

2021

Linking body cues to emotions for  
elementary aged children: an  
understanding by design  
curriculum for social-emotional  
learning

---

<https://hdl.handle.net/2144/42557>

*Boston University*

BOSTON UNIVERSITY  
SARGENT COLLEGE OF HEALTH AND REHABILITATION SCIENCES

Doctoral Project

**LINKING BODY CUES TO EMOTIONS FOR ELEMENTARY AGED  
CHILDREN: AN UNDERSTANDING BY DESIGN CURRICULUM  
FOR SOCIAL-EMOTIONAL LEARNING**

by

**ALISA TESELLE**

B.S., Eastern Michigan University, 1993

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

2021

© 2021 by  
ALISA TESELLE  
All rights reserved

Approved by

Academic Mentor

---

Bradford D. Wheeler, Ph.D.  
Teaching Professional of Occupational Therapy

Academic Advisor

---

Karen Jacobs, Ed.D., OT, OTR, CPE, FAOTA  
Associate Dean for Digital Learning & Innovation  
Clinical Professor of Occupational Therapy

*“We are, I believe, in the midst of a revolution in our understanding of emotion, the mind, and the brain — a revolution that may compel us to radically rethink such central tenets of our society as our treatments for mental and physical illness, our understanding of personal relationships, our approaches to raising children, and ultimately our view of ourselves.” (Dr. Lisa Felman Barrett, 2015, p. xv).*

## **DEDICATION**

I would like to dedicate this work to fellow Occupational Therapy Practitioners, who are tireless in serving others to be more independent, fulfilled with a sense of purpose, and promoting health and well-being for all.

## ACKNOWLEDGMENTS

Throughout the writing of this dissertation, I have received a great deal of support and assistance.

I would first like to thank my academic mentor, Dr. Bradford Wheeler, for his enthusiastic guidance and expertise throughout each stage of this process. Brad, your insight and knowledge steered me through this research, and you were invaluable in synthesizing and refining my writing to make it what it is today. Your continued inspiration pushed me to sharpen my thinking and brought my work to a higher level through innovative technologies, your abundant encouragement, joy of teaching, and your love for learning.

Second, I would like to acknowledge my peer mentor Carrie Schmitt for her spark of curiosity as she was instrumental in refining the path of my research. For this, I am extremely grateful. Carrie kept my mind engaged in online learning, filled my heart with laughter, and will be the soul for future inspiration and collaboration. Next, Jennifer Byrne for ending this process with enthusiasm and encouragement.

Third, to my fellow teachers at Helen Keller Elementary School in Franklin, MA, who are my heroes, constantly striving to engage, love, and support their students. You are the reason I started this endeavor, in order to further support you in your work. I thank my writing tutor, Professor David Sechrest, for his valuable guidance throughout my studies. You provided me with the tools that I needed to synthesize and simplify my written words into ideas for the reader, and successfully complete my dissertation. In addition, Lucas Gugiere for sharing the Franklin, MA Districts SEL vision and watching

him tirelessly lead our educators in educating the whole child. Finally, Eric Stark and Keri Busavage for guiding me in my journey of using Understanding by Design in my work.

In addition, I would like to thank my parents for their wise counsel and sympathetic ear. You are always there for me. Next, my three sons Austin, Lucas, and Conrad who were the silent motivation for moving me towards this life goal, in order to show that even their mom can persevere to attain a dream, later in life.

In conclusion, I could not have completed this dissertation without the support and love of my friends, Daniel Tavares, Lisa Hodgdon, Linda Cournoyer, Kerry Water Stokes, Amy Dunajski, Crista Lambert, and Stephanie Luz who provided stimulating discussions as well as happy distractions to rest my body and mind outside of my research.



**LINKING BODY CUES TO EMOTIONS FOR ELEMENTARY AGED  
CHILDREN: AN UNDERSTANDING BY DESIGN CURRICULUM  
FOR SOCIAL-EMOTIONAL LEARNING**

**ALISA TESELLE**

Boston University Sargent College of Health and Rehabilitation Sciences, 2021

Major Professor: Bradford D. Wheeler, Ph.D., Teaching Professional of Occupational  
Therapy

**ABSTRACT**

America's elementary-aged children are struggling in school. Teachers and parents report that children are demonstrating difficulty attending to and staying engaged with instructional activities in classrooms nationwide. As a result, teachers must manage children's dysregulation as it may impact their immediate learning abilities and produce further downstream consequences in the K–12 environment. These elementary-aged children are often referred to school-based occupational therapy. The referrals indicate social-emotional learning (SEL) deficits. These social-emotional processes and the child's learning are negatively impacted by increased anxiety. Evidence supports these findings. In fact, the current literature on the topic reveals multiple contributing factors including sensory functions that link body cues to emotions.

This doctoral project provides an overview of *My Body Feelings (My BF)* curriculum. This project details the curriculum's development, and the specific connection of school-based interventions. *My BF* is informed by three educational theories including Sociocultural Theory, Social Cognitive Theory, and the Theory of Constructed Emotions. Curriculum materials and lessons are organized as well as

structured for the instructors using the Understanding by Design Framework. The program incorporates current evidence-based intervention strategies in 21 accessible 30-minute sessions complete with take home Exit Tickets.

The result is an educational curriculum which directly addresses decreased self-regulation in children. The skills developed in the program will drive situation-specific coping skill development in children in grade levels 1–5. The anticipated outcome is improved emotional health and well-being of today's elementary-aged children impacting their important occupational role of student.

## TABLE OF CONTENTS

<b>DEDICATION.....</b>	<b>v</b>
<b>ACKNOWLEDGMENTS .....</b>	<b>vi</b>
<b>ABSTRACT.....</b>	<b>viii</b>
<b>TABLE OF CONTENTS .....</b>	<b>x</b>
<b>LIST OF TABLES .....</b>	<b>xiv</b>
<b>LIST OF FIGURES .....</b>	<b>xv</b>
<b>LIST OF ABBREVIATIONS .....</b>	<b>xvi</b>
<b>CHAPTER 1 - INTRODUCTION.....</b>	<b>1</b>
Background.....	1
The Problem: Anxiety and Attentional Issues in School.....	1
Various Causes of Childhood Anxiety and Attentional Problems.....	2
<i>Use of Technology.....</i>	<i>3</i>
<i>Instant Gratification.....</i>	<i>4</i>
<i>Parental Behavioral Management Skills .....</i>	<i>5</i>
<i>Educational System Deficits .....</i>	<i>6</i>
Addressing Anxiety and Attention in Classrooms.....	7
Limitations with Current Approaches to Solve the Problem.....	8
How this Program Relates to the Domain of Occupational Therapy.....	10
Body Cues - A Curricular Approach .....	12
<b>Conclusion .....</b>	<b>13</b>
<b>Chapter 2 - THEORETICAL AND EVIDENCE BASE TO SUPPORT THE PROPOSED PROJECT .....</b>	<b>15</b>
<b>Introduction.....</b>	<b>15</b>
Framework for Understanding the Self-Regulation Problem.....	15
Terminology Definitions and Information.....	16
<i>Anxiety.....</i>	<i>17</i>
<i>Attention.....</i>	<i>19</i>
<i>Self-Regulation.....</i>	<i>20</i>
Theoretical Frameworks .....	22
Sociocultural Theory.....	22
Social Cognitive Theory .....	25
Theory of Constructed Emotions .....	27
<i>Background.....</i>	<i>27</i>
<b>Conclusion .....</b>	<b>29</b>
Evidence for Proposed Explanatory Model of the Problem .....	30

Instant Gratification and Implications for Attention.....	31
American Society & Culture of Instant Gratification .....	34
<i>Mobile Technology</i> .....	35
Lack of Parental Knowledge.....	37
<i>Parent’s Self-Regulatory Skills</i> .....	39
<i>Parent-Child Relationships</i> .....	39
<i>Parenting Practices</i> .....	41
Children’s Lack of Knowledge of Body Cues Tied to Self-Regulation .....	42
Bodily Expression of Emotion.....	45
<i>Active Emotion Recognition</i> .....	47
<i>Emotions and Self-Regulation</i> .....	47
<b>Conclusion .....</b>	<b>48</b>
Reflections and Implications for Research .....	48
<b>Chapter 3 - A SYNTHESIS OF CURRENT APPROACHES AND METHODS.....</b>	<b>50</b>
<b>Introduction.....</b>	<b>50</b>
<b>Themes .....</b>	<b>51</b>
<b>Summary of Literature Base.....</b>	<b>51</b>
<i>Occupational Therapy Interventions</i> .....	51
<i>Social-Emotional Learning Interventions</i> .....	54
<i>Problem-focused and Emotion-focused interventions</i> .....	57
<i>Evidence-based Kernels</i> .....	61
<i>Contemplative Practices</i> .....	63
<i>International and Transdiagnostic Interventions</i> .....	63
<i>Diagnostic-Specific Groups and Interventions</i> .....	66
<b>Conclusion .....</b>	<b>67</b>
<b>Chapter 4 - DESCRIPTION OF THE PROPOSED PROGRAM .....</b>	<b>71</b>
<b>Introduction.....</b>	<b>71</b>
<b>Program Description .....</b>	<b>71</b>
Program Design .....	74
Intended Audience .....	75
Program Participants.....	76
Program Implementation Personnel.....	76
Objectives and Expected Outcomes.....	77
Barriers and Challenges to Implementation.....	78
<b>Chapter 5 - PROGRAM EVALUATION RESEARCH DESIGN .....</b>	<b>80</b>
Overall Goals .....	80
Logic Model.....	81

<b>Program Design and Evaluation Methods.....</b>	<b>81</b>
Evaluation Performance Measures .....	82
Needed Resources .....	83
Specific Evaluation Questions (See Table 5-1) .....	84
Evaluation Methodology.....	88
Data Collection .....	88
<i>Methods for Formative/Qualitative Data Management (see Table 5-2) .....</i>	<i>88</i>
<b>Conclusion .....</b>	<b>91</b>
<b>Chapter 6 - DISSEMINATION PLAN .....</b>	<b>93</b>
<b>Summary of Proposed Program .....</b>	<b>93</b>
Dissemination Goals .....	94
<i>Short Term Goal 6 months-1 year. ....</i>	<i>94</i>
<i>Long Term Goals 2-5 yrs. ....</i>	<i>94</i>
<b>Target Audiences, Messages, Messengers, and Activities .....</b>	<b>95</b>
Primary Audiences.....	95
Key Messages for Primary Audiences.....	95
Primary Spokesperson .....	96
Activities.....	97
Secondary Audiences.....	98
Key Messages .....	98
Secondary Spokespeople .....	99
Activities.....	100
Budget.....	101
Evaluation .....	102
<b>Conclusion .....</b>	<b>103</b>
<b>Chapter 7 - FUNDING PLAN .....</b>	<b>104</b>
<b>Summary of Proposed Program .....</b>	<b>104</b>
Available Local Resources .....	105
Resources Needed:.....	105
Facilitators to Program Development or Implementation: .....	105
Policies, Regulations that Influence or Impact Program Development or Implementation: .....	106
Payers.....	106
Needed Resources: Budget .....	107
Potential Funding Sources .....	109
Revenue Sources.....	114
<b>Conclusion .....</b>	<b>115</b>
<b>Chapter 8 -CONCLUSION.....</b>	<b>117</b>

<b>APPENDIX A Example Lesson from My Body Feelings .....</b>	<b>121</b>
<b>APPENDIX B Summative Staff My Body Feelings Program Evaluation .....</b>	<b>126</b>
<b>APPENDIX C Summative Student My Body Feelings Program Evaluation.....</b>	<b>132</b>
<b>APPENDIX D Program Manual .....</b>	<b>137</b>
<b>APPENDIX E Executive Summary.....</b>	<b>153</b>
<b>APPENDIX F Fact Sheet.....</b>	<b>167</b>
<b>References .....</b>	<b>169</b>
<b>CURRICULUM VITAE.....</b>	<b>196</b>

## LIST OF TABLES

Table 2-1 .....	44
Table 5-1 .....	84
Table 5-2 .....	89
Table 5-3 .....	90
Table 6-1 .....	101
Table 7-1 .....	107
Table 7-2 .....	108
Table 7-3 .....	110
Table 7-4 .....	115

## LIST OF FIGURES

Figure 2-1 .....	16
Figure 4-1 .....	75
Figure 5-1 .....	81



## LIST OF ABBREVIATIONS

ADHD	Attention Deficit Hyperactivity Disorder
AOTA	American Occupational Therapy Association
CASEL	The Collaborative for Academic, Social, and Emotional Learning
CBT	Cognitive Based Therapy
CITI	Collaborative Institutional Training Initiative
DESE	Department of Elementary and Secondary Education
DESSA-mini	Devereux Student Strengths Assessment-Mini Assessment 2
EASEL	Ecological Approaches and Social Emotional Learning
EF	Executive Functions
ESSA	Every Student Succeeds Act
GAD	Generalized Anxiety Disorder
IEP	Individualized Education Program
IRB	Instructional Review Board
K–12	Kindergarten to Twelfth grade
MA	Massachusetts
MAIA-2	Multidimensional Assessment of Interoceptive Awareness Version 2
MBE	Mind Brain and Education science
My BF	My Body Feelings curriculum
OT	Occupational Therapy Practitioner
PLN	Personal Learning Network
PTSD	Post Traumatic Stress Disorder

RULER	Recognizing emotions in self and others, Understanding the causes and consequences of emotions, Labeling emotions with diverse vocabulary, Expressing emotions across contexts, and Regulating emotions effectively
SEL	Social-Emotional Learning
SEL4MA	Social and Emotional Learning alliance for Massachusetts
UbD	Understanding by Design

## CHAPTER 1 - INTRODUCTION

### Background

This chapter outlines the gaps within occupational therapy interventions and social-emotional learning as well as the underlying problem with education's role in addressing social and emotional learning, and why this problem matters. The primary purpose of this proposed program is to address the increase in young children at school dealing with anxiety and attentional related symptoms resulting in decreased emotional self-regulation. This chapter proposes a hypothesis of what is causing and contributing to social-emotional learning deficits in children grades one through five, and then how the *My Body Feelings (My BF)* curriculum could help improve a child's behavior within the classroom. Finally, this chapter describes how social-emotional learning relates to various aspects of occupational therapy, and how the proposed program relates to the domains of occupational therapy (OT), and how OTs are specifically qualified to address this problem.

### **The Problem: Anxiety and Attentional Issues in School**

Students today are often anxious and distracted and with a growing diversity of learners within the classroom, teachers are struggling to reach these students with effective methods (Munro, 2017). Current research indicates that anxiety is the most common childhood and adolescent psychiatric disorder (The Anxiety and Depression Association of America, 2010-2018; Bosquet & Egeland, 2006). Anxiety affects children and their ability to regulate themselves within the classroom, which impacts learning and future outcomes. Furthermore, the presence of anxiety with Attention Deficit Hyperactivity Disorder (ADHA) occurs in approximately 30% of youth. Likewise,

statistics from the Center for Disease Control and Prevention (2018) show an increase in ADHD diagnosis. A student's ability to function in the academic setting is negatively impacted by the presence of these two diseases and can impact cognitive functioning (Hammerness et al., 2010).

Foundational skills and knowledge that children have developed in early childhood have been shown to correlate with future adolescence and adult success across fields, including education, employment, criminality as well as mental health (Corcoran et al., 2018; Yang et al. 2018; Zins et al., 2007). Thus, it is not surprising that a child's social and emotional skills could be predictive of a child's future outcomes pertaining to independence, social skills, and well-rounded individuals who are responsive enough to navigate their own personal and professional future (Jones et al., 2015; Oberle et al., 2016). Because of the importance of developing these emotional skills, it is critical for clinicians to become more familiar with some underlying causes of anxiety and decreased attention, to become more equipped to provide appropriate and effective interventions.

### **Various Causes of Childhood Anxiety and Attentional Problems**

Several factors potentially contributing to the problem of decreased self-regulation among school-aged children include the increased use of technology by school-aged children, a society fixated on instant gratification, lack of parent knowledge in typical childhood regulation, and a deficit of holistic emotional practices for children. These factors are discussed below.

### *Use of Technology*

The increased use of technology in our culture results in fewer play opportunities, limiting creativity and physical movement (Edwards, 2014; Phillips, et al., 1995; Rosen et al., 2014; Schmidt, et al., 2008). The impact of technology use has several implications for students in grades 1–5. First, children are mostly stationary when using these devices and there is little to no social interaction involved. Second, children do not have as much access to outside play and exploration. It is recommended that children ages 6–12 sleep 9–12 hours, accumulate at least 1 hour of moderate intensity physical activity and limit screen time to less than two-hours a day. However only 5% of these children met these three criteria leading to decreased health outcomes (Knell et al., 2019). Third, children have diminished skills in order to engage in creativity, planning, organizing, and adapting play.

Typically, when children engage in social or physical play, they are playing with other peers which promotes more opportunities for physical, cognitive, social, and emotional growth (Milteer & Ginsburg, 2012). Analysis of literature concludes that more time using technology may influence physical health (Rosen et al., 2014), social play opportunities, developmental skills, and feelings of satisfaction and well-being (Chesley, 2005). When children engage in creative play, there are opportunities for initiation, planning, problem-solving which help prepare them for learning. Furthermore, participation in play provides engagement of gross and fine motor skills needed to help support academic readiness such as handwriting.

### ***Instant Gratification***

Research indicates that instant gratification, specifically the ability to delay gratification has been indicative of better self-control and the ability to inhibit thoughts, feelings, and behaviors (Murray et al., 2018). Delay of gratification is the ability to shift your attention from something that you want right now to a better reward later on. This ability to shift focus or distract oneself has implications for attention and anxiety as noted by Wells and Matthews (1996), who state that difficulties in self-control can lead to over-thinking. Over-thinking impacts attention which may result in a fixation on emotion-related stimuli. For example, ruminating on certain topics like making a mistake, can cause anxious or depressive vulnerability. Thus, children who are more successful at controlling their thoughts have a better ability to shift their negative thinking to positive thinking.

Duckworth (2011) found the ability to delay gratification in students positively influences self-regulation. In regards to media and instant gratification, a 2017 study by Common Sense Media concluded that “more than 70 percent of elementary, middle and high school teachers say media use has hurt students’ attention spans, while more than 40 percent believe it has interfered with students’ critical thinking and their ability to engage with subject matter” (Alsop, 2014, para. 15). Instant gratification may be attributed to the ability to instantly access information via technology. Easily accessible information has been shown to reduce problem-solving strategies or strategies to teach patience and time management (De Paola & Gioia, 2017). Furthermore, additional evidence gathered from research shows that modern societies thrive on instant gratification made possible by

easily accessible information provided through smartphone use, instant delivery services, and instant web searches (Roberts, 2014; Alsop, 2014). Taken collectively, these studies provide substantial evidence that instant gratification is both prolific and problematic. Additionally, the research suggests that a child's ability to delay gratification and exhibit self-control can help combat the negative impacts of the fast-paced societal culture in which we live.

### ***Parental Behavioral Management Skills***

Parents are observers of their children's skills in a variety of situations. Parent knowledge about a child's abilities and the strategies to meet cognitive and social-emotional needs are required to interpret their child's behavior to guide raising their child. Several classroom studies illustrate that parents struggle to help students regulate emotions, particularly related to anxiety. For example, Marshall et al., (2016) found that 21 parents' recognition of child development was low with a mean of only 61%. Furthermore, a meta-analysis based on 47 studies conducted by McLeod et al. (2007), found that parental warmth and autonomy-granting were associated with less child anxiety, and higher levels of parental withdrawal, aversiveness, and overinvolvement were associated with more child anxiety. Additionally, educating parents on their own self-regulatory skills can positively enhance their own child's self-regulatory skills (Baker, et al., 2019; Morawska et al., 2019; Thompson, 2014). Taken together, these studies demonstrate the importance of parental knowledge impacting their child's emotional self-regulation.

### *Educational System Deficits*

Children in American school systems are beginning to receive targeted instruction on emotional well-being. Emotional well-being and educational interventions pertaining to social and emotional learning (SEL) specifically have begun to focus on remediating factors that impact young children. SEL school-based programs are designed with learning outcomes that seek to improve emotional skills awareness, self-esteem and behaviors which have been shown to reduce emotional stress and behavioral issues in the classroom (Corcoran et al., 2018). SEL is one popular practice employed in American K-12 settings that links mind and body practices. This is evidenced by the 3.5 hours spent on SEL per week at the elementary school level as well as the annual spending of \$300,000,000 on SEL products within United States classrooms (Krachman & Larocca, 2017 pp. 6–7).

While the practice is more mainstream, several problems with SEL have emerged. First, programs have been shown to lack fidelity, as well as staff buy-in needed to carry out SEL practices (Schonert-Reichl, 2017) even though there is a daily concern in classroom discipline for teachers (Hardman & Smith, 2003; Madigan et al., 2016). Educators may not be aware of the effective SEL interventions that also support classroom behavior. For example, a meta-analysis by Korpershoek et al. (2016), indicated that classroom management interventions that focused on the social-emotional development of the students were effective in student outcomes of student learning and self-efficacy. However, despite knowing some of these positive impacts of SEL, most teachers and administrators juggle numerous competing priorities in their daily schedule



and must meet district and state educational requirements. These competing priorities reduce the time teachers have to teach the whole child; such as social-emotional instruction which can positively impact a child's behavior (Reinhard, 2017).

### **Addressing Anxiety and Attention in Classrooms**

Many districts, states, and national organizations are employing SEL within the public-school setting (CASEL, 2021). Both District Improvement Plans and School Improvement Plans within the State of Massachusetts have begun to employ SEL as a strategic objective meant to “foster within its students the knowledge and skills to find and achieve satisfaction in life as productive global citizens” (Franklin Public School District, 2019 para 1). The legitimacy of SEL is also recognized by the Department of Elementary and Secondary Education (2018) which focuses on SEL. Their aim is to “systematically develop the SEL for their students...to promote academic achievement and prosocial behavior, as well as lowering emotional distress and conduct problems” (Massachusetts Department of Elementary and Secondary Education, May 2018, para. 1).

Several districts in Massachusetts recognize the importance of responsible and socially competent skill sets needed at the elementary level. The skills associated with Social-Emotional Learning include such competencies as to understand and manage emotions, set and achieve positive goals, feel and show caring and concern for others, establish and maintain positive relationships, and make responsible decisions (Weissberg et al., 2015).

Nationally, for the first time, schools across the nation are being asked to prioritize educating the whole child (Corcoran et al., 2018) as evidenced by the recent

passage of the Every Student Succeeds Act (ESSA) (U.S. Department of Education (n.d.)). Another mandate of ESSA is to ensure that all 50 US states have preschool SEL competencies and standards embedded into their curriculums. Furthermore, 18 states have responded by expanding SEL competencies into their K-12 curriculums. While the main goal of SEL is to change maladaptive behaviors in students, it can only be achieved when a well-developed and integrated approach is provided by local, state, and national stakeholders.

Local, State, and national initiatives are only part of the SEL implementation story. Other stakeholders such as the Collaborative for Academic, Social, and Emotional Learning, (CASEL) (CASEL, 2021) have sought to help. CASEL is an international organization driven to infuse SEL education initiatives such as the Collaborating States Initiative (CASEL, 2021), and are looking to other organizations to help guide future education. However, according to Weissberg et al. (2015), there are still many needs for stronger implementation of quality programs.

### **Limitations with Current Approaches to Solve the Problem**

Despite growing evidence that utilizing SEL and teaching children cognitive and affective skills can improve children's emotional adjustment, impact academic achievement enabling positive future outcomes; implementing SEL curriculum may be seen as an added and difficult extra responsibility of the classroom. Given that teachers often report feeling overextended, framing SEL in this way is risky as it may be resented by the teachers. As stated earlier, another limitation is that teachers may not possess current knowledge or skills on the most effective brain-based research regarding learning

or emotions.

Current research indicates that the body is sometimes the first mechanism that alerts the brain of potential danger as Javanbakht and Saab (2017) found. These concepts are important as a newer emerging concept of interoception which has exploded in the past decade. Interoception is “an internal sensory system in which the internal physical and emotional states of the body are noticed, recognized/identified and responded to” (Government of South Australia, 2019, p.16). In other words, interoception is the first step to emotional intelligence or social-emotional skills because it is mindful body awareness. Children with well-developed interoception can use both logic and emotions to respond to their environment. A child without well-developed interoception has to think through each situation, and over time, this is extremely tiring and can contribute to overload, shutdown, meltdowns, anxiety, and depression. Internationally, many schools are using interoception activities to help children better regulate their emotions, exhibit more on-task behaviors, and engage in more prosocial behaviors. For example, in Australia, schools have been using a regular implementation of interoception activities for 8-10 weeks with higher levels of student engagement in learning and lower levels of difficult behaviors in classrooms. American schools are behind in using interoception in SEL curricula.

In terms of current school-based practice, as an occupational therapist, I have also found that teaching students positive emotions and connections to body gestures or cues besides facial expression (i.e., heart rate, temperature, breathing, discomfort), as well as the context that emotion occurs (i.e., where, when, what is going on at the

moment, and why), correlates positively with an awareness of feelings and feeling mitigation choices. When students are aware of what they are feeling, they are then better able to choose a few strategies to help make more sense of these feelings. This feeling of control or self-efficacy can impact a child's feelings of anxiety. Because there is a lack in a SEL curriculum that addresses body cues and connects them to specific emotions, this paper will focus on the development of a body cues curriculum that provides coping skills to fit the situation, that specifically addresses this need.

### **How this Program Relates to the Domain of Occupational Therapy**

Occupational Therapy practitioners (OTs) are uniquely positioned to help implement SEL into the classroom. As school-based practitioners, our role is to support academic achievement and social participation by promoting occupation within all school routines. Thus, "utilizing prevention, promotion, and intervention strategies to improve mental and physical health and well-being" (AOTA, 2021, para. 2).

OTs also possess unique training in sensory processing. Sensory processing is foundational and one of the main focuses of emotional regulation. Sensory processing is one of the physiological body functions to maintain homeostasis within the body. Homeostasis is important to a regulated body. Having children become aware of their internal body senses, they can impact their own health. Therefore, occupational therapists are well equipped to teach body cues and sensations and how it relates to emotions in children. "Occupational therapy practitioners are distinctly qualified to address the sensory processing needs of all students. Persons with disabilities and/or mental health difficulties may experience everyday sensations with more or less intensity than those

without such challenges. Such sensory differences may influence a person's behavior, social interaction, and self-regulation. Occupational therapy practitioners apply a sensory processing approach at the universal, targeted, and intensive levels to identify how sensory needs influence behavior and they develop sensory strategies to enhance attention, mental well-being, behavioral organization, and everyday functioning" (Bazyk, 2011, pp. 56-57).

The OT profession is uniquely focused on interoception. Interoception is defined as the "internal detection of changes in one's internal organs through specific sensory receptors (to be aware of, e.g., hunger, thirst, digestion, state of alertness)" (AOTA, 2020). This concept is important as it is the first step to bodily self-awareness impacting self-regulation which has been added to the newly revised American Occupational Therapy practice framework: Domain and process (4th ed.) (AOTA, 2020).

Occupational therapy practitioners are also able to teach all students self-regulation strategies to manage and control emotions and behavior (Kuypers, 2011). As an occupational therapist, part of our practice is to "design occupation-based intervention plans that facilitate change or growth in student factors (body functions, body structures, values, beliefs, and spirituality) and skills (motor, process, and social interaction) needed for successful participation" (American Occupational Therapy Association, 2014, p. S1). The profession of Occupational Therapy also assumes that student engagement leads to increased positive feelings resulting in improved self-esteem and a more holistic treatment approach according to the American Journal of Occupational Therapy (AOTA, 2020). Occupational therapists use engagement with occupation to facilitate change.

Using therapeutic activities such as participating in a body cues and emotions curriculum within their school environment will more effectively promote positive outcomes which can impact and therefore change emotional health.

### **Body Cues - A Curricular Approach**

The primary purpose of this project and study is to develop a targeted curriculum *My Body Feelings (My BF)* directed towards children from first to fifth grade that will teach children awareness about their own body signals, contextual cues, and develop strategies to deal with these signals. The second part of this study will be to implement the curriculum by having teachers and parents/caregivers learn these new concepts of interoception in order to better instruct children to connect these biofeedback signals of their bodies to specific feelings. This curriculum is based on the contemporary Theory of Constructed Emotions (Barrett, 2017b), which highlights interoception as the initial step to a self-regulated child. A key ingredient of the curriculum will give students a list of coping strategies to use when they are feeling worried, stressed, confused, tired, or sad. Furthermore, the lessons are designed using the Understanding by Design (UbD) framework (McTighe & Willis, 2019), which makes lessons easy to follow and implement; as well as increasing carry-over for students to real-life situations and scenarios. Finally, to assess the effectiveness of this curriculum, this study includes mixed methods to assess future impacts on students. Overall, the impact could be improved self-regulation leading to decreased disruptive behaviors and increased student engagement for learning.

## **Conclusion**

Three issues disproportionately affect these children and merit special attention: student self-regulation is a major problem in structured and unstructured times causing anxiety and attentional issues in children, SEL curriculum deployment in grades one to five have not been targeted enough, and although there has been an increase in social-emotional learning in the past ten years, there are only a few curriculum programs in teaching children body cues, in public school settings, having a void in curricula that specifically instructs children on a direct correlation between body cues and emotions within the school environment. The proposed curriculum intervention addresses that gap through prevention that focuses on reducing both the incidence and the seriousness of problem behaviors and mental health disorders. More research is needed to prove the importance of this work in a public educational setting as well as the causes and contributions to this problem. The motivation for this Universal/SEL intervention is informed by my practice as an occupational therapist in elementary school settings. Through my own personal and professional experiences, I have witnessed an increase in student self-understanding regarding students' feelings when encountering SEL programs. Given the anecdotal and evidence-based successes, I propose that in raising children's awareness of stress, anxiety, and other emotions, they can contradict the negative impacts of these emotions yielding improved coping skills leading to improved behavior and outcomes (Dubow & Tisak, 1989; Pincus & Friedman, 2004). The next chapter provides the framework for understanding the problem of decreased self-

regulation and increase of anxiety and attentional issues in children grades 1-5, as well as the conceptual and intervention theories that support the *My BF* project.



## **CHAPTER 2 - THEORETICAL AND EVIDENCE BASE TO SUPPORT THE PROPOSED PROJECT**

### **Introduction**

Within this chapter, a framework for understanding decreased self-regulation in children grades 1–5 is introduced and explained. First, the terms for the explanatory model for decreased self-regulation in elementary-aged children (See Figure 2.1) are defined and described. Subsequently potential causes of dysregulation are provided through a theoretical lens. Finally, findings from literature addressing the framework are discussed. Reflections and adjustments to the explanatory model as well as implications for future research are also provided.

### **Framework for Understanding the Self-Regulation Problem**

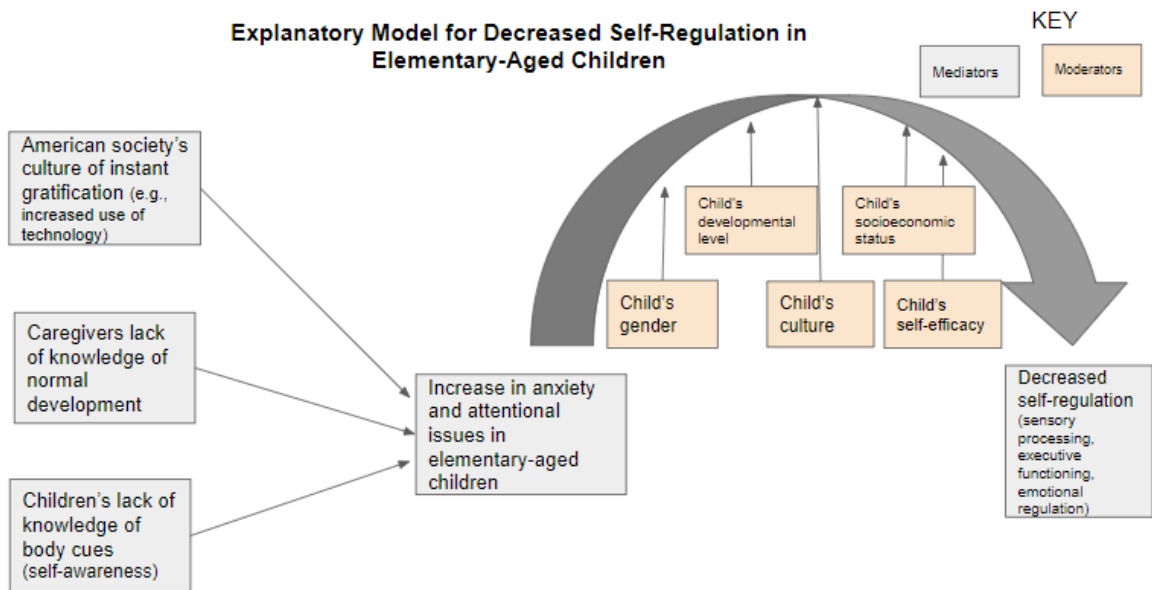
There are many causes of increased anxiety and attention-related symptoms in early elementary children. Occupational therapy practitioners are making clinical observations as the number of younger students dealing with anxiety- and attention-related symptoms on their caseloads grow. A substantial increase in self-regulation difficulties has correlated to an increased referral rate for occupational therapy services to help children better regulate their behavior in the classroom. Unfortunately, self-regulation difficulties may reduce a student's ability to successfully learn in the classroom. Such difficulties may correlate with a loss of learning time, decreased work production and motivation, all while contributing to disruptive behaviors in the classroom environment.

This familiar situation incidence led to the following hypothesis: The increase of anxiety- and attention-related symptoms in elementary-aged children may be attributed to

three things, the cultural phenomena of instant gratification, a caregivers' lack of knowledge of typical child development, and children's lack of self-awareness or knowledge relating to their own body cues.

**Figure 2-1**

*Proposed Explanatory Model of Identified Problem*



*Note:* The explanation model is designed to illustrate how decreased self-regulation occurs in elementary-aged children. The model is broken into various terms and definitions and includes various mediators and moderators. These elements are described below.

**Terminology Definitions and Information**

The key constructs of this framework include anxiety, attention, and self-regulation. Literature exploring the causal basis for an increased incidence of childhood anxiety, attention challenges, and dysregulation was gathered, analyzed and is discussed in the following sections.

## *Anxiety*

Childhood anxiety may be explained by a number of mental health symptoms and illnesses, including generalized anxiety disorder (GAD), obsessive-compulsive disorder (OCD), panic disorder, posttraumatic stress disorder (PTSD), social anxiety disorder (also called social phobia), and specific phobias (Anxiety Disorders Association of America, 2010-2020, p. 5). Anxiety disorders are increasing within child populations, including children between 13 and 18 years old, where as many as 25.1% are affected. “Research shows that untreated children with anxiety disorders are at higher risk to perform poorly in school, miss out on important social experiences, and engage in substance abuse” (Anxiety and Depression Association of America, 2018, para. 14), so there is an urgent need to recognize and address this growing problem.

Anxiety can impact a variety of aspects of a child’s development, including social acceptance, family functioning, cognitive perceptions, and quality of life. A child who exhibits deficits due to anxiety may be prone to demonstrate more intense dysregulated behaviors that prohibit them from succeeding in the classroom. These child development areas are correlated to success in the classroom, but they may have impacts well into adulthood success as well (Pella et al., 2017). Therefore, it is important to understand potential factors for the causes of anxiety in children as well as the potential interventions to assist these young children before academic concerns resulting in negative outcomes arise.

Additionally, researchers have also been interested in the underlying causes of anxiety. By understanding the causes, researchers are able to better understand precursors

or viable interventions that might help minimize anxiety. Research indicates that several factors may influence anxiety, these include maternal depression, difficult temperament, family dysfunction, and maternal self-efficacy (Côté et al., 2009). A longitudinal study by Bosquet and Egeland (2006) found that there were four major risk factors for developing anxiety-related symptoms in children. First, the researchers found that a failure to develop competent emotion regulation skills may be an important precursor to the development of anxiety-related difficulties in childhood. Second, temperamental profiles such as “difficult” temperament and behavioral inhibition were identified as involving both a heightened physiological and emotional reactivity and poor regulation and increased risk for the development of anxiety-related symptoms and disorders in later childhood. Third, according to attachment theorists, the caregiver-child relationship provided the context in which the young child develops emotion regulation abilities and future peer relationships. Fourth, early attachment influenced peer relationships, and insecure parent-child attachment relationship is associated with anxiety-related symptoms in adolescence.

Bosquet and Egeland (2006) findings demonstrate the roles of an infant's biobehavioral reactivity and regulation such as habituation to sensory stimulation, irritability, activity, consolability, and the physiological response to stress, which is correlated with anxiety-related symptoms in childhood. Next, anxiety in pre-adolescence was associated with developmental incompetence in adolescence, which is related to self-efficacy. Finally, gender differences may be a factor. For instance, findings suggested that males and females showed similar rates of anxiety-related symptoms until

adolescence, at which point females demonstrated greater rates. In summary, the child's developmental level, self-efficacy as well as gender may be moderating factors impacting anxiety in children as shown in Figure 2.1.

### ***Attention***

Attention involves multiple cognitive processes such as attending and focusing, inhibition, orienting to responses, switching between tasks, or regulating and monitoring of actions (Gupta & Kar, 2009; Suades-González et al., 2017). Attentional problems affect 5% of children, according to the Centers for Disease Control and Prevention (2018). Additionally, about one in three children diagnosed with ADHD present symptoms of anxiety. Both attention and anxiety capitalize on the behavioral mechanisms of attention control, which is the ability to shift attention and focus on task-relevant information (Brooker et al., 2020, Susa et al., 2012). In addition to control attention, the mind must be able to properly manage forces of inhibition and delayed gratification. Broadly speaking the importance of attention is seen across demographics but research findings suggest that attention processes are very crucial in supporting a children's ability to delay gratification (Eigsti et al., 2006; Mischel et al., 1989). More broadly speaking, children that present with issues related to sustained attention they consequently have correlated difficulty waiting to receive feedback which may result in impulsive behaviors that occur in the classroom. This is further supported by Bulotsky-Shearer et al. (2011) who found that in early childhood, decreased attention impacts motivation, and self-regulation resulting in problem behaviors predictive of poorer outcomes. Thus, attention is an important component to inhibiting impulses which relates to self-regulation.

### ***Self-Regulation***

The concept of self-regulation is broadly defined and studied in the literature using various terms and terminologies. At times, literature refers to self-regulation as emotional regulation (Augustyniak et al., 2009; Loevaas et al., 2019), while other scholars reference self-regulation by using statements such as self-control and delay of gratification (Sanders et al., 2019).

More recently, the literature has expanded and integrated the concept of self-regulation by including studies of people's own personal constructs executive functioning skills (Bailey & Jones, 2019; McCoy, 2019). As defined by Bailey and Jones (2019), self-regulation is a "domain-general term that encompasses a broad array of physiological, attentional, emotional, behavioral, cognitive, interpersonal and social processes" (p. 3). Importantly, Kuypers (2011) discusses three components of self-regulation, namely sensory processing, executive functioning, and emotional regulation. In her 2001 book, *The Zones of Regulation: A Curriculum Designed to Foster Self-Regulation and Emotional Control*, Kuypers notes three important neurological components that contribute to self-regulation.

Kuypers three-component definition of self-regulation is particularly important for this project's framework as it pertains to elementary education and curriculum development. Kuypers who is an occupational therapy practitioner has contributed to the instruction of self-regulation in school settings nationwide. The three-component definition provides a hierarchical approach to building lessons pertaining to self-regulation by focusing on a persons' sensory and body cues. A child requires effective

sensory-processing skills to successfully make sense of the information they receive from the environment. These sensory-processing skills are gathered from auditory, tactile, vestibular, visual, olfactory (smell), gustatory (taste), and proprioception (awareness of the position and movement of the body) senses. In children, the ability to identify body sensations is a key factor for self-awareness. Bodily self-awareness is the first step to self-regulation in children. Sensory-processing skills are also the foundation for higher-level cognitive functioning and academic learning (Williams & Shellenberger, 1996). Relating to academics, executive functions (EF), the second neurological component, are the cognitive skills needed in school to be able to attend to the teacher, ignore other distractions, follow multi-step directions, initiate work, and remember previously learned information. A study by Nelson et al. (2018) found that poorer preschool executive control was significantly associated with both greater depression and anxiety-related symptoms in elementary school. The third neurological component, emotional regulation, is needed to modulate behavior and interact with other people. Children need to monitor, evaluate, and modify emotional responses to build strong relationships. In addition, children have to organize emotional stimuli and integrate them to respond and act in a purposeful way (Kuypers, 2011). In summary, children with stronger self-regulation are better equipped to handle school-related tasks and social demands than students with weaker self-regulation.

Self-regulation is a powerful framework for examining how students' anxiety and attentional difficulties impact how and why they may excel or struggle in school. The explanatory model is intended to present and organize a framework for elementary school

SEL curriculum.

### **Theoretical Frameworks**

Sociocultural theory and social cognitive theory have been applied to various educational research studies to examine self-regulation (Berk et al., 2006; Eigsti et al., 2006; John-Steiner & Mahn, 1996; Schunk & Zimmerman, 2007; Zimmerman & Schunk, 1989). These theories were used to address various aspects of self-regulation including effortful control, executive functioning, inhibition, cognitive control, and self-efficacy. Several of the studies specifically applied these frameworks in order to better understand instant gratification, decreased parental or caregiver knowledge of typical childhood development/managing childhood behavior, and children's lack of knowledge in connecting behaviors to feelings.

Numerous studies reviewed in the literature were supported by these two frameworks. However, the curriculum development was further informed by components drawn from the Theory of Constructed Emotions. This theory provided a framework to support a curriculum which is based on interoception which constantly maintains body balance, relating to self-regulation.

### **Sociocultural Theory**

A parent or caregiver implicitly plays a critical role in fostering a child's cognitive, emotional, and social development (Baker et al., 2012; Sanders et al., 2019). Therefore, it can be hypothesized that parents or caregivers who are lacking knowledge about development and support of a child's developmental needs could negatively impact self-regulation. Given this deficit, Sociocultural theory (Vygotsky, 1966/2016) addresses



how adults and peers influence individual learning, but also how cultural beliefs and attitudes impact how instruction and learning take place in cultural contexts. For example, adults need to vary the assistance that they give a child and adjust the task to meet performance demands to successfully promote development in that child. The parent provides the impetus and delivery of self-regulatory skills for a child that is (not yet) able to demonstrate the skill themselves. Following the theory, a parent would acknowledge or praise certain self-regulation behaviors exhibited by a child, such as task persistence, sharing toys, and asking for help. Not surprisingly, children lack many of these skills and only develop them when the parent can lend and model their own cognitive, emotional and social development to the child through mechanisms explained by Sociocultural Theory.

Sociocultural theory proposes that children learn best through collaboration and cooperative engagement in their learning environment. Since most children learn in a formal education setting such as a public-school classroom, these collaborative and cooperative experiences increasingly happen in this setting as well as in their home with parents and siblings. Through interacting with others in the classroom, children integrate the group learning into their understanding of the world. As learners participate in various cooperative activities, they gain an understanding of participation and skills for working together. A dynamic process takes place in school, where interactions with others (e.g., teachers and peers) happen in the context of the environment (i.e., school) in which they occur.

Self-regulation is required for a child to follow rules and delay impulses for acting

the way they want to act (Vygotsky, 2016). According to theory, children practice rules in a socio-cultural context, this often takes the form of play, or make-believe play. In these scenarios, children are able create an imaginary situation, change the variables, take on and then act out specific roles, and follow a set of rules that are determined by these specific roles. By proxy of play, children practice impulse control and self-regulation in order to complete the scenario. Throughout the process, children are presenting behaviors, adjusting their behavior based on peer's reactions, and through play they take turns, compromise, and execute the plan, which require self-regulation (Berk et al., 2006; Bodrova et al., 2013).

Make-believe play also connects to emotional-regulation according to Vygotsky's sociocultural theory. Berk et al., (2006) state that self-regulation requires adult support to assist children in mastering fears and to help understand emotions. When children lack emotional understanding and regulation, children demonstrate more internal and external behavioral problems, failures in relationships, and negative behaviors (Dereli, 2016). According to Dereli (2016), "the significance of the conditions of the social environment in child development and the role of the opportunities provided by the family and immediate environment especially during the initial years of life on a child's emotional, social and intellectual development are undeniable facts" (Dereli, 2016, p. 42). In this early period of development, children begin to recognize and learn basic emotions such as anger, sadness, happiness, and fear (Kramar, 2014). Emotional understanding contributes to a well-regulated child. Important components of emotional regulation are the ability to control impulses and emotions, guide thoughts and behaviors. Vygotsky

believed this emotional regulation occurred through the enactment of emotional experiences. This re-enactment of emotions allows children to better understand emotions as well as deal with negative emotions in a safe context (Berk et al., 2006).

Meanwhile, there are many factors that impact this emotional understanding as it relates to self-regulation from a child's environment, such as knowledge of childhood development, socioeconomic status, parental age, cultural differences, educational level of parents, parental role, child temperament, and maternal confidence (September et al., 2015). These previous factors can all moderate a child's learning environment and their ability to effectively regulate themselves (See Figure 2.1).

Research indicates that well-functioning self-regulation is achieved by limiting impulses, delaying gratification, and understanding emotions. Sociocultural theory supports self-regulation in school settings. School settings provide children with the space and opportunity to develop self-regulation since it provides immersion in a sociocultural environment of other children and adults that can provide the basis for sociocultural learning.

### **Social Cognitive Theory**

Bandura's Social Cognitive Theory (1977) describes one's belief in their capabilities to organize and execute the courses of action required to manage prospective situations. More specifically, Bandura defines self-efficacy as "a person's belief in his or her ability to succeed in a particular situation."

Students' perceived self-efficacy or belief in their abilities can be seen in their choice of activities and the setting in which those activities occur. Self-efficacy may be

influenced by several factors, including a student's ability, prior experience, attitudes toward learning, and instructional as well as social factors in the environment (Kramer, 2014). For example, one child may seek out an environment and situation that reinforces the desired behavior leading to self-reinforcement. On the other hand, if a child has a weak sense of self-efficacy, then they may avoid certain tasks, focus on their failings and negative outcomes, and lose confidence in their abilities. This negative cycle can lead to feelings of frustration, anxiety, and depression. Self-efficacy is gained by mastering experiences, through social modeling, and psychological responses (Cherry, 2019).

Children can generate current motivators of behavior in their own learning environment that can influence goal-directed behavior through self-evaluation. Self-evaluation is an important component of academic self-regulation (Zimmerman & Schunk, 1989). This component of self-regulation will influence the persistence and effort the child puts forth on a task to impact learning. Thus, feedback gained through the consequences of their behavior can serve positively as a source for motivation, while conversely, if negatively experienced, may serve to lower motivation and self-efficacy. In addition to the factors of observational learning through models (i.e., adults/teachers), as the social cognitive theory poses that children learn by doing and observing others, this observational learning also influences behavior. For example, one child may receive praise from a teacher, and then another child will model the behavior, and, in comparing themselves socially with others, will reach a specific goal. Students that demonstrate a strong sense of self-efficacy also demonstrate self-regulation skills as evidence of their success. Given these points, when a child has difficulty with skills needed for self-

regulation such as paying attention to others, persisting on activities, planning outcomes, or controlling emotions, then self-efficacy will be weaker, thus leading to possible feelings of anxiety. In conclusion, social cognitive theory helps to explain the problems associated with decreased self-regulation in children.

## **Theory of Constructed Emotions**

### ***Background***

As an intervention theory for this program, I originally chose the emotional intelligence theory (Salovey & Mayer, 1990). In order to effectively recognize the emotions in others, Salovey and Mayer (1990) suggest that appraisal and expression of emotion include verbally labeling emotions as well as nonverbal abilities like looking at facial or bodily expressions. Initially, I had thought that there are specific body signs that relate to specific emotions. This was based on the classic approach to understanding emotions as described in the literature on psychology that supposes that you are born with emotions (e.g., happiness, sadness, anger, and fear) (Darwin, 1965); that there are specific fingerprints to specific emotions (Siegel et al., 2018); and that emotions are innate and universal (Izard, 1994). That is to say, the classic approach to understanding emotions, supported by some in affective and cognitive neuroscience, is that emotions are located in dedicated neural circuits for emotional activation (Ekman & Cordaro, 2011). The initial proposal is that when children are not directly being taught specific body cues for different emotions, they will have difficulty identifying their own emotions and those in others. This difficulty in emotional recognition causes a disconnect and as a result more instances of dysregulation. However, in researching body cues and trying to relate

specific body cues to specific emotions, there was not a consensus within the research, or the research was inconclusive. This was when I read *How Emotions Are Made: The Secret Life of the Brain* (Barrett, 2017a).

The theory of constructed emotion, proposed by Barrett (2017a) encouraged me to develop lessons that incorporated a more robust emotional development component based on body cues. Body cues can be used to maintain balance, plan, execute, and processes stress. By adjusting to body cues, the individual exhibits a form of self-regulation, as the brain constantly integrates and regulates its processing of experiences for optimal survival (Barrett, 2017b). More specifically, according to the theory, the human brain must balance sensations from internal organs from our bodies to regulate our autonomic nervous system, immune system, and endocrine systems. These internal body sensations are termed interoception and are at the center of many other psychological phenomena such as memory, attention, and emotion (Barrett & Satpute, 2017). As sensory information comes into the brain, this information is compared to past instances and categorized. When these sensations are categorized, the brain constructs meaning to these sensations and then guides actions. These body sensations can be categorized into an instance of emotion or to inform us if we are hungry, sick, or hot, or they can alert us of danger. Interoception is your “brain's representation of all sensations from your internal organs and tissues, hormones, blood, and immune system” (Barrett, 2017a, p. 56). Therefore, interoception is the first step to emotional categorization (Barrett & Satpute, 2019). This revised and critiqued theory of constructive emotions proposes that emotions like happiness, fear, confusion, and anger are constructed at the moment from predictions

that the brain makes. These predictions maintain physiological regulation, guide action, and construct perception. Therefore, the brain develops the ability to construct meaning by anticipating incoming sensations, and the sensations are then categorized and compared against past experiences of emotions to guide action to experience emotions or perceive that emotion (Barrett, 2017b). Thus, there is not one neural pathway for a specific emotion but many.

The theory of constructed emotions helps to frame newer intervention methods that align with SEL and interventions for young children that not only need to learn with more integrated theoretical approaches beyond socio-cultural and self-efficacy-based approaches. By developing curriculum to include body cues students can build a stronger emotional resilience towards self-regulation. Because this theory specially addresses body sensations and interoception, this also connects to the newly added factor of interoception into the occupational therapy practice framework (AOTA, 2020), which relates to the physiological functions of body systems in the area of sensory systems. As occupational therapists, we must assess this area to formulate an intervention plan for optimal engagement, participation, and well-being. As research continues to evolve in the area of emotions, especially in the area of interoception, we are now including this more advanced theory of constructed emotions that posits that we have more control over how we may be feeling and can use current feelings to guide future behavior.

### **Conclusion**

Self-regulation is a powerful framework for examining how students learn and why they may excel or struggle in school connected to anxiety, attention, and self-

regulation. Sociocultural theory and social cognitive theory have been applied to various educational research studies to examine self-regulation. The concepts of imaginary play as well as self-efficacy help to explain feelings of anxiety and important components of self-regulation within children in a school setting. Theory of constructed emotions supports the foundation of an intervention program that begins with bodily self-awareness to improve emotional understanding and self-regulation in elementary-aged children.

### **Evidence for Proposed Explanatory Model of the Problem**

I searched and retrieved articles from the databases PubMed, CINAHL, PsycInfo, and ERIC (an education database), and the online search engine for the American Journal of Occupational Therapy (AJOT). Evidence was reviewed related to using five overarching questions. The search criteria used a series of questions: (1) How do decreased attention, anxiety, and self-control present themselves in elementary-aged children? (keywords: “children” AND “emotional regulation” AND “dysregulation,” “symptoms” and “anxiety” OR “attention”); (2) How does the American culture of instant gratification lead to decreased attention in children? (keywords: “delayed gratification” and “children” AND “attention”); (3) How does increased mobile technology impact the attention/anxiety of students in grades 1-5? (keywords: “mobile technology” OR “internet usage” OR “mobile phones” AND “anxiety,” OR “attention” AND “children”); (4) How does parental knowledge impact childhood emotional development? (keywords: “child development” OR “child emotional development” AND “educational intervention” OR “educational programs” AND “parents”); and (5) How



does children's lack of body cues of emotions determine self-regulation? (keywords: “children” AND “interoception” OR “body awareness,” AND “emotions” AND “self-regulation”). These questions provided a robust subset of literature that explains self-regulation more completely.

The literature was limited to children in grades 1-5 in an elementary school setting with emotion dysregulation, curriculum emphasizing body cues for emotions, and a control group with no intervention. For each search, a core set of articles that were the most relevant or repeated across databases and search engines were pulled for review. The results relevant to the research questions are reported next. The evidence for each contributing component (mediators) of the proposed explanatory model of the problem is then summarized. This summary is followed by reflections on the explanatory model itself, proposed changes to the model based on the evidence, and implications for researching current methods of addressing the identified problem.

### **Instant Gratification and Implications for Attention**

Attention is underwritten by an important component referred to throughout the literature as self-control (Eigsti et al., 2006; Mischel et al., 1989; Murray et al. 2018; Pressley, 1979; Reeck et al., 2017). “Manipulations designed to affect children's perceptions of the situation have been shown to dramatically affect children's self-control” (Pressley, 1979 p. 360). Pressley (1979) illustrates that cognitive behavioral therapy is deeply impacted by perceptions and cues in the environment. Perceptions and the environment are important stimulus variables with regards to where a child focuses in the environment. The implications of self-control on attention are extensive. According to

Pressley (1979), a child must first recognize they may need self-control in the situation they are in. Second, a child must analyze the environment to determine what could be problematic. Third, the child must then come up with a plan for either altering the environment (e.g., moving away from the problem) or internally altering their thoughts (e.g., thinking about something else or reminding themselves about the negative aspects of the issue). Finally, a child must execute that plan and know when to use the plan. In analyzing the situation, recognizing the need for attention, developing a plan, and then executing a plan, a child can feel a sense of perceived control and greater self-efficacy. Self-control is an important component of that makes up the broader category of attention and is deeply impacted by, in the case of this literature, a child's ability to delay gratification.

Kohn (2008) argues that self-discipline or self-control both have implications in psychological and social realms within the classroom. In order for a more optimal learning state, students' have to function within a group of peers and be paying attention, take in classroom instruction, have the ability to retrieve that information when needed, and communicate this learned information effectively. This optimal learning state can be impacted by many factors that may be impaired or impacted in a school environment. These factors include; emotions, problem-solving, social functioning, listening skills, following directions, asking for help, cognitive flexibility, and inhibitory control (Low, et al., 2018). If students are having difficulties inhibiting their impulses, then various negative behaviors may occur. However, psychologically, a lack of self-control is not necessarily "bad because it can provide the basis for spontaneity, flexibility, expressions

of interpersonal warmth, openness to experience, and creative recognitions” (Block, 2002, p. 195). Self-control may also reflect a fear of being overwhelmed by outside pressures or by one’s desires and must be suppressed through a lot of effort.

Consequently, overcontrol can lead to obsessive thoughts or a continuation to do something even though it may be counterproductive. Intrinsic motivation vs. extrinsic motivation can differ in every child, and if a child feels controlled by others, then they are likely to be conflicted, unhappy, and perhaps less likely to succeed (Kohn, 2008). Lastly, norms are an important social framework and may influence a child’s behavior. Samuel (2017) argues that most studies on delayed gratification assume we are waiting for something that we are looking forward to. He points out that clinically, the experience of delay or withholding an experience impacts the final outcome of the experience works differently in a situation of something that you are not looking forward to. “When people are waiting for something they really like, the delay in gratification increases their subjective enjoyment of their ultimate reward; when they’re waiting for something less intrinsically enjoyable, the delay imposes all the aggravation of waiting without the ultimate payoff” (Samuel, 2017, para. 13). This is important in viewing a student who looks like they demonstrate exceptional self-control but may be too driven, constantly feeling inadequate and anxious.

Self-control is an important factor to attending to attention and the ability to delay gratification. When children can attend to information, they are able to plan and problem-solve, leading to better academic and social outcomes within the classroom. However, we must be careful to promote creativity, spontaneity, and flexibility to prevent overcontrol

and to support childhood health and well-being.

### **American Society & Culture of Instant Gratification**

A major contributing factor to America's focus on achieving instant gratification societal is the expansion of same-day and instant services. American culture supports instant gratification in numerous ways, but through same-day delivery services of groceries, fast food, and other goods; getting immediate answers to questions by consulting the web; or streaming a whole season of a TV show in one or two sittings. On a macro-level this impacts nearly all citizens, but it impacts children in unique ways. Children's needs are increasingly addressed through technology available to parents. Studies show that parents often keep children "entertained" or quite by placating their immediate needs with soothing multimedia available on smartphones and tablets (Radesky et al., 2016). There is no longer a need to wait, and it is impacting people's self-regulation skills and their ability to focus. Waiting requires self-control and self-control has implications in outcomes within the areas of occupations, finances, mental health and substance use (Samuel, 2017). According to a study by Hosokawa (2018), regular use of portable technology was linked to hyperactivity/inattention and conduct problems. Further confirming this deficit, Eigsti et al. (2006) showed that attention is a crucial element in supporting children's ability to delay gratification. On a broader scale, other studies have shown that a child's ability to delay gratification can be a predictor of better psychological, academic, health, and cognitive outcomes in later life (Eigsti et al., 2006; Mischel et al., 1989; Miyazaki et al., 2012; Murray et al., 2018; Piquero et al., 2016; Reeck et al., 2017).

***Mobile Technology***

Increased use of mobile technology across various aspects of a childhood development impacts students' ability to self-regulate. Increased use of mobile devices has been correlated to have, often negative effects on a child's behavior, play, attention, somatic symptoms, and social-emotional functioning (Baker et al., 2019; Hosokawa, 2018; Rosen et al., 2014). According to studies, children spend significantly more time using mobile technology due to the development of portable and instantly accessible mobile devices such as tablets and smartphones. This plays out in the home, according to Common Sense Media (2017) who found that 98% of children aged 8 or under live in a home with some type of mobile device. Likewise, the development of educational applications has led to more screen time for children (Hosokawa, 2018). More specifically, the average amount of time children spent on mobile devices has tripled from 2011-2017. Also, only 20% of parents surveyed say they know about the American Academy of Pediatrics' recommendations on screen time use of one hour a day (American Academy of Pediatrics, 2020). Finally, this study found that time spent on media can reduce the time children spent in physical play. This is important because positive benefits of pretend and physical play include enhanced social success (Lindsey & Colwell, 2013), an increase in physical activity and exercise (Bundy et al., 2017), and development of cognitive abilities (Sattelmair & Ratey, 2009). The findings of the American Academy of Pediatrics' Council on Communications and Media support play, stating, "higher-order thinking skills and executive functions essential for school success, such as task persistence, impulse control, emotional regulation, and creative, flexible

thinking, are best taught through unstructured and social (not digital) play, as well as responsive parent-child interactions” (American Academy of Pediatrics, 2016, p. 2).

Relating to health outcomes, Hosokawa (2018) found that negative impacts of regular use of mobile devices were significantly linked to conduct problems and hyperactivity/inattention. Another finding of this study proposed that children with attentional issues may be attracted to technology because of the constant stimulation it provides. A supporting study by Baker et al. (2019) found that excessive media exposure in early childhood poses many developmental and behavioral health risks, so parents may inadvertently perpetuate a problem and put children at higher risk for continued self-regulatory difficulties and adverse developmental outcomes. A third larger study demonstrating negative health by Rosen et al. (2014) found that daily technology use in children aged 4 through 8 predicted attentional and physical problems such as headaches and stomachaches.

Social-emotional difficulties were also evidenced to impact children with the use of mobile technology. Family considerations are important to understand the purpose and use of mobile technology. Many parents use mobile technology to quiet their children. Analysis from a study of parents using mobile technology to calm children showed significant associations between increased social-emotional difficulties in toddlers and the tendency of low-income parents to use mobile technology to keep their children quiet, particularly parents who expressed lower perceived control over their children’s behavior and development (Radesky et al., 2016). Lastly, another negative consequence of mobile technology relating to families found that consistent use of cellphones over two years is

associated with higher distress and lower family satisfaction (Chesley, 2005).

However, after conducting a literature review, there were some positive benefits of technology use reported, such as supporting academics, improving visual-spatial skills, promoting socialization, and the expression of positive parental views of technology. Positive benefits of media may include that internet use was positively related to academic performance in reading skills, and video gaming helped improve visual-spatial skills (Jackson et al., 2011). Social media sites offer daily opportunities for collaboration, connection, and social inclusion (O'Keeffe & Clarke-Pearson, 2011; Smith, 1999). From a parent's perspective, the internet was seen as having a more positive than negative impact on their children due to increased safety and decreased need for supervision (e.g., outdoor play, social encounters, or messy crafts (Plowman et al., 2010; Shin, 2015). Within the school environment, a study by Chen and Chiu (2016) found that computer use in the classroom is effective in enhancing student engagement, learning achievement, and creativity. Finally, Edwards (2014) suggests that we may have to rethink what play means in a contemporary view vs. a more traditional view of play because of the digital culture in which we live. For example, a parent and their child could play computer games such as Scrabble or trivia, or they could create a digital make-believe world. These findings on technology use may be important to consider when thinking of an intervention method within a school setting to balance technology exposure and engagement.

### **Lack of Parental Knowledge of Childhood Development**

One of the most important influences on children's development, particularly

early in life, is their parents. Therefore, research indicates that interventions targeting the early years of life tend to study parents, as they typically are the architects of the child's environment, and mediators of self-regulation. However, parental knowledge about childhood development has been shown to be inconsistent across studies. Morawska et al. (2019) have identified a problem in identifying parental interventions that target self-regulation, resulting in a gap in knowledge in the literature. Comparing studies is made difficult due to broad definitions across the literature. Additionally, the term, self-regulation was not consistently defined across studies. Also, a range of populations and demographics makes the comparisons for parent-only groups difficult. A crowded and uneven research landscape makes it difficult to study, compare, and ultimately disseminate research findings about childhood development to the general public.

Most parents are not aware of these studies or the current research that connects emotional self-regulation to anxiety- and attention-related issues, they are also not aware that these factors can impact their children (Marshall et al., 2016). However, self-regulatory skills have been shown to be predictive of many "short- and long-term outcomes including school-readiness, relationships with peers and family, academic achievement, feelings of higher self-worth, ability to cope with stress, less substance abuse, and law-breaking, and better mental health" (Baker et al., 2019, p. 54). Research findings also demonstrate that parents' influence children's self-regulation, emotional processing, and executive functioning according to (Sanders et al., 2019). More specifically, parents own self-regulatory capabilities, the quality of the parent-child relationship, and parenting practices. Given parent's lack of research knowledge and the



importance of self-regulation, children would ultimately benefit from raising parental awareness about the important findings made possible by studying self-regulation and anxiety.

### ***Parent's Self-Regulatory Skills***

Hypothetically, improving parents' awareness of their own self-regulatory skills could translate downstream to their children's own development of self-regulation skills. However, awareness alone is only part of the solution, action and infusing research findings and knowledge into daily parenting practices represents an additional gap for both scholars and practitioners to bridge.

For example, during daily interactions with their children, parents are required to monitor the needs of their children and respond appropriately according to their values and goals for their family (Sanders et al., 2019). Thus, if a parent has difficulties in self-regulation, it may be evidenced through attending to their children, problem-solving appropriate consequences to issues, responding effectively to their children, or managing their own emotional responses to situations. Parenting requires modulation of attention, cognition, and emotions to be nurturing and responsive to children. Conversely, parental impulsivity, risk-taking, breakdowns, and response inhibition have obvious implications for stable, predictable, responsive parenting.

### ***Parent-Child Relationships***

Parent-child relationships have been extensively studied by scholars. Research findings indicate that the relationship between a parent and a child directly influences how a child processes emotions. Research has shown that a low-quality relationship may

lead to emotional diagnoses such as anxiety and depression. Implications from Côté et al. (2009) illustrate that participants with stronger parenting skills saw fewer negative emotional symptoms in their children. More specifically, scholars have demonstrated that parental warmth was an important characteristic associated with overall self-regulation, specifically in the ability to delay gratification related to the achievement of goals (Baker et al., 2019). These factors of parental warmth include a sense of positive regard expressed by the parent toward the child, pleasant interactions shared between parent and child, or parental involvement in children's activities. Interpersonal benefits include greater warmth toward, engagement with, and trust in others. Academic benefits include greater general academic adjustment, academic delay of gratification, and resilience (Baker & Hoerger, 2012). However, this conflicts with another study by McLeod et al. (2007), which found parental warmth, a sub-dimension of parenting that theory and conventional wisdom posit to be crucial for children's development and well-being, appeared to play a very small role, explaining less than 1% of the variance in childhood anxiety.

A third theme pertains to parental involvement. Findings by McLeod et al. (2007) demonstrating differential effects for rejection and control dimensions suggest that parental autonomy-granting and support for independence, as well as less parental overinvolvement, could facilitate children's confidence and buffer against excessive anxiety; or, conversely, those very anxious children tend to elicit parental overinvolvement and less autonomy support. Parental control is also linked to increased somatic and neurological complaints, emotional and cognitive dysregulation,

interpersonal problems, and physical pleasure-seeking around eating and substance use (Baker & Hoerger, 2012). Specifically, parental rejection was most closely related to internalizing clinical presentations like anxiety, depression, and somatization, while overcontrol was associated instead with mood swings and increased energy. Furthermore, a longitudinal study by Campbell et al. (2000) discussed that ineffective parent-child interaction such as harsh or negative parental control, intrusive parenting, and a lack of positive parental involvement are implications of externalizing behavior in young children.

### ***Parenting Practices***

In relation to parenting practices, another important finding was the parental use of routines and the formation of habits, which may be one of the most effective ways in which parents can enhance their child's early development of self-regulation and healthy lifestyle behaviors (Baker et al., 2019). For example, parents who have regular times themselves for screen watching, hygiene tasks, and exercise reinforce these healthy habits in their children. An additional parenting practice that impacts self-regulation to improve child behavior is positive parental influence. Morawska et al. (2019) found that children learn what is appropriate behavior through parental acknowledgment and praise of positive behavior.

In conclusion, Sanders et al. (2019) explain that parents need knowledge about normal child development to enable them to be aware of their own child's stage of development and any deficits. For example, some parenting skills and strategies are appropriate and effective for children at all stages of development (e.g., descriptive

praise, affection, interesting activities), whereas others (e.g., time-out) work well at certain developmental stages (e.g., older toddlers and preschool-aged children) but not so well at later stages of development. The use of routines, parental acknowledgment, and praise of positive behavior instead of harsh or negative parental control, intrusive parenting, and a lack of positive parental involvement are examples that may decrease anxiety- and attention-related symptoms in school-aged children. These findings need to be disseminated to the general public so that parents can be more knowledgeable and confident in order to positively influence child development.

### **Children's Lack of Knowledge of Body Cues Tied to Self-Regulation**

My final hypothesis regarding contributing factors (mediators) to anxiety- and attention-related issues in children is that there are specific bodily signs that relate to specific emotions, and children are not being instructed specifically on these body cues. This resulting lack of body awareness has implications for a child's self-regulation capabilities. When reviewing the literature, some differing uses of emotion categories emerged, such as negative and positive (Aviezer et al., 2012; Dael et al., 2012), active and low arousal (Dael et al., 2012), and a large number of emotion-related terms. To narrow the field of emotions, I chose to review four recurring themes of emotions—anger, sadness, fear, and happiness—that are most often used in research (Kret & De Gelder, 2010). Moreover, anger, sadness, fear and happiness are also common emotions that are more easily identified and expressed by children (Guarnera et al., 2015).

It appears that there are many conflicting findings relating to body cues (See Table 2-1). For example, regarding emotion recognition on faces, Aviezer et al. (2012)

found that fearful faces were the best recognized and that sad faces were the least. This is in contrast to Kret et al. (2013), whose findings suggest that happy faces were better recognized than fearful faces. Another example regarding the bodily expression of emotion comes from Stock et al. (2007), who found that sad bodily expressions are recognized more accurately than angry or fearful bodily expressions. However, Kret and De Gelder (2010) found that sad bodily expressions were the least recognized at only 30%, and happy bodily expressions were better recognized than angry bodily expressions. A more surprising finding by Kret et al. (2013) is that angry postures were better recognized than happy postures, conflicting with his earlier study. Altogether, this demonstrates that research is not conclusive on specific body cues determining emotions, further supporting the findings of Clark-Polner et al. (2016) that emotions lack unique specific fingerprints. This diversity explains why some people laugh when they are nervous or cry when they are happy, as well as the variation of emotional expression.

**Table 2-1***Inconclusive Findings on Connecting Body Cues to Four Emotions*

Author	Anger	Fear	Happiness	Sadness
Aviezer et al. (2012)		Fearful faces better recognized than faces.		Least recognized.
Fourati & Pelachaud (2015)	Accelerated arm motions and 3-D openness of feet.	3-D openness of feet.	Lateral torso movement.	Hand extension and 3-D openness of feet. Head downward flexion.
De Gelder et al. (2010)	Angry postures better recognized than happy postures.	Participants attended longest to fearful eyes. Face was looked at longest when it expressed anger. Also, participants attended longer to body in a threatening posture.	Happy faces slightly better recognized than fearful faces. Happy postures less attended to than angry or fearful postures. Accuracy lowest for happy bodies.	
Kret et al. (2013)	Angry postures better recognized than happy postures.	Participants attended longest to fearful eyes.	Happy faces slightly better recognized than fearful faces. Happy postures less attended to than angry or fearful postures.	
Kret & De Gelder (2010)			Happy bodies better recognized than angry bodies.	Sadness lowest 30%.
Dael et al. (2012)	Hot anger well discriminated 70%. Amusement and hot anger well discriminated	Panic and joy confused sometimes.	Amusement discriminated 70% Vertical movement Elated joy had the highest number of	Emotions are moderated or mediated by factors such as language and culture.

	from other emotions.	correct classifications 90%.	
Martinez et al. (2015)	Anger is the only emotion for which the face and body yielded comparable accuracy rates. Angry body postures are detected more rapidly than happy body postures in a crowd.	Happy face was well recognized even at a distance, and participants were most accurate in recognizing happiness and then anger.	Better recognized up close than from a distance.
Nelson et al. (2018)		Adults most likely to correctly ID happy clips.	Children most likely to correctly label sad clip.
Stock et al. (2007)		Most difficult bodily expression to recognize.	Sad bodily expressions are recognized more accurately than angry or fearful expressions.

### **Bodily Expression of Emotion**

There were, however, some important findings regarding body cues in emotions. Most research has looked at facial features and understanding of emotions, but fewer have addressed body cues and emotions. Some themes identified the importance of body cues in emotional identification and expression: body cues that are more visible when viewed from afar, importance of social contextual influences, recognition of prejudices, emotions are more easily identified with face and body as a whole, and certain emotional

expressions are easier to recognize than others.

De Gelder (2009) argued 12 reasons to include bodily expressions in affective neuroscience. Some of the reasons included that bodily expressions are recognized as reliably as facial expressions; facial expressions in isolation are often less easily recognized; facial expressions are not always clearly visible; and bodily expressions are perceived in a multisensory environment. Similarly, a study by Kret and De Gelder (2010) found that identification of body cues can be related to social contextual influences of group behaviors and that bodily expressions and not facial expressions predicted how the bodily expression was perceived. Other findings included while facial expression is still important for close-by interaction, bodily expressions allow for appraisal of action, intention, and emotions over larger distances (Stock et al., 2007). As the perceptual system develops expertise for viewing the whole person, the most ecological approach will be to view the face and body as a unit (Aviezer et al., 2012). A study by Fourati and Pelachaud (2015) looked at the identification of relevant expressive body cues in the context of emotional bodily expressions classification. Findings indicated multiple expressions of emotions through bodily representations, supporting the hypothesis of Barrett (2017a, b). A more recent study by Bijlstra et al. (2018) found that there are stereotypes and prejudices in recognition of emotional body postures. They found that participants more quickly classified anger than sadness in male bodies and more quickly classified sadness than anger in female bodies. These authors also found that positive emotions were classified more quickly than negative emotions on female bodies and not male bodies. Age also may be a variable, as Nelson et al. (2018) reported



that children were more likely to correctly identify sad clips but adults were more likely to identify happy clips.

### ***Active Emotion Recognition***

Other findings are also worth noting. From Dael et al. (2012), active emotions such as hot anger, elated joy, panic fear, and pride were differentiated from low-arousal emotions such as pleasure, relief, sadness, irritation, and anxiety. The three emotions of hot anger, amusement, and pleasure were well discriminated from any other emotion. This study also found that the so-called basic emotions such as panic, fear, sadness, and joy were not represented by one specific body movement pattern and that emotions can be confused with others (e.g., sadness, despair, and anxiety [labeled as “fear”]). For example, panic fear (“terror”) was confused with elated joy. The results of this study demonstrated that a “general lack of emotion-specific behavior profiles strongly suggest that emotional body movement is not driven by fixed affect programs” (Dael et al., 2012, p. 1097), also supporting Barrett’s findings (Barrett, 2017a).

### ***Emotions and Self-Regulation***

According to a study by Brown and McConnell (2011), self-regulation was predicted by how people expected themselves to feel given potential future outcomes. This finding is important because a person may be more focused on how they think they will feel rather than how they are currently feeling. This study also demonstrated that an individual can learn from their emotional experiences so that they inform future feelings. Regarding the function of emotions more generally, these findings are consistent with the perspective that emotions may not be the direct cause of the behavior but rather may

affect it indirectly, such as by creating expectations, prioritizing goals, and guiding attention (Brown & McConnell, 2011).

Due to the lack of consensus regarding research pointing to specific body cues to identify certain emotions, there is a need to educate the public on variations and certain potential biases. This will be equally important when looking at an intervention to teach children the connection of body cues to self-regulation. Education on cultural awareness and differing perceptions, as well as on specific instruction on variations of body cues connected to emotions is needed to make progress in the area of interventions that are effective to decrease attention- and anxiety-related symptoms in children.

## **Conclusion**

### **Reflections and Implications for Research**

Reflections from the literature warranted including the additional moderators of a child's developmental level, gender, socioeconomic status, culture, and self-efficacy to my explanatory model. An additional modification to my explanatory model will be reconsidering the negative impacts of mobile technology to include more positive benefits within a school environment, as technology can be highly engaging and used to impact learning (Chen & Chiu, 2016). As research demonstrated (Andrade et al., 2015; Baker et al., 2019; McLeod et al., 2007; Morawska et al., 2019; Sanders et al., 2019; Tichovolsky et al., 2013), parents are very influential within a child's life but may not be aware of effective parenting strategies, so a home component to interventions is merited. This home component ensures parents are learning taught concepts along with students so that they will have a greater impact on self-regulation and emotional well-being. Finally,

I did not find that teaching a child a specific set of body cues for one emotion could be supported by research. In summary, teaching students that a variety of body cues may be related to different emotions, and that these body cues can be diverse within each person, should be an important focus of future interventions.

Due to the increase of anxiety- and attention-related symptoms in children that have a direct impact on self-regulation (Centers for Disease Control and Prevention, 2018), an engaging and well-planned curriculum that teaches a hierarchical set of skills is needed. Also needed is a variety of coping strategies to moderate anxiety for these younger students so that they feel more successful. As has been noted, when children can gain self-awareness and use strategies in their environment, they have greater self-efficacy (Reeck et al., 2017). The following chapter reviews current approaches and methods of interventions used with children grades 1-5 within a school setting, as well as limitations and suggestions for an improved approach.

## **CHAPTER 3 - A SYNTHESIS OF CURRENT APPROACHES AND METHODS**

### **Introduction**

This review of literature illustrates some of the most effective interventions for child OT patients addressing challenges in self-regulation. Recent literature identifies effective interventions by measuring improvements in the following areas: self-awareness of arousal states, self-efficacy and participation in daily skills, executive functioning skills, emotional regulation, friendship skills, academic success, use of varied coping skills, and reduction of anxiety symptoms. The literature was also analyzed to address limitations in order to avoid future shortcomings. In addressing these limitations, direction and focus are provided to create suggestions for a future intervention that goes beyond what currently exists.

### **Search Methods**

The review of literature included the following journals and databases: ERIC, CINAHL, PubMed, and PsycInfo relating to interventions within the school environment within the past 17 years. Database and the online search engine for the American Journal of Occupational Therapy (AJOT), was also included. Evidence was reviewed related to the following keywords: “interventions” AND “children” AND “school-based”, OR “body language”, OR “interoception”, OR “improvement”, OR “social cues”, AND “emotion” OR “self-regulation” OR “emotional regulation”, AND “improvement in disruptive behavior”.

From the reviewed studies, the literature that most closely aligned with children in grades 1–5 or children aged 5–17 was compiled. From this pool, studies included a range

of participants: a) 3 small studies which included 12–50 participants, b) 8 larger studies including 50–200 participants, and c) 4 extremely large studies with a range of 200 to ~3,800 participants. Studies included a range of intervention time periods from 3 sessions to 20 sessions and programs that lasted the school year. The time of applying the intervention ranged from 30 minutes to 90 minutes. These studies were then coded using NVivo and the following themes emerged.

### **Themes**

Several clinical intervention themes emerged from the literature. These themes included SEL-based programs, problem and emotion-focused coping strategies, use of evidence-based kernels, contemplative practices, international and transdiagnostic approaches, and diagnostic-specific interventions. While these themes provide broad findings across the literature, a subset of the literature base was particularly relevant to occupational therapy practice.

### **Summary of Literature Base**

#### ***Occupational Therapy Interventions***

Occupational Therapists hold a unique role in addressing body functions and body structures that include sensory processing in relation to engagement and participation in daily activities. Occupational therapy practitioners are able to apply a sensory based approach and identify how these sensory needs can influence behavior. Occupational therapy practitioners “then develop sensory strategies to enhance attention, mental well-being, behavioral organization, and everyday functioning” (Bazyk, 2011, pp. 56–57). However, only two peer-reviewed articles were found relating to self-regulation

within a school setting. This lack of evidence is noted by the author of the first of the two studies, who reported that even though the Alert Program is one of the most widely used by occupational therapists with children who have emotional disturbances, “research evidence is lacking” (Barnes et al., 2008 p. 371). Barnes et al. (2008) included twelve children with sensory processing challenges in their study. Authors utilized The Alert Program (Williams & Shellenberger, 1996) which is an eight-week intervention program focusing on arousal levels, recognizing sensitivities, and using strategies for self-regulation (Barnes et al., 2008). The authors concluded that overall, this program helped improve children's sensory profile scores, behavioral scores, as well as teacher perceptions of student efficacy in self-regulation. Limitations within the study include the small sample size and the quasi-experimental design, which is not the ideal design to draw any adequate statistical significance or power. Of consequence, this intervention appears to increase awareness of emotional states as this study found that children with emotional disturbance may be unaware of their difficulties with self-regulation or how others perceive their behavior. Awareness is the precursor to skill development (Garcia et al., 2016). Therefore, this program benefits children who have difficulties identifying their energy levels to begin to become aware of how it is impacting their engagement in school. However, due to the self-monitoring quality of The Alert Program, one might consider this metacognitive assessment of one’s arousal state as arousal regulation awareness, instead of a program that focuses on orienting the child to an awareness of their arousal state as it exists as unique sensory information within their bodies.

A metacognitive approach deals with an individual’s higher-order cognitive

process where the individual has active control and awareness over their cognition. As cognition deals with memory, learning, problem-solving, attention, and decision making, metacognition goes one step further so that the individual not only understands and knows what skills to apply, but also how to apply them in a specific circumstance. Metacognitive studies are used widely within educational literature.

The second study that specifically related to self-regulation within a school setting utilized an intervention called the Cognitive Functional (Cog-Fun) intervention (Hahn-Markowitz, et al., 2017). Cog-Fun promotes the acquisition of executive strategies and self-efficacy in occupational performance, using metacognitive learning during fun activities. This study was done with children diagnosed with attention deficit hyperactivity disorder (ADHD). Cog-Fun was found to improve executive functioning skills, child participation in activities of daily living, and improved self-regulation abilities as observed at home. Limitations noted by the authors included a lack of parent carryover, and this treatment was not compared to another treatment. Other limitations include parental bias with results; the parents within this study were primarily married and educated, so they may not be representative of the entire population. Han-Markowitz, et al. (2017) findings support another study by Garcia et al. (2016), noting correlations between metacognition knowledge and executive functions. All in all, instruction in metacognitive awareness and skills may be warranted to impact self-regulation.

The literature indicates that more evidence-based interventions are needed in classrooms. This is especially important as there is a limited pool of peer-reviewed research specific to Occupational Therapy practice that addresses emotional self-

regulation in educational settings. There were, however, two master's dissertations that used a classroom-wide emotional self-regulation program called The Zones of Regulation (Kuypers, 2011). This curriculum was developed by an occupational therapist to improve emotional self-regulation and was found to improve identification and categorization of feelings (Hoffman, 2018), how feelings can affect behavior, improved self-awareness, greater empathy, and ability to self-regulate (Munro, 2017). These studies support the need for more evidence-based interventions within this domain.

### ***Social-Emotional Learning Interventions***

The importance of recognizing and understanding emotions within the classroom is an important step for building meaningful relationships with others. Taking others' perspectives, understanding others' feelings, and empathizing with others is part of navigating daily social interactions. As a child grows, these social skills become more complex involving responsible decisions in order to resist peer pressure and exhibit prosocial behaviors (Denham, 2015). Two SEL programs supported by the Collaborative for Academic, Social, and Emotional Learning (CASEL), have been researched numerously include RULER and The Incredible Years Dina Dinosaur Program. RULER (Nathanson, et al., 2016) is an evidence-based SEL curriculum that supports the expression of emotions across contexts. This evidence-based approach is an acronym for five skills: recognizing emotion in self and others, understanding the causes and consequences of emotions, labeling emotions with diverse vocabulary, expressing emotions across contexts, and regulating emotions effectively. The key components include:



- a color-coded Mood Meter which is a four-quadrant grid representing valence (unpleasant to pleasant) and arousal (low to high energy) where students plot themselves on this grid using feeling words
- a Meta-Moment which is a step-by-step process for extending the time between an emotional trigger and the response to it, designed to help students and educators respond effectively to a trigger by taking a deep breath, envisioning their best self, and selecting a strategy that will support the student at the moment
- a Blueprint that helps students manage conflict by analyzing the causes and consequences of their behavior and others' reactions to that behavior (Nathanson et al., 2016).

Evidence demonstrates that children in RULER classrooms compared to those not using RULER were positive for labeling emotions, emotional recognition, use of taught strategies, work habits, cooperative learning strategies and received higher grades in English language arts. Thus, SEL competencies also support academic success. Moreover, these classrooms that implemented RULER had more positive classroom climates and greater warmth and connectedness between teachers and students (Nathanson et al., 2016).

Unregulated students are consequently unfocused which results in disruptive behavior. A second SEL-based study addressed these issues. The Incredible Years Dina Dinosaur Program (Webster-Stratton & Reid, 2003, 2004) was adapted to account for the travel time of students, teacher instruction time, the order of the program, the use of

appropriate instructional videos, and group space in a school setting. The effective ingredients of this program decreased disruptive conduct problems for school-aged children but were also appropriate for addressing comorbid problems such as attention problems and peer rejection. Consequently, the ability to impact a secondary health condition can limit the development of secondary conditions and their subsequent impact on function and well-being (Kinne et al., 2004). Strategies of The Incredible Years Dina Dinosaur Program taught children appropriate school behavior, how to identify emotions, manage difficult emotions, engage in problem-solving, and develop friendship skills (Webster-Stratton & Reid, 2003, 2004). The following child-friendly components of this program are as follows:

- praise
- token economies
- rewards used to reinforce desirable and prosocial behavior
- puppets, videos, and role-play to model and practice new skills and positive behavior
- teaching children to use their detective skills to identify body sensations that connect to feelings
- use of a Tiny Turtle puppet to teach a 5-step anger management strategy (i.e., recognize anger, think “stop”, take a deep breath, go into your shell, and tell yourself, “I can calm down, and try again”
- an anger thermometer to teach children self-control, decorated with pictures of feeling faces like “happy” and “relaxed” in the blue or cool section to “angry”

or “stressed out” in the red or hot section

Results of the program were positive, with statistically significant decreases in problem behaviors and intensity of these problem behaviors as rated by teachers from pre-to post-test. Also notable was the teachers reported seeing moderate improvement in classroom behavior, emotion regulation, problem-solving skills, and friendship skills. Finally, teachers reported high levels of overall satisfaction with the intervention and a tendency to recommend the intervention to other teachers. Overall, these results suggest that an adapted curriculum that has child-friendly components was effective in reducing behavior problems and enhancing important SEL skills. This points to the importance of teacher satisfaction to increase fidelity with any intervention. Taken together, this author notes the comprehensive goal of managing emotions to establish healthy relationships with others and to achieve one’s desired personal goals.

### ***Problem-focused and Emotion-focused interventions***

Every day children are taught a variety of ways to solve academic-related problems. More uncertain is a child’s ability to solve real-life problems when they are under stress. To be of impact, emotional problem-solving situations need to be practiced and reinforced within the context they happen (Elias et al., 2015). Traditionally, problem-focused strategies are taught to children with a focus on efforts to directly change or master the source of stress while improving coping strategies to deal with everyday stress. Problem-focused strategies include changing the external pressure or finding resources so that the situation is less problematic (Pincus & Friedman, 2004). An example of a problem-focused strategy is a child dealing with a shoe tied too tight. This

child could loosen the lace of the shoe. However, some situations are not able to eliminate the external pressures such as a painful medical condition. Pincus and Friedman (2004) note that when a child is unable to deal with a stressful event, their psychological adjustment may be impacted, such as their skills to navigate daily life events.

A contrast emerged in the scholarly literature regarding two themes: problem-focused coping strategies and emotion-focused coping strategies. Unlike problem-focused strategies, emotion-focused strategies are strategies to manage or regulate negative emotions associated with the stressful event (Pincus & Friedman, 2004). In the same example listed above, the child can notice and name the discomfort of the tight shoe and try a cognitive distraction like reading a book or saying to themselves “this is uncomfortable, but I am still able to focus on my work”. Examples of emotion-focused strategies include cognitive distraction, cognitive restructuring, thought-stopping, positive self-statements, seeking emotional support, or emotional expression. Within emotion-focused coping literature, there was an additional difference between inward and outward coping strategies. Liang et al. (2019) differentiated between inward (e.g., denial, wishful thinking, mental disengagement) and outward emotion-focused coping (venting, emotional support seeking) strategies and found that inward-focused coping may be more maladaptive hindering problem resolution. In other words, individuals tend to ignore stress and not deal with it, or they have an unrealistic illusion that stress will resolve itself. This type of thinking leads individuals less motivated to deal with stress, suppression of emotions, leading to decreased well-being.

In order for a coping strategy to be effective, children need to shift their coping

responses based on their own perceived characteristics of the stressful situation. For some children, emotion-focused strategies may need to be utilized first to regulate one's emotion prior to being able to effectively implement a strategy aimed at directly solving a problem (Shure & Spivack, 1982). However, developmentally, younger children have fewer coping strategies and rely on problem-focused strategies. Pincus and Friedman (2004), sought to answer the question of whether younger children could be taught to increase their generation of coping strategies after a brief intervention period. All children received one of three brief, 75-minute session interventions. Key ingredients included identification of feelings in response to problematic situations, instruction on five methods for dealing with situations and applying these skills into various everyday stressful situations. One example component was that children used 'I can do' statements to promote self-efficacy. Results found that the children who used emotion-focused strategies demonstrated an increase in the total number of coping strategies they generated. These emotion-focused strategies are important because depending on the situation, children need to use a coping strategy that fits best.

Children who are flexible in the use of their coping strategies have a more positive behavioral and emotional adjustment (Compas, 1987; Eisenberg et al., 1997; Weisz et al., 1994), demonstrating the importance of teaching children both problem-focused and emotion-focused strategies. An example of a study using both emotion-focused and problem-focused strategies was done using The Prepare Curriculum (Augustyniak et al., 2009). Key features of this program include labeling emotions, identifying emotional triggers, and employing relaxation techniques. Findings resulted in

better problem-solving and perspective taking with this cognitive-self regulation program. Another key point was that peer feedback appeared more impactful on behavior than individual therapy, so the group experience may lead to new perspectives among children for self-regulation and ways of coping. The impact of peer feedback within a school environment can also result in examples of varied coping strategies. A limiting factor was the program was not followed as intended due to school schedule conflicts, so flexible programming is valuable.

A second study expanding the literature using both emotion-focused and problem-focused strategies to strengthen emotional self-regulation in children using a hierarchical approach. This hierarchical approach helps boost children's memory for learning (McTighe, Wills, 2019). The Rochester Resilience Project intervention (Wyman et al., 2010) teaches a common set of skills vs. a single problem area, uses adult modeling/instruction, role-play, and in the moment coaching which is tailored to children's level of understanding and skill to promote the use of skills in real-life contexts. Within the fourteen lessons taught by school-based mentors, children were taught a hierarchical set of skills: monitoring of emotions; self-control/ reducing escalation of emotions; and maintaining control and regaining equilibrium. An example intervention is the use of a feeling thermometer, a tool to monitor feelings and gain control to stop feelings from entering the 'hot zone'. The results of this randomized study of 226 children were significant leading to a positive impact on children's classroom behaviors, rates of disciplinary incidents, including improved behavior control (i.e., fewer aggressive-disruptive problems), on-task learning behaviors, peer social skills and less

shy-withdrawn and more assertive behaviors. Second, children who received the intervention showed improved functioning in all domains of behavior as rated by teachers. Third, these children had a 46% decrease in mean office disciplinary referrals as compared to controls. At the intervention interval, there were 1.8% of children in the intervention condition that was suspended compared to 6.1% of controls. Last, findings suggest that this accessible school-based intervention also benefited children who may not typically receive these services as most emotion-based interventions are reserved for children presenting with the most severe behaviors.

In conclusion, using both emotion and problem-focused coping strategies is important to incorporate within interventions to increase the flexibility and use of a variety of coping strategies to fit the situation at the moment a difficulty arises. When a maladaptive behavior is caught in the moment, the opportunity to identify, correct, and provide a variety of successful coping strategies can be an effective way to deal with the wide range of stressors that are part of everyday life.

### ***Evidence-based Kernels***

An intervention that is evidence-based, efficient, covers various age and developmental ranges, and impacts a variety of behaviors is important to the clinician for effective implementation. An intervention that fits this definition is called a kernel. A kernel is an evidence-based prevention or treatment to change behavior. Important components of kernels include that they a) are not lengthy or complex interventions, b) require no training or support, are cost-effective, easy to implement, c) have good generalization and ease of maintenance, and d) are evidence-based. These kernels cover a

wide range of age and developmental ranges and can influence behavior in context. These evidence-based kernels have a reliable effect on one or more specific behaviors and can prevent a variety of negative behaviors (Embry & Biglan, 2008). These active ingredients which result in a kernel are derived from 20 leading prevention, scientific and policy leaders. Examples of these kernels include:

- timeout
- verbal or written praise notes
- mystery motivator
- self-monitoring
- non-verbal signals
- breathing techniques

Four ways these kernels influence behavior is a function of an antecedent to channel behavior, a consequence following the behavior, a set of words about the behavior, or direct manipulation of physiology. Some examples of physiological interventions include the use of omega-3 fatty acids, breathing techniques, progressive relaxation, supplements, or an altered diet. Some concerns about the use of kernels include short-lasting effects or the need for use daily. A more recent example of the use of kernels is from Columbia University *Hechinger Report* (Barshay, 2019). Stephanie Jones from Harvard's EASEL laboratory is now testing the effectiveness of forty of these evidence-based kernels in California school districts 2019-20 school year. Incorporating these kernels into an intervention program can minimize disruptive behavior, increase the prevalence of prosocial behavior, and improve well-being. These kernels can have an immediate



impact on the person, are widely available, easily dispensable, and can reach a large audience.

### ***Contemplative Practices***

Current research is demonstrating that contemplative practices such as meditation and yoga improve attention and reduce stress within the use of children in a classroom setting (Shapiro et al., 2015). Contemplation is practiced in sitting, standing, or walking meditations and involves paying attention in a purposeful and sustained way to internal experiences (e.g., one's thoughts or sensations), or external perceptions (e.g., the sound of a chime or an image). These repetitive engagement activities can include spending time in silence, in nature, engaging in art, or other enjoyable activities that promote health and wellbeing (AOTA, 2020). A growing body of research with adults and older children indicates that executive function may be improved through contemplative training. Contemplative exercises in the classroom may help support the development of emotion regulation by shaping the neural circuitry underlying both automatic and controlled aspects of emotion regulation. These activities promote executive function as they include skills such as inhibitory control, cognitive flexibility, and working memory. Daily practice of these activities can build social, emotional behavioral, and academic well-being. The use of mindfulness-based strategies with young children not only provides awareness to the body, but also gives yet another strategy to manage emotions.

### ***International and Transdiagnostic Interventions***

Culture is a force that affects individuals within society's behaviors, values, perceptions, and preferences. The United States is a multicultural society, and

occupational therapy practitioners must develop an understanding and sensitivity to the cultural profiles of customers within their catchments. Several themes emerged out of social and emotional learning literature within different countries besides the United States. It is important to do a broad review of different studies and methods that may be used within different countries and cultures to extend the literature on SEL interventions. Also important is the ease of intervention use for clinicians. Ehrenreich-May and Chu (2014) also emphasize that having one treatment program that health professionals are trained in that target a multitude of symptoms, makes it easier for professionals to adopt and implement these programs within a broad population. An intervention that targets common underlying mechanisms is flexible enough to target various symptom categories and disorders and is based on a theory explaining diverse problems with one or several shared mechanisms is termed transdiagnostic. A transdiagnostic program that also incorporated the use of problem and emotion-focused coping strategies is EMOTION (Loevaas et al., 2019). EMOTION is an emotional regulation program, where children learn to recognize and label emotions, identify how emotions are expressed bodily, and practice relaxation skills using cognitive restructuring; where children learn strategies to change how to interpret situations. Other impactful components within this intervention are the gradual exposure to feared or avoided situations, including parent sessions. Results demonstrated a decrease in dysregulation and an increase in modulating emotional reactions in an adaptive manner. These positive results of this study have wide applications as transdiagnostic interventions have the advantage of reaching more children due to the inclusion of children with more than one symptom (i.e., anxiety and

depression) thereby increasing the availability of evidence-based interventions for these children (Ehrenreich-May & Chu, 2014).

In an extension of this transdiagnostic work, Essau et al., (2019) explored a cognitive-based therapy (CBT) program that was administered in a regular school setting by varied professionals. This program is called Super Skills for Life and targets anxiety and depression symptoms. Some examples of intervention components include video feedback, and skills to solve social problems. These interventions were developed with input from key stakeholders (teachers, counselors, school nurses, and parents). Evidence found that girls scored higher than boys for anxiety, emotional problems, peer problems, and prosocial behavior. Girls also demonstrated more internalizing symptoms and boys more externalizing symptoms. Findings were positive for a significant reduction of total anxiety symptoms except for social phobia. From the follow-up, children showed an improvement suggesting that the learned skills were used over the 6 months and contributed to the child's self-image. Most significant was the child's improvement from the first video session to the last in terms of length of eye gaze, vocal quality, length of speech, and comfort level, pointing towards improved self-efficacy. Overall, this study adds to the existing literature of an evidence-based transdiagnostic program delivered in a real-world setting by professionals with a variety of experiences. Limitations included the use of an open clinical trial design limiting internal validity, no use of structured diagnostic interviews due to time limitations, and no use of a treatment integrity measure which impacts treatment fidelity. In conclusion, these transdiagnostic global studies are an important addition to the studies that are found in the United States to support the

provision of services by school personnel within real-world settings targeting a variety of disorders impacting emotional self-regulation.

### ***Diagnostic-Specific Groups and Interventions***

A diagnostic category that is of importance regarding self-regulation, is Autism Spectrum Disorder. This disorder is an increasingly prevalent condition resulting in social and communicative skills due to difficulties with reading emotion from faces (Friedrich, et al., 2015; Tell & Davidson, 2014). These deficits with social and communicative skills can lead to feelings of worry and anxiety in social situations.

From the Centers for Disease Control and Prevention (n.d.), in 2006 it was reported that one in 110 children carried the diagnosis of Autism Spectrum Disorder. In 2016, one in 54 children received the diagnosis of Autism Spectrum Disorder. Looking at studies within this diagnostic category of Autism Spectrum Disorder can give educators and support personnel another intervention approach to use with students who have anxiety-related symptoms. One intervention using a randomized controlled trial was the Coping Cat Program. This modified program was used to target anxiety symptoms within twenty-two children ages 8–14 who had a diagnosis of Autism Spectrum Disorder (McNally et al., 2013). The sessions focus on body-based and mind/brain-based education using awareness of somatic sensations associated with anxiety; cognitive restructuring; developing a coping plan; evaluating performance and administering self-reinforcement. Another important component was exposure tasks in a hierarchical sequence of anxiety-provoking situations. This allowed students to use taught skills at the moment that a problem occurs. This program also included two-parent training sessions

and student-parent homework. Findings were that over half of children who had the Coping Cat program demonstrated remission in clinically significant anxiety symptoms, no longer meeting diagnostic criteria. This is a significant finding to support the use of body-based interventions with this population. Limitations included that the author delivering treatment in these groups had extensive experience working with this population, outcomes were provided by parent reports that were not blinded, and a small treatment cohort. Altogether, these studies support the use of somatic instruction to increase awareness of sensations that may co-occur with emotions.

### **Conclusion**

Within the previously stated research to decrease disruptive behavior within an elementary school setting, several themes emerged regarding effective interventions within a school setting relating to self-regulation in students in grades one to five. First, identifying body sensations is one of the first steps to self-awareness (Barnes et al., 2008; Malboeuf-Hurtubise et al., 2017; Loevaas et al., 2019; McNally et al., 2013; Nathanson et al., 2016; Webster-Stratton & Reid, 2003, 2004), and self-awareness impacts skill development. In addition to the components of identifying body sensations that connect to feelings, using a 5-step anger management strategy helped children begin to recognize the body sensations that connect to feelings and then to use a strategy to help deal with that feeling. Other effective interventions included a body scan, breathing meditations, observation of thoughts and physical sensations, to assist a child to learn how emotions are expressed bodily.

To have a clearer understanding of body awareness, the individual must pay

attention to one's sensory information. This body awareness is also termed interoceptive awareness. As interoceptive information enters consciousness, we become aware of it. According to Mehling et al. (2009), "subjective awareness, in turn, is strongly influenced by mental processes including attention, interpretation, appraisal, beliefs, memories, conditioning, attitudes and affect" (p. 2). These interoceptive-based interventions are a bottom-up (body-based to mind/brain-based) vs. top-down (mind/brain-based to body-based) approach. Using a bottom-up process the sensations come in and directs the cognitive experience. With the top-down approach, cognition directs experiences. This concept of interoception is supported by current neuroscience research and theories (Barrett, 2017a, 2017b).

Key features of other programs included labeling emotions, identifying emotional triggers, and employing coping strategies at the moment the dysregulation occurs, as well as including peer feedback (Augustyniak et al., 2009; Loevaas et al., 2019; Malboeuf-Hurtubise, et al., 2017; Nathanson et al., 2016; Pincus & Friedman, 2004; Webster-Stratton & Reid, 2003, 2004; Wyman et al., 2010). The use of analogies such as the feeling thermometer (Webster-Stratton & Reid, 2003; 2004) or the Mood Meter (Nathanson et al., 2016) were also incorporated into many interventions. These analogy-based techniques help support brain-based learning (Willis, 2009) and mind, brain, and education science (MBE) (Abdurachmanov, 2017). Pincus and Friedman (2004) found emotion-focused strategies and the use of 'I can do' statements and cognitive distractions were important to use with children to promote self-efficacy and to provide a variety of coping strategies. Webster-Stratton & Reid (2003; 2004) used evidence-based kernels

that are adaptable to each cultural context for children with varying developmental abilities based on ongoing dialogue and collaboration between participants and leaders to effectively impact self-regulation. Another important program component included it being transdiagnostic to reach a diverse patient population in varied diagnostic categories. Additionally, adding a home-based component including parental involvement or home practice will help with carry-over and consistency across settings (Essau et al., 2019; Hahn-Markowitz, et al., 2017; Loevaas et al., 2019; McNally et al., 2013). Finally, using contemplative practices such as meditation, yoga, and participating in repetitive engaging and relaxing activities mediate executive functioning, behavior control, and academic well-being (Shapiro et al., 2015).

These effective, research-based interventions help build self-monitoring, self-awareness, and self-management. All of which are important for components of current SEL programs including recognizing emotions in self and others, understanding the causes and consequences of emotions, labeling emotions with diverse vocabulary, expressing emotions across contexts, and regulating emotions effectively. These findings support clinical observations that when children use taught coping strategies at the moment a difficulty arises, they can regulate their bodies to return to a more optimal learning state. Once in a regulated state, children can begin to connect the emotional trigger to the behavior and begin to reflect on how their behavior impacts others.

In summary, findings support that identifying body sensations may be an essential treatment component lacking in evidence-based programs. Overall, it is imperative that moving forward, intervention programs that include direct instruction on body sensations

be incorporated to extend research on current interoceptive studies. Occupational therapy practitioners are experts at promoting self-regulation and identifying sensory dysregulation when it occurs. Children who become aware of their internal body senses can impact their own health. Development of a curriculum that is based on teaching a hierarchical set of skills to address bodily sensations a) identifying sensations; b) labeling emotions using a diverse vocabulary; c) employing both problem and emotion-focused coping strategies; d) identifying emotional triggers; e) use of analogies in interventions to solidify learning; will fill the need for an evidence-based intervention to improve self-regulation and emotional well-being, while extending research within a school setting. The description of the proposed program *My Body Feelings (My BF)* which incorporates the above impactful evidence-based components, is described in detail in the next chapter.



## **CHAPTER 4 - DESCRIPTION OF THE PROPOSED PROGRAM**

### **Introduction**

*My Body Feelings (My BF)* is an educational curriculum developed to address decreased self-regulation in children grades 1–5 within a school setting, using current evidence-based research and the combination of the Sociocultural Theory, Social Cognitive Theory, and the Theory of Constructed Emotions with Understanding by Design Framework (UbD) (McTighe & Wiggins, n.d.; McTighe & Associates Consulting, n.d.). In developing this program, the main purpose is to teach staff and students to notice body signs and learn different physiological calming strategies when they become dysregulated. *My BF* curriculum promotes brain-based learning and opportunities to apply student learning to new situations at the moment and receive timely feedback on their performance to help them improve regulating their emotions for improved health and well-being.

### **Program Description**

This project and study utilize several established evidence-based programs developed to support self-regulation and emotional control. There are many components of this program that the author would like to expand beyond the use of the five Collaborative for Academic, Social, and Emotional Learning, competencies (CASEL), (Collaborative for Academic, Social, and Emotional Learning, 2020). CASEL is a national organization that promotes social and emotional learning (SEL), and emotional well-being. First, this program is developed from current neuroscience research, including the concept of interoception (sense of the physiological condition of our bodies

that monitors our internal processes and sends status updates to the brain), using the Theory of Constructed Emotions (Barrett, 2017a, 2017b). This is one of the first known interventions based on this newer theory. The Theory of Constructed Emotions is foundational to understanding body awareness and emotional control. This interoceptive understanding will help children to identify what their bodies are signifying and then what they can do about it. In addition, instructing children on the diversity of emotions, signals, and vocabulary will assist in building recognition of other's emotions.

Second, structuring the lessons and materials with the Understanding by Design (UbD) Framework (McTighe & Willis, 2019) within my curriculum offers a three-stage backward design process for curriculum planning and brain-based learning. Brain-based learning supports executive functions which are responsible for attention, reasoning, judgment, flexible thinking and emotional self-regulation, and self-management. Instruction that supports and engages these executive functions will strengthen them. This backward design avoids teaching to the task and activity-oriented teaching in which no clear purposes are apparent. UbD's primary goal is teaching for understanding should be the assurance that students can use their acquired understandings and knowledge independently in real-world situations and scenarios. The UbD uses Enduring Understandings for big ideas that the students will know after the lesson or course. Teaching for understanding requires that students be given numerous opportunities to draw inferences and make generalizations for themselves (with teacher support). The primary goal is teaching for understanding should be the assurance that students can use their acquired understandings and knowledge independently in real-world situations and

scenarios. Teaching for transfer means that learners are given opportunities to apply their learning to new situations and receive timely feedback on their performance to help them improve. There are six facets of understanding, the ability to explain, interpret, apply, shift perspective, empathize, and self-assess. Essential Questions are questions that foster inquiry and understanding of learning and can be used as an assessment of knowledge (Bowen, 2017; McTighe & Wiggins, n.d.; McTighe & Associates Consulting, n.d.). This backward design is familiar with occupational therapy's role in goal setting, assessing, and planning interventions. Clinicians must think of the end result and what they want a student to be able to do. For example, a deficit is noted, an assessment is chosen, the goal is identified, and the intervention is planned.

Within *My BF*, there are a total of twenty-one lessons. These lessons are tied to one of the five social and emotional learning competencies and are hierarchical in design. Each lesson starts with an enduring understanding, an essential question followed by what the student will be skilled at and know after the lesson. Following these are a contemplative body warm-up and then a specific lesson or activities which connect body cues to emotions. Last, an exit ticket will be filled out by the student and reviewed by an occupational therapist before it is sent home. This exit ticket will provide caregivers with key lesson concepts to facilitate the carry-over of taught knowledge within the home setting. Additional lessons focus on describing emotions, effective listening, conflict management, coping strategies, as well as areas within executive functioning. These components are developed from brain-based learning which proposes the brain's ability of prediction patterning needed for understanding which is foundational to the Theory of

Constructed Emotions. See Appendix A for an example lesson from *My BF*.

## **Program Design**

### ***Logic Model***

The following logic model demonstrates the relationships among inputs, resources, activities, outputs, and outcomes of *My BF*. This logic model will be used for program planning.

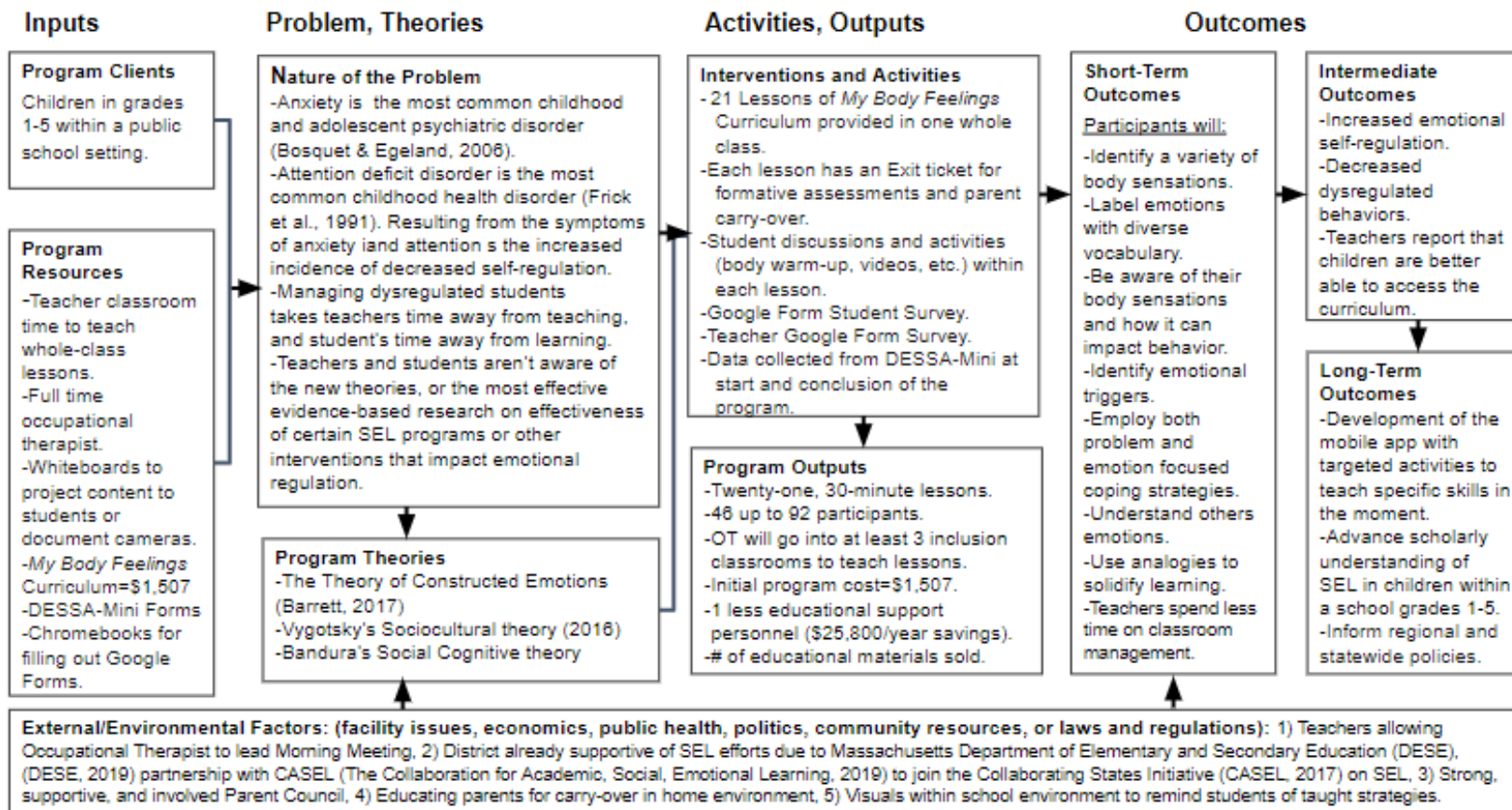
### **Intended Audience**

There are multiple audiences within the author's project. The first is the students who receive this intervention. The community at large is the school-wide community comprised of other staff and students, benefit from having this instruction as students will be more regulated and ready to learn. Another audience is the administration who benefit from knowing there is an effective program to target disruptive behaviors that occur in the classroom. The main targeted audience is teachers who are seeing the daily impact of the curriculum within their classrooms. These teachers are important collaborators as well, as they utilize taught vocabulary and strategies throughout the week. Also important are the parents and caregivers who use some of the intervention strategies at home to decrease problem behaviors. In addition, the occupational therapist, other providers, and other researchers are focused audiences to extend the research on evidence-based interventions within a school setting. Finally, when the research is presented to acknowledge the effectiveness of this intervention, then policymakers and advocacy groups will recognize the importance of including interoception in SEL State policies.

**Figure 4-1**

*Logic Model for My Body Feeling Program*

**Program title:** *Linking Body Cues to Emotions for Elementary Age Children: A Understanding by Design Curriculum for Social-Emotional Learning.*



**Program Participants**

The priority population is children in grades 1-5. Since an inclusion classroom includes both typical students as well as students with different learning needs who may be on Individualized Education Programs, primary and secondary prevention strategies are provided. Therefore, this program is both group and population client levels as working with classrooms (groups) and small groups of children, more at-risk (also group), impacting the entire student body (population). Within an inclusion classroom, there are typically about four students who have goals in the area of Self-Regulation and receive services from an occupational therapist. The classroom size is about 20 students with one classroom teacher and a special education teacher or educational assistant who provide services to students who are on an Individualized Education Program (IEP). An occupational therapist goes into the classroom once a week during a morning meeting time from 8:30 am to 9:00 a.m. to provide a whole class lesson on different topics in the area of body cues in context as it relates to self-regulation. This time block provides occupational therapy inclusion services that were determined in student's IEP's. One lesson from *My BF* curriculum is delivered each week.

**Program Implementation Personnel**

This program is created by an occupational therapist and will initially be facilitated by an occupational therapist within classroom settings. This program also has the potential to be utilized by teachers, educational assistants, special education staff, other occupational therapists, speech and language therapists, school adjustment counselors, school psychologists, behavioral analysts, private counselors, and parents or

caregivers. *My BF* can be used in elementary schools, private schools, clinics, and homes.

### **Objectives and Expected Outcomes**

The overall purpose is to teach staff and students to notice body signs and learn different physiological calming strategies when they become dysregulated. Utilizing a curriculum that is based on teaching a hierarchical set of skills to address bodily sensations will fill the need for an evidence-based intervention to improve self-regulation and emotional well-being.

Example Student Objectives:

- Within a classroom setting, after twenty-one, 30-minute lessons connecting body cues to emotions, 90% of students will be able to identify the sensations they feel in their body (butterflies in stomach, change in heart rate or temperature, scattered thoughts) with a feeling state (frustrated, worried, angry) in 4 out of 5 opportunities.
- Within a classroom setting, after twenty-one, 30-minute lessons connecting body cues to emotions, 90% of students will begin to identify and name various triggers to their emotional state (frustration, anger, silly), and engage in a calming strategy when dysregulated, in 4 out of 5 opportunities.
- Within a classroom setting, after twenty-one, 30-minute lessons connecting body cues to emotions, 90% of students will demonstrate improved emotional control as evidenced by:
  - 1) decreased disruptive behaviors
  - 2) improved on-task learning

3) utilization of coping strategies

### **Barriers and Challenges to Implementation**

Initially, the building administration and school committee may be a roadblock. In using any new program, this committee has to show that benefits out way risks, which hopefully this proposal has shown. Even so, the Franklin Public School District (2019) is a supportive district that realizes the importance of SEL and has monthly competencies in this area and is a leader within the state of Massachusetts that other districts follow. The Franklin Public School district realizes that teachers' time is invaluable as they are asked to provide high-quality instruction. Staff is required to adhere to the Massachusetts Curriculum Frameworks which results in high-performing students. The administration knows that there are many curricula expectations and do not want to place another thing onto teachers so surveyed these teachers on what SEL strategies and tools they are using within their classroom. Using collected stakeholders' input, a website was developed for the district on classroom-based SEL tools. Second, teachers may not be supportive of another new program on top of the many demands they have. Reiterating that an occupational therapist will be going into the classroom for 30 minutes during the morning meeting, snack time, or after recess to teach these lessons, giving teachers a short break from teaching in front of students. Also, many of the activities incorporated into *My BF* curriculum were developed by teachers who already use them daily within the classroom. Newer research-based interventions are also incorporated into this curriculum for teachers to learn new concepts of interoception to better instruct children to connect these biofeedback signals of their bodies to specific feelings, which is the first step of self-



awareness. Further buy-in will occur when teachers realize that this program is improving students' self-awareness and decreasing episodes of disruptive behavior leading teachers to spend less time on behavior management and more time on teaching. Chapter 5 discusses plans for program evaluation.

## **CHAPTER 5 - PROGRAM EVALUATION RESEARCH DESIGN**

### **Overall Goals**

This program aims to better understand if a 30-minute lesson per week on body cues in context over a 21-week time frame increases social and emotional competencies as well as interoceptive awareness among children in grades 1-5 within a public-school setting versus a comparison group with no intervention. As stated earlier, the author wants to extend the research on using the Theory of Constructed Emotions (Barrett, 2017a, 2017b) that is the basis of the curriculum. Furthermore, this program is developed by an occupational therapist, and it is imperative that moving forward, intervention programs that include direct instruction on body sensations be incorporated to extend research on current interoceptive studies. These body signs can mean different things and knowing what it can mean for them can make a difference in how they learn and interact with others. The impact on health management, education, play, and social participation all occur in the areas of occupation (AOTA, 2020). Participating in health-promoting activities (e.g., a curriculum to teach strategies to reduce anxiety and attentional issues) as well as preclusion from social activities due to peer rejection which may result in feelings of negative self-worth, anxiety, and isolation will moderate occupational deprivation. In addition, this author wants to demonstrate that there is a gap within the interventions on specifically teaching children the signs of their body as this are more a bottom-up (body to brain) process than a top-down process (brain to body). Using a bottom-up approach can be more effective when dealing with a dysregulated student. Finally, in researching long-term outcomes, this project could potentially save the district money due to the use

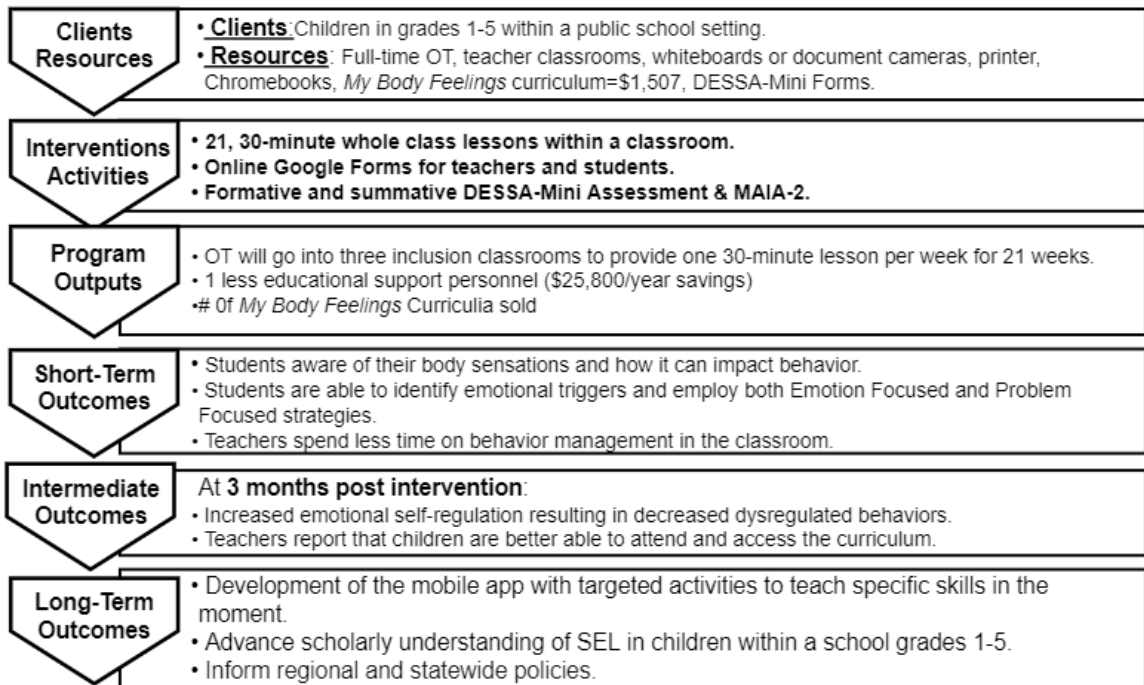
of support personnel that is needed to support these dysregulated students.

**Logic Model**

The following logic model (Figure 5-1) of *My BF* was developed to further involve additional stakeholders as well as a program evaluation tool. The Simplified logic model for My Body Feelings program evaluation research showing expected program inputs and outputs, plus short-term, intermediate, and long-term outcomes. Short-term outcomes will be measured during the initial program launch.

**Figure 5-1**

*Simplified Logic Model for Use with Stakeholder*



**Program Design and Evaluation Methods**

*My BF* program has an intervention group as well as a comparison group. The occupational therapist chose the comparison classroom. The program uses a quasi-

experimental quantitative design because it is not possible to use a random design or blinding. Therefore, a basic value-added design is used in this program as this author is doing pre and post measurements at the soft launch of the program. Teachers complete quantitative assessments to measure emotional regulation in all students. Students' complete quantitative measures to assess interoception awareness. These two quantitative measures are done before the initiation of the program and by one month following the completion of the program in order to determine the degree of change that resulted from *My BF* program.

To evaluate the content of this program, teachers, and students complete a mixed-method Google survey three months after the initiation of the program to assess their thoughts and suggestions for program improvement. Following completion of the program, parents or caregivers fill out mixed-method Google survey forms for suggestions on program improvement. Google Sheets will be used to analyze all data.

### **Evaluation Performance Measures**

The following includes further information on these measures.

- A quantitative student checklist/screener the Devereux Student Strengths Assessment-Mini Assessment 2 (DESSA-mini) (Aperture Education, 2020) to assess the areas of social-emotional competencies in the school environment.
  - This checklist will be used to identify areas of decreased emotional knowledge.
  - The checklist will also be used as a diagnostic tool to identify students who demonstrate lower self-regulation. The checklist will be completed by

the teacher at the beginning of the school year and then at the end of the school year to assess progress on SEL-related skills as a summative assessment.

- A quantitative data collection tool (Multidimensional Assessment of Interoceptive Awareness Version 2 (MAIA-2). (Jones et al., 2020; Mehling et al., 2018) through Google Forms.
  - This tool assesses the students' understanding of taught concepts of body cues to emotions, environmental context, and self-regulation strategies.
  - This is completed by the child at the beginning of the school year and then at the end of the school year to assess interoceptive awareness.
  - This tool is utilized to monitor taught concepts and student responses to the SEL curriculum.
- A formative mixed-method survey through Google Forms after program completion to assess teacher and student satisfaction of the program. This form will be completed after program completion to assess satisfaction, ask for feedback on program content and delivery, and ask for suggestions to improve the program.
- A summative mixed-method survey through Google Forms to assess parent use of strategies as learned through take-home Exit tickets after each lesson.

### **Needed Resources**

The resources needed to collect the information are the classroom teacher, school Chromebook computers, DESSA-Mini, time within the classroom for students to take the

surveys, and time to analyze the results. All data is entered into a laptop into Google Docs and Google Sheets as they include cloud-based storage to prevent issues of not saving or losing data. Analysis of data is done through Google Sheet add ons such as Google Analytics.

### **Specific Evaluation Questions (See Table 5-1)**

Types of research questions that might be asked by users of the program evaluation data that could be answered by the study accompanying the launch of the author’s proposed project.

**Table 5-1**

*Program Evaluation Research Questions by Stakeholder Group*

<b>Types of Program Evaluation Research Questions</b>	
The author as the researcher	<p><b><i>Quantitative questions:</i></b></p> <ul style="list-style-type: none"> <li>● Does a 30-minute lesson per week on body cues in context over a 21-week time frame increase social and emotional competencies as well as interoceptive awareness among children in grades 1-5 within a public-school setting versus a comparison group with no intervention?</li> <li>● Within a classroom setting, after twenty-one, 30-minute lessons connecting body cues to emotions, will 90% of students will be able to identify the sensations they feel in their body (butterflies in stomach, change in heart rate or temperature, scattered thoughts) with a feeling state (frustrated, worried, angry) in 4 out of 5 opportunities.</li> <li>● Within a classroom setting, after twenty-one, 30-minute lessons connecting body cues to emotions, will 90% of students will begin to identify and name various triggers to their emotional state (frustration, anger, silly), and engage in a calming strategy when dysregulated, in 4 out of 5 opportunities.</li> <li>● Within a classroom setting, after twenty-one, 30-minute lessons connecting body cues to emotions, 90% of students will demonstrate improved emotional control as evidenced by:</li> </ul>

- 
- 1)improved on-task learning
  - 2)understanding of others' emotions
  - 3)utilization of coping strategies, in 4 out of 5 opportunities.

***Qualitative question:***

- Are the lessons easy to understand?
- Are the lessons engaging to students?
- Did the teachers find lesson resources helpful?
- What strategies did teachers use within their classrooms?
- What strategies did students most often use in the classroom?
- What body cues or signs are the students better able to identify?
- What signs demonstrate that students have more on-task learning?

---

Teachers, SPED team and colleagues- (SLP/BCBA/SAC/special educators

***Quantitative:***

- Did participants gain needed knowledge consistent with program goals?
- Did participants gain needed skills consistent with program goals?
- Did participants gain perceived competence about identifying body signs and connecting them to emotions?
- Did recipients of the intervention improve in terms of desired performance consistent with program goals?
- Did the decrease in dysregulated behaviors or other characteristics in recipients of the intervention group consistent with program goals?

***Qualitative:***

- Was the information presented relevant?
  - Was the information presentation too easy or too complicated?
  - Was teaching delivered at an optimal pace and intensity for learning?
  - Was the instruction sufficient for the staff to begin using it with students?
  - Was the program duration adequate, or should it be shorter or longer?
  - Were some aspects of the program more or less useful or effective?
  - Is there anything that should be changed to improve program content or delivery?
  - What other key issues or problems faced by students were not addressed in the program?
-

District Administration Building administration- (principal/vice-principal)	<p><b>Quantitative:</b></p> <ul style="list-style-type: none"> <li>● Will the research data show that the intervention led to the desired change independent variables of interest?</li> <li>● Can the research data be used to demonstrate improved standards of learning provided to recipients of the intervention?</li> <li>● Has the program positively impacted employee reported job-satisfaction?</li> <li>● Are outcomes consistent with the proposed theoretical justification?</li> <li>● Is the delivery of the program more or less costly than other means of delivery?</li> </ul> <p><b>Qualitative:</b></p> <ul style="list-style-type: none"> <li>● Does the content of the program match organizational goals?</li> <li>● Does the course content align with faculty needs?</li> <li>● Is the course delivery format suitable for teachers?</li> <li>● Were program participants sufficiently prepared to apply the learning content in the classroom?</li> <li>● Did recipients of the intervention and family members report a favorable experience with the intervention received?</li> <li>● Were any problems or issues reported?</li> <li>● Did external factors impede the execution of the research methodology?</li> </ul>
Parents/ Parent Council	<p><b>Quantitative:</b></p> <ul style="list-style-type: none"> <li>● Did students use strategies at home?</li> <li>● Were students able to better regulate their emotions?</li> <li>● Did students feel confident in identifying body signs and connecting them to emotions?</li> </ul> <p><b>Qualitative:</b></p> <ul style="list-style-type: none"> <li>● Was the information on Exit Tickets presented helpful?</li> <li>● Was the information on Exit Tickets presentation too easy or too complicated?</li> <li>● Were some aspects of the Exit Tickets more or less useful or effective?</li> <li>● Is there anything that should be changed to improve the content?</li> <li>● Would you like more information on body cues and self-regulation?</li> </ul>
Circle of advisors Academic advisor and experts in the	<p><b>Quantitative:</b></p> <ul style="list-style-type: none"> <li>● Can the research data be used to demonstrate the desired change in recipients of the intervention as the result of the program?</li> <li>● Will the research data demonstrate the importance of the role of OT for providing services relevant to the program?</li> </ul>



---

field of self-regulation  EASEL laboratory at Harvard University.	<ul style="list-style-type: none"> <li>● In light of the school environment, is the program justified based on study findings?</li> <li>● Will findings demonstrate that the course content matches the knowledge needed to close the clinical gap the program is addressing?</li> </ul> <p><b><i>Qualitative:</i></b></p> <ul style="list-style-type: none"> <li>● Do teachers/staff/administration report increase understanding of the distinctive role of occupational therapy in the provision of services relevant to the program?</li> <li>● Are colleagues confident that they will be able to advocate for the role of occupational therapy as a change agent in areas relevant to the program?</li> <li>● Are the long-term goals of the program realistic and achievable?</li> <li>● Will the program increase awareness of developments in the field?</li> </ul>
<hr/>	
School Committee  Funding agencies, advocacy organizations, including AOTA, policymakers.  DESE  Collaborative for Academic, Social, and Emotional Learning (CASEL)	<p><b><i>Quantitative:</i></b></p> <ul style="list-style-type: none"> <li>● Can the research data be used to demonstrate the desired change in recipients of the intervention as the result of the program?</li> <li>● In light of the school environment, is the program justified based on study findings?</li> <li>● Will findings demonstrate that the course content matches the knowledge needed to close the clinical gap the program is addressing?</li> <li>● How much money can be saved with the use of this program?</li> <li>● What is the yearly cost to run this program?</li> </ul> <p><b><i>Qualitative:</i></b></p> <ul style="list-style-type: none"> <li>● Do teachers/staff/administration report increase understanding of the distinctive role of occupational therapy in the provision of services relevant to the program?</li> <li>● Are colleagues confident that they will be able to advocate for the role of occupational therapy as a change agent in areas relevant to the program?</li> <li>● Are the long-term goals of the program realistic and achievable?</li> <li>● Will the program increase awareness of developments in the field?</li> <li>● Will program findings support local and statewide policies?</li> </ul>

---

## **Evaluation Methodology**

To check the fidelity of *My Body Feelings* curriculum delivery, and maintain internal validity and reliability, numerous steps are taken. As a first step, completion of the CITI training to obtain a certificate was done. The next step is obtaining Instructional Review Board (IRB) approval to make sure that well-planned study procedures are utilized, and risks and benefits are analyzed. After performing these risk/benefit analyses, program costs are reviewed, and a detailed plan was developed to maintain the confidentiality of data. The confidentiality of data is maintained using a coding system developed for each subject. Each student is assigned a number. This coding system uses Google Sheets as it is web-based and saves/updates automatically to prevent loss of data. Finally, this confidential information is locked in a file cabinet at work.

## **Data Collection**

### ***Methods for Formative/Qualitative Data Management (see Table 5-2)***

Formative evaluations are implemented to determine whether the program is feasible, accessible, and applicable before it is fully implemented. A formative/process evaluation procedure was developed by first having a logic model of program components. Second, proactive and participatory approaches with stakeholders will be continued. Third, a formative qualitative process evaluation after three months of implementing this program is completed. This formative evaluation uses a qualitative Google survey to determine the relationship between program activities and outcomes. Google Forms are used to analyze survey results to prevent researcher bias. Observations of student behaviors are also a consideration that can be taken using a Momentary Time

sampling compared to a peer.

**Table 5-2**

*Formative/Qualitative Data Collection Methods*

Setting	Public Elementary School in Franklin, MA
Participants or subjects	40-80 participants. One classroom is an inclusion classroom where students on Individualized Education Programs are placed. One to two grade-levels will be chosen depending on the student's IEP goals and objectives. The occupational therapist will choose the comparison classroom. Teachers and special educators/educator assistants will also be participants in the program. Parents will also fill out surveys.
Qualitative information gathering	<ul style="list-style-type: none"> <li>-A Mini-social assessment was completed using Google Forms on a computer.</li> <li>-This author will be taking data.</li> <li>-Data is analyzed by Google which is a cloud-based platform.</li> <li>-An email to parents will be sent out at the conclusion of the program including a survey asking about the use of the Exit Tickets students completed at the end of each lesson. These Exit Tickets are sent home. Data will be reviewed to see if they were easy to understand for parents or if parents used some of the strategies at home.</li> </ul>
Timing	Before program implementation, data was collected starting in June 2020 for the Mini-social assessment. During the program, formative assessments of teachers and participants will be taken at the end of term 1 or 3 months after the beginning of the program. By one-month post-program completion, formative data will be collected and analyzed for any changes that are needed to be made to the program for the next year.

### Methods for Summative/Quantitative Data Management (See Table 5-3)

To ensure the program is impacting student self-regulation by instructing children using interoceptive concepts, summative quantitative data is needed to ensure a reliable and valid program. For quantitative data, results are analyzed and then a Peer Mentor at Boston University will double-check these to ensure validity. Program sustainability is ensured as summative quantitative Google surveys are completed at the end of program implementation in order to improve or revise any program components.

**Table 5-3**

*Summative/Quantitative Data Collection Methods*

Setting	Public Elementary School in Franklin, MA
Participants or subjects	40-80 participants. One classroom is an inclusion classroom where students on Individualized Education Programs are placed. One to two grade-levels will be chosen depending on the student's IEP goals and objectives. The occupational therapist will choose the comparison classroom. Teachers and special educators/educator assistants will also be participants in the program.
Quantitative information gathering	This study will use Basic Value-Added Outcome measurement before and after the intervention. Teachers and students will be completing quantitative measures.
Independent variables	A 21-week program for 30 minutes per week provided by an occupational therapist. One factor is that some students within the intervention class are already on Individualized Education Programs so may have lower initial scores on quantitative measures due to developmental disabilities, etc. To acknowledge this, differences between pre-intervention and post-intervention will be completed to assess how much the students changed due to the intervention.
Dependent variables	Ability to connect body cues to emotions, decreased anxiety and attentional symptoms, increased on-task learning, and self-efficacy of self-regulation.
Measurement	<ul style="list-style-type: none"> <li>Devereux Student Strengths Assessment-Mini Assessment 2 (DESSA-mini) filled out by the teacher.</li> </ul>

---

	<ul style="list-style-type: none"> <li>● Multidimensional Assessment of Interoceptive Awareness Version 2 (MAIA-2) filled out by students in both control and comparison groups.</li> <li>● Part of Google surveys for both teachers (Appendix B) and students (Appendix C) will include Likert scales and multiple choice for performance measurement and subject satisfaction.</li> </ul>
--	---

---

Timing	<p>Devereux Student Strengths Assessment-Mini Assessment 2 (DESSA-mini) filled out by the teacher before initiation of the program and by one-month post-intervention.</p> <p>Multidimensional Assessment of Interoceptive Awareness Version 2 (MAIA-2) filled out by students in both control and comparison groups before initiation of the program and by one-month post-intervention.</p> <p>Google surveys for students and teachers are done two months after the start of the program and by one-month post-intervention ending.</p>
--------	---

---

### **Conclusion**

The main goal for gathering qualitative and quantitative information is to provide credibility and dependability of the proposed program. Using two standardized measures of program outcomes of improved interoceptive awareness and emotional regulation measures the degree of change that resulted from *My BF* program to ensure fidelity and evidence-based practice. Using surveys provides reliable data on program processes, activities, outputs, and behavioral outcomes and can be used for summative/outcomes or formative/process program evaluations. Moreover, having both teachers and students complete mixed-method surveys post-program completion will impact program content to ensure feasibility, accessibility, and sustainability. Additional interests include gaining the perspectives of audiences to further improve the quality of this program. All in all, this data will help gain insight into any additional problems within the area of the understanding of body cues as it relates to anxiety, attention, self-regulation and the

impacts on SEL. The following chapter outlines plans for disseminating this innovative program.

## CHAPTER 6 - DISSEMINATION PLAN

### Summary of Proposed Program

Due to the growing incidence of childhood mental health issues, specifically regarding attention and anxiety concerns, to date, only one other known interoceptive-based intervention provided within a whole classroom setting impacts self-regulation in young children (Lewis & Spann, n.d.). These body-based coping strategies impact a variety of child functioning including, effective listening, conflict management, emotion, and problem-focused coping, as well as areas within executive functioning. Indeed, occupational therapy practitioners are well equipped to implement this intervention which positively impacts self-regulation. Moreover, this is the first known social and emotional learning (SEL) intervention to use the theory of constructed emotions (Barrett, 2017a, 2017b) utilizing the Understanding by Design Framework with evidence-based kernels of intervention. This transdiagnostic approach will be able to reach more children with diverse symptoms which will have a greater impact on these children's well-being. Using a transdiagnostic approach will also enable teachers, therapists, and caregivers to more easily adopt and implement *My Body Feelings (My BF)*. To increase stakeholders' awareness as well as interest in this innovative curriculum, a plan is needed to promote action which is detailed in my dissemination plan below. This plan will advance the utilization of the *My BF* curriculum.

## **Dissemination Goals**

### ***Short Term Goal 6 months–1 year.***

Program implementation and sustainability are a top priority in the dissemination phase of *My BF*. Factors that influence the quality of implementation also influence sustainability which includes: a good fit for the school, sufficient buy-in and commitment (getting teachers onboard), effective leadership, staff-turnover, program costs, administrative mandates, effective programming, and family support (Wright et al., 2015). Currently, the school district that will adopt *My BF* already supports SEL with district initiatives, and since this program is already developed, the following short-term goals have been developed:

- Publication of *My BF* curriculum
- Implementation of *My BF* in at least two classrooms within two different grade levels
- Mentor training for new staff (i.e., teachers, educational assistants)
- Family in-services
- Website for *My BF* curriculum
- Development of a mobile app

### ***Long Term Goals 2–5 yrs.***

The long-term goal is to be part of the Department of Elementary and Secondary Education advisory group for SEL (2018) to help integrate SEL throughout initiatives that support student and educator learning and growth. The following are my long-term goals:



- Collaborate with members of Social and Emotional Learning Alliance for Massachusetts (SEL4MA) (2019)
- Ensure current proven research methods are included, as well as helping to develop an evaluation tool for these SEL strands
- Publish program outcome findings in journals or within a book chapter

### **Target Audiences, Messages, Messengers, and Activities**

#### **Primary Audiences**

To disseminate this program to the largest number of children, classroom teachers are the primary targeted audience. These classroom teachers are the most influential adult to children within the school environment. Thus, teachers have the most impact on children's learning, as well as daily carry-over of taught concepts. A second key audience is caretakers as they are the agents of change influencing their child's overall health and development.

#### **Key Messages for Primary Audiences**

Initially, teachers may be hesitant to incorporate yet another new program within their busy classroom schedule. Teachers will need to gain an additional benefit from using this curriculum within their classrooms. Many elementary schools place aside the first thirty minutes of the morning for announcements, turning in homework, or class-wide meetings, which is an ideal opportunity to integrate *My BF* into classrooms. This way, the time is being utilized effectively and there is minimal impact on the time and schedules of both teachers and students. An occupational therapist will be going into the classroom during this time block to provide whole class lessons, giving teachers a short

break from teaching in front of students. However, teachers will be expected to be present and engaged in order to carry out taught concepts of *My BF* (e.g., visuals from the program), with their students. The intent is for teachers to gain *My BF* buy-in by realizing the positive impact on student behavior, which lessens the time spent on behavioral management. Further buy-in will occur when teachers see that *My BF* uses things they already do within their classroom, and such strategies are easily integrated into daily teaching practices. After teachers realize this program uses things they already do within their classroom and the positive outcomes, they will become collaborators to this process and be a participant with the *My BF* curriculum.

The message to the child's parents or caretakers will focus on the benefits of using *My BF* at home. With the use of *My BF*, their children will develop improved awareness and skills to better regulate themselves throughout the day, resulting in fewer instances of difficult behaviors; thus, positively impacting overall health. Because Exit Tickets are sent home each week including concepts and vocabulary of *My BF*, parents or caretakers may learn a variety of effective coping skills and strategies to ensure better psychosocial outcomes (Pincus & Friedman, 2004).

### **Primary Spokesperson**

As the author of this program, I will act as the primary spokesperson for the staff and parents at school, and within the school community. Fortunately, the building principal and vice-principal are dedicated to SEL, as well as promoting a positive school culture, therefore, they will also be initial key supporters as well as spokespeople. Additionally, the Assistant Superintendent will be another spokesperson, as he has

already demonstrated motivation and dedication to *My BF* through collaboration efforts.

### **Activities**

To convince stakeholders and others that *My BF* is a program of value, the following steps are taken to disseminate the pertinent findings to reach a larger audience. First, using a two-page executive summary (Grob, 2015) to share program findings with the majority of the stakeholders will be used. The two-page executive summary is the most compatible with the staff involved in the implementation of *My BF*. This is because the majority of stakeholders work within a school setting (e.g., school committee, administrators, teachers, specialists), and are already strapped for the time within their schedules. The executive summary gives the readers a good amount of information but is not too lengthy or overwhelming. The executive summary is distributed electronically through emails. Following the dissemination of the summary via emails, a staff meeting will be organized and held to introduce *My BF*. This provides the opportunity to introduce program elements, describe benefits and intent, and allow for any questions or concerns to be addressed. Next, an already developed audiovisual Google Slideshow video where the author talks and explains the problem, solution, and shares examples of the program are shared with staff and parents. The use of pie charts and graph tables is used to represent data for an easy-to-follow visual display. Following the dissemination of this video, the primary spokesperson, will schedule and hold in-person family in-services on *My BF* to answer questions and promote discussions to further learn parent's and caretaker's needs. Because most information is disseminated online in a school setting, a website is being developed for more information on *My BF* curriculum. A final

step is the use of Teachers Pay Teachers (n.d.) or Boom Cards (Boom Learning, 2020) where free visuals from *My BF* curriculum are posted and downloaded. These free visuals are also a promotional tool for other therapists and teachers.

### **Secondary Audiences**

A second key audience is members that are already established within a Massachusetts SEL group. This is important to begin to influence statewide SEL practices, and to impact State-wide policies on SEL, to reach the long-term goal. One group is the Social and Emotional Learning Alliance for Massachusetts (SEL4MA) (2019). SEL4MA is a 501 (c) (3) non-profit educational organization “To advance and support effective SEL policies and practices in all schools and communities in Massachusetts” (Social and Emotional Learning Alliance for Massachusetts, 2019, para. 1).

### **Key Messages for Secondary Audiences**

It is of utmost importance to have skilled and qualified personnel teaching children specific skill sets within a mental health curriculum. Occupational therapists are essential to support mental health efforts with children. With our expertise in working and teaching children about mental health, strategies, and specific intervention techniques, we are vital personnel in ensuring the success of SEL within Massachusetts.

To influence change, one project that the Massachusetts SEL advisory group was part of was developing evidence-based strands for the Massachusetts Comprehensive Health Curriculum Framework. In 2018, The Massachusetts Department of Elementary and Secondary Education began the process of revising the 1999 Massachusetts

Comprehensive Health Curriculum Framework (Department of Elementary and Secondary Education, 2018). Within the Social-Emotional Health strand, are the three following topics: mental health, family life, and interpersonal relationships. Although there are framework standards, research was limited in approved curricula. Only one health curriculum called *HealthSmart* (Advancing Health Equity: ETR, 2019) met the National Health Education Standards. Even though the Department has set standards, there is no tool to implement or monitor these standards. Physical education and health teachers are responsible to teach students these health-related topics. Although physical education and health teachers need to have a background in health and wellness, wellness is a general term that may include emotional, mental, spiritual, and social well-being. A collaboration between physical education teachers, occupational therapists, adjustment counselors, and school psychologists will be beneficial in order to share the knowledge base among these experts. Therefore, it is essential to get involved in the Department of Elementary and Secondary Education advisory group for SEL to network with other important stakeholders to share the results of my program in order to effectively meet and impact the SEL needs of students.

### **Secondary Spokespeople**

Boston Public Schools affirmed its commitment to social and emotional learning in 2015, by hiring an Assistant Superintendent of Social Emotional Learning and Wellness and becoming the first public school district in the country to create such a cabinet-level position. The Assistant Superintendent of SEL and Wellness will be my secondary spokesperson as well as members of SEL4MA.

## Activities

The following steps are taken with the secondary audience through the use of written and online media. A two-sided flyer was developed to share summative data to distribute to regional and statewide organizations to share the impact of this innovative curriculum. These agencies will be able to further advocate, fund, or create new policies to impact the emotional well-being of elementary-aged students. The first step to publishing in periodicals is to develop a poster presentation on the value of my program to share with fellow occupational therapists, educators, or interested parties at regional and national conferences or conventions. Next, publishing in occupational therapy-related journals, as well as research journals, is warranted to further extend research on interoception connected to SEL. Examples of potential publications include *OT Practice*, *American Journal of Occupational Therapy*, *Child Development*, or *Journal of Educational Research*. After publishing in periodicals, the final step is to submit a chapter within a book on SEL, childhood education, child development, or childhood mental health.

Finally, using social media such as *Facebook*, *Twitter*, and *LinkedIn* to post weekly information on SEL initiatives, self-regulation, and current research to further familiarize the public with me and my curriculum. This author has already established a personal learning network (PLN) (Guhlin, 2010; Nielsen, 2008) for online media platforms such as *Massachusetts School-Based OT-PT Practitioners*, *The Occupational Therapy Hub*, and *ADVANCE for Occupational Therapy Practitioners* (n.d.), and continues to engage and exchange information to expand these important networks.

## Budget

The publication of *My BF* is the first step in the dissemination plan. After publication, it is important to let others know about *My BF* through marketing on teacher resource sites as well as social media. Attending professional conferences will be the next logical step, and through poster presentations and publishing within journals, my curriculum will begin to become familiar to others. The total dissemination cost is \$3,293.00, specified below (See Table 6-1).

**Table 6-1**

*Budget and Timeline for Primary and Secondary Audiences*

Target Audience	Method	Timeline	Cost
<b>Primary</b> -Teachers and staff	Publication and implementation of My Body Feeling curriculum	Completed by July 2021, for use during the 2021/2022 School Year	\$1035,00
	Two Page Executive Summary	August 2021	\$5.20 (\$.13 per page x 20)
	Boom Learning Cards	December 2021	\$0
	Teachers pay Teachers materials	December 2021	\$0
<b>Primary</b> -Parents/ Parent Council	Audiovisual Google Slideshow Presentation	October 2021	\$0
	Family In-services	December 2021	\$0
	Website for <i>My Body Feelings</i>	June 2021	\$654
<b>Secondary</b> -Social and Emotional Learning Alliance of Massachusetts	Two-sided flyer	February 2022	\$100 (100 flyers)

(SEL4MA) and the Massachusetts Department of Elementary and Secondary Education	Website for <i>My Body Feelings</i>	June 2021	\$ (See above)
	Evaluation Tool for monitoring Health SEL strands in Massachusetts	August 2022	\$0
<b>Secondary</b> -the public, PLN	Posting on social media	May 2021	\$0
	Poster presentation for conferences	February 2022	\$9.99
	MAOT Conference 2022		\$125.00
	AOTA Conference 2022(San Antonino, TX, March 31-April 3) Publish in a periodical or within a book chapter	March 2022  August 2022	\$523.00 conference \$240 flight \$600 lodging and food= <b>\$1,363</b> \$0 (will publish in non-peer-reviewed to start)
<b>Total Costs</b>		<b>\$3,293.00</b>	

### Evaluation

Goal-based and outcome-based evaluation methods are integrated into the evaluation of *My BF*. First, the author will use Table 6.1 to evaluate short and long-term goal attainment. Reflection on short and long-term goals as well as the policy process is vital at this stage for future progress. Second, as part of the outcomes-based evaluation methods, two mixed-methods Google Forms (See Appendix A & B) to track program



outcomes for teachers and students were developed. Third, will be the development of an evaluation tool for implementing and monitoring Health SEL strands in Massachusetts with the advisory board of the Massachusetts Department of Elementary and Secondary Education. This work will confirm future improvements to stakeholders. Finally, continued sharing of activities with stakeholders on social media is important to update others on policy progress and changes.

### **Conclusion**

The results of this study may benefit several stakeholders. First, this study will provide publication materials for occupational therapists, general education teachers, parents, school adjustment counselors, to familiarize these stakeholders with the benefits of *My BF*. Second, the results of this study will advance the scholarly understanding of SEL in children who are in school grades one to five. Third, the dissemination of this program will inform regional and statewide policies. Finally, the results may speak to a broader audience of educators and others through the use of social media and published materials to establish the legitimacy of *My BF*.

## CHAPTER 7 - FUNDING PLAN

### Summary of Proposed Program

A child's social and emotional skills could be predictive of a child's future outcomes and can be impacted by the ability to deal with every-day demands and stressors. Therefore, a growing number of school districts are implementing Social and Emotional Learning (SEL) programs. However, it is difficult to carry out these programs with fidelity due to increased demands on teacher's time. Many SEL programs involve workshops or lengthy training and are costly (Embry & Biglan, 2008). Current evidence-based literature suggests that there is a lack of an SEL curriculum to address body cues that connects them to specific emotions. It is imperative that moving forward, intervention programs that include direct instruction on body sensations be incorporated to extend research on current interoceptive studies. Awareness of bodily sensations as a foundation will enable students to build on these diverse emotional signals to better attend, problem solve, effectively listen to others, engage in productive conflict management, and set goals. *My Body Feelings (My BF)* curriculum meets the needs by teaching staff and students to notice body signs and learn different physiological calming strategies when they become dysregulated. *My BF* curriculum will be carried out weekly in 30-minute time intervals. Lessons are taught by an occupational therapist within a whole-class of approximately 22 students. These twenty-one lessons utilize the Understanding by Design Framework that helps deepen student understanding and knowledge for application to real-world situations and scenarios.

**Available Local Resources**

As an employee for the Town of Franklin Massachusetts, I have access to my elementary building's resources. The resources that are available include: printers, use of computers and internet access, classroom space, and document cameras, and Smart Boards within the classroom for the projection of materials. Additionally, parent volunteers and educational support personnel are available to do printing and collating of materials (e.g., weekly Exit Tickets).

**Resources Needed:**

- Printed curriculum, website.
- Physical space such as the classroom or common areas is available to staff.
- Smart Board or document camera and computer to project materials in the classroom.
- Computers for web application within the classroom. The school has Chrome book carts for classrooms.

**Facilitators to Program Development or Implementation:**

- The Franklin Public Schools (n.d.) is a supportive district that realizes the importance of SEL and has monthly competencies in this area. They are a leader within the state of Massachusetts that other districts may follow.
- Support from district SEL website and administrators.

## **Policies, Regulations that Influence or Impact Program Development or**

### **Implementation:**

- Statewide initiatives for Social and Emotional Learning. The Massachusetts Department of Elementary and Secondary Education (DESE), (DESE, 2018) partnered with The Collaboration for Academic, Social, Emotional Learning (CASEL 2021) as one of eight states to join the Collaborating States Initiative on SEL.

### **Payers**

In a public school, the district has a yearly budget that is funded by federal, state, and town taxes (See Table 7-1). Within the state of Massachusetts, funding for special education comes from Federal, State, and local funds. In 2015, the state of Massachusetts provided districts with \$23,332 for each assumed, in-district, special-needs student and \$26,461 for each assumed, out-of-district, special-needs student (Education Commission of the States, 2020a, b). Within my school district for the 2019 school budget, Federal funds of \$1,148,727, were recommended by the town. The yearly school budget is developed by the administration and school committee who proposes the budget to the town. The school committee works closely with the town-wide joint budget committee. It is important to know that 76% of the proposed school budget goes to staff salaries (Franklin, n. d.). Franklin employs 100 special education teachers and 300 classroom teachers within the district. These special educators are assigned to a grade level to support students on Individualized Education Programs (IEP). A potential outcome of using the *My BF* program within classrooms is to decrease the need for a special educator

to support disruptive classroom behaviors. Instead of a special education teacher who is paid around \$68,675/year to provide direct services to a highly dysregulated student, an educational assistant (who is paid about \$25,800/year) could be utilized instead. This educational assistant will be present during whole class lessons using *My BF* and will be able to carry over lessons and strategies with the students. From the school district's perspective, financially, the program is beneficial as it will decrease the number of support staff needed and will allow teachers to spend more time on learning and less time on behavior management. In conclusion, this proposal could potentially save the school budget \$41,277 within a year.

**Table 7-1**

*Town of Franklin Yearly Budget Payers for Special Education in 2018-2019*

Payers	Amount
Medicaid (State-Federal) =.5%	\$14,000
Town Taxes=50%	\$1,486,000
IDEA Federal funds at 40%	\$1,148,727
Massachusetts State	\$24,897
<b>Total</b>	<b>\$2,673,624</b>

**Needed Resources: Budget**

In terms of implementing and sustaining this program within a school setting, there are a few initial costs. These costs include the purchasing of an initial standardized

measure, the DESSA-Mini (Aperture Education. 2020), which will be paid from the Town of Franklin's Special Education Budget. Other initial expenses include the design and printing of the curriculum, copyright fees, web-design, internet access fees, and maintenance costs which are listed in Table 7-2, and totals \$5,076 over two years. One ongoing expense is website hosting, security, and maintenance costs which is \$6/month or \$36/year. These fees as well as dissemination fees will be the responsibility of this author.

**Table 7-2**

*Budget for the Years One and Two*

<b>Budget Item</b>	<b>Year 1</b>	<b>Year 2</b>
Copyright Curriculum (U.S. Copyright Office, n.d.)	\$65	\$0
Publishing 100 books + 25 free at \$22/book (48 Hour Books)	\$2754	\$0
Website design \$21/month (Adobe, 2020a)	\$ 200	\$0
Copyright Website (U.S. Copyright Office, n.d.)	\$35	\$0
Trademark Website Name (United States Patent and Trademark Office, 2020, February 15)	\$275	\$0
Hosting including SSL and Domain \$6/month (Hostinger, 2004-2020)	\$72	\$72
DESSA-Mini Standardized Assessment 25 forms for \$9.00	\$36.00 (purchased by the school district)	\$36.00 (purchased by the school district)
Dissemination Costs (See Table 6.1)	\$5.20	\$1,598
<b>Totals</b>	<b>\$3,406</b>	<b>\$1,670 = \$5,076</b>

### **Potential Funding Sources**

Possible sources of funding are included in Table 7-3. Examples of funded SEL projects include Education First SEL in Action Awards (2021). A previous example from Massachusetts went to Katharine Hinkle from Innovation Academy Charter School in Tyngsboro, MA.

“We are seeking to pilot three virtual reality 'relaxation stations' in different settings in our school. These stations will be equipped to allow students to immerse themselves in a relaxing setting with the option of doing short guided meditations. We are hoping to both decrease acute moments of anxiety that can lead to students missing class time as well as ubiquitous stress that can detract from the learning experience. Our hope is that these relaxation strategies will provide another tool that our students can utilize to increase their ability to attend school by identifying and regulating their emotions and managing anxiety (Education First/NoVo Foundation, 2021, Katharine Hinkle, Innovation Academy Charter School Tyngsboro, MA: Teacher section).

The second example of a grant supporting self-regulation was awarded to occupational therapist Erin McQuaid from the Boston University Consortium Education Learning Grants program (Boston University Wheelock College of Education & Human Development, n. d.). This was a feasibility study on implementing a self-regulation program within a 4th-grade classroom as a Tier-1 intervention support. This study used the *Zones of Regulation* curriculum (Kuypers, 2011), as an intervention, and this study also addressed student perceptions of improvements in the areas of self-awareness,

knowledge, and application (McQuaid, 2018).

**Table 7-3**

*Potential Funding Sources*

Funding Sources	Requirements	Possible Amount
Allstate Foundation	Works with influential organizations and meaningful causes to make the greatest impact on youth. The Good Starts Young program provides financial support to many organizations and initiatives.	The program has committed \$45 million over the next five years toward in-school and afterschool programs that build students' social and emotional skills. (Allstate Foundation, 2021).
AOTF Intervention Research Grant Program	The American Occupational Therapy Foundation (AOTF) awards Intervention Research Grants (IRG) as part of its mission to advance the science of occupational therapy to support people's full participation in meaningful life activities. The purpose of this grant program is to lay the necessary groundwork for larger intervention studies and support the profession's Vision 2025 of occupational therapy as an evidence-based profession. The IRG program intends to provide seed funding for the development of new and/or novel ideas in order to generate preliminary data as proof of concept.	Applications accepted August 2021-December 2021 (AOTF, 2021).
Bank of America	Bank of America's aim is to build thriving communities by addressing issues fundamental to economic health and sustainability. The focus is advancing economic mobility by addressing issues related to	Two billion over the next ten years (Bank of America, 2020).



workforce development and education, community development, and basic needs. The goal is to fund innovative longer-term solutions for economic self-sufficiency.

Boston University	Sargent students and postdoctoral fellows working with Sargent-primary faculty are eligible for a Student Research Grant. These investigator-initiated awards should be consistent with ongoing research at Sargent, with a preference for proposals that cannot be supported otherwise (e.g., by existing funding in the mentor's lab).	The Student Research Grant awards up to \$5,000 in support. The deadline is March 1, 2021 (Boston University, n. d.).
Education First	School-based educators (including teachers, counselors, administrators, and other school staff) seeking to implement SEL initiatives in classrooms or schools in the 2020-2021 school year. Are focused primarily on student outcomes (as opposed to only adult outcomes).  Are original and innovative, and build off of existing evidence-based practices or the science of learning.	Grant awards for educator-led projects will be a maximum of \$7,500 each. Applications accepted Feb. 8-April 9. (Education First, 2021).
Education Learning Grants Program -BU Consortium	The BU Consortium Grants Program provides funding for projects that support the learning and growth of educators and their students.  Grant proposals must include a learning component for educators. Educators will identify an aspect of teaching/learning that they wish to investigate and articulate the	Application Deadline March 2021. Grant Awards vary. (Boston University Wheelock College of Education & Human Development, n. d.).

process they will engage in to explore that aspect of their practice. Educators will then design, implement, or evaluate some aspect of instruction or school activity with the ultimate goal of supporting educator and student learning and growth.

<p>FY 2020 Education Innovation and Research (EIR) Competition Announcement</p>	<p>The EIR program is authorized under Section 4611 of the Elementary and Secondary Education Act (ESEA), as amended by the Every Student Succeeds Act (ESSA). Its purpose is to create, develop, implement, replicate, or take to scale entrepreneurial, evidence-based innovation to improve student achievement. This year social-emotional learning funding has become a priority.</p>	<p>Varies-\$5000-\$8000. The deadline to apply is June 15. (Education First/NoVo Foundation, 2021).</p>
<p>Helen Keller Elementary School Parent council</p>	<p>This group of parents and caregivers does yearly fundraising and supports each staff with a yearly request for supplies or materials.</p>	<p>\$50.00-\$100.00 Annually in September.</p>
<p>Nea Foundation</p>	<p>Grants are available to teachers, counselors, and education support professionals for programs that improve student achievement and focus on critical thinking, problem-solving, and 21st-century skills.</p>	<p>Amounts are \$2,000 and \$5,000, and funds can be used throughout the year for resource materials, supplies, equipment, transportation, and technology. Application period December 22 - March 19, 2021. (The NEA Foundation, 2021).</p>
<p>Office of Elementary and Secondary Education</p>	<p>a) An IHE that provides course materials or resources that are Evidence-Based in increasing</p>	<p>The Office of Elementary and Secondary Education is</p>

academic achievement, graduation rates, or rates of post-secondary education matriculation; (b) A national nonprofit organization with a demonstrated record of raising student academic achievement, graduation rates, and rates of higher education attendance, matriculation, or completion, or of effectiveness in providing preparation and Professional Development activities and programs for teachers, principals, or other School Leaders.

awarding SEL grants up to \$6000.

Applications available April 13, 2021, and the Deadline July 10, 2021. (Grants.Gov, n. d.).

Robert Wood Johnson Foundation	<p>Our grants and grant programs generally have three aims:</p> <p><i>Discover and Explore</i>—Seeking creative solutions through targeted solicitations and an ongoing request for bold ideas with transformative potential.</p> <p><i>Spread Model Interventions</i>—Identifying and expanding public policies, community-based programs, system changes, and other interventions that are having a meaningful impact on health.</p> <p><i>Conduct Research and Evaluation</i>—Expanding the evidence around key health issues, and evaluating, learning from, and sharing key lessons both from our own grantmaking and from other health-improvement initiatives tied to our areas of interest.</p>	Varied. (Robert Wood Johnson Foundation, 2001-2020).
Substance Abuse and Mental Health	The aim is to promote youth mental health awareness among schools and communities and	Award varies and applications due December 24.

Services Administration	improve connections to services for school-age youth. The grants are awarded to state education agencies (SEAs), which then coordinate funds with local education agencies (LEAs). Funds can be used to support SEL initiatives that aim to increase awareness of mental health issues among school-age youth; train educators and other youth-serving adults to detect and respond to mental health issues; and connect children, youth, and families who experience behavioral health issues with appropriate services.	(Substance Abuse and Mental Health Services Administration, 2020, April 29).
-------------------------	---	--

---

### Revenue Sources

By promoting the curriculum through posting free and low-cost resources for other teachers and therapists on open marketplaces that sell digital materials such as Teacher Pay Teachers (n.d.) or Boom Learning (2020), I will gain back some of the initial expenses. Through posts on social media, as well as web searches by the public, familiarization with the *My BF* curriculum will increase and I could start selling this curriculum online. The pricing of the *My BF* curriculum will be \$60 for a softcover-bound book. The use of a website extension for an online/digital version of the curriculum will be \$100/year for 60 students. Possible revenue for the first two years could be \$5,380. Furthermore, I have applied for grants to obtain funds to pay for any further expenses. See Table 7-4 for revenue sources.

**Table 7-4***Potential Revenue Sources for the First Two Years*

<b>Source</b>	<b>Year 1</b>	<b>Year 2</b>
Teachers Pay Teachers \$2.00 resources	\$80	\$140
Boom Learning \$2.00 resources	\$60	\$100
<i>My Body Feelings</i> curriculum sales at \$60 each	\$1200	\$3,600
Website extension at \$100/60 students.	\$500	\$1,000
<b>Totals</b>	<b>\$1,840</b>	<b>\$4,840=\$6,680</b>

### Conclusion

Regarding the financial operation metrics for the implementation of the *My BF* curriculum, it is affordable, financially self-sustaining, and economically feasible. First, the curriculum itself is inexpensive to purchase compared to other programs. Second, this program could be self-sustaining within two years (i.e., revenue could exceed expenses by a few hundred dollars). Third, many supportive grants and funds are willing to support social and emotional programs that benefit health and wellness in children. Finally, when a student can function well within the classroom environment, there are fewer needs for either special education personnel or related services to support the same student within

the classroom which will free up staff time and lessen caseloads which can save the district money with yearly budget allowances. In the final chapter, we will explore the significance of *My BF* as a transformation program for a variety of stakeholders.

## CHAPTER 8 - CONCLUSION

Across studies, there exists a gap within evidence-based interoceptive interventions targeting social and emotional learning. To date, there is a lack of SEL curriculum within the American 1-5 school base that includes teaching children body cues and various coping strategies in connection with emotions within the context the emotion occurs. Self-regulation and self-awareness are important in mitigating frustration tolerance, stress reduction, and self-control. The ability to control emotions leads to supportive learning environments, improved attitudes about school, self, and others, leading to improved social behavior and self-esteem (Corcoran et al., 2018; Pincus & Friedman, 2004).

Occupational therapists are well-equipped to provide interoceptive interventions with children. Identifying body sensations is one of the first steps to self-awareness which is needed for skill development. Awareness of bodily sensations as a foundation will enable students to build on these diverse emotional signals to better attend, problem solve, effectively listen to others, engage in productive conflict management, and set goals. Second, occupational therapists are also able to teach all students self-regulation strategies within the school environment, so children can begin to manage and control their body and emotions, thus changing behavior. The profession of Occupational Therapy also assumes that student engagement leads to increased positive feelings resulting in improved self-esteem and a more holistic treatment approach is needed to facilitate change. Using therapeutic activities such as participating in a body cues and emotions curriculum within their school environment will promote positive outcomes

which can impact and therefore change emotional health.

*My Body Feelings (My BF)* curriculum was developed to fill the gap of an effective program leading to improved emotional control and self-regulation within elementary-aged children by using proven evidence-based intervention methods connected to body cues. Weaving together the sociocultural theory and social cognitive theory help explain self-regulation within the educational environment. Furthermore, the theory of constructed emotions supports the foundation of an intervention program that begins with interoceptive self-awareness to improve emotional understanding and self-regulation in elementary-aged children. *My BF* curriculum will be the first of its kind to have the foundation of The Theory of Constructed Emotions, utilizing both SEL competencies with the Understanding by Design Framework to promote brain-based learning.

The social-emotional lessons within *My BF* are designed for broad understanding to ensure the brain is engaged to enable students to independently use this knowledge in connection with real-life situations. Identifying body sensations is an essential treatment component that is lacking in many previous SEL curricula. Awareness of bodily sensations as a foundation will enable students to build on these diverse emotional signals to better attend, problem solve, effectively listen to others, engage in productive conflict management, and set goals. Typically, when an individual is emotionally dysregulated, the sympathetic nervous system goes into “fight or flight” so the brain is unable to effectively access thought stopping or calming strategies. Using this bottom-up (i.e., body sensations) approach vs a top-down (i.e., cognitive) approach is key with a dysregulated



system that is ineffectively able to access cognitive processes. *My BF* starts with the body first. Using the body first and becoming aware of bodily sensations is the first step to self-regulation. As the brain uses past experiences to predict what the sensation may mean, learning a variety of body sensations can help students be more emotionally intelligent and regulated.

Within a school setting, there are many opportunities to apply learning to new situations at the moment and receive timely feedback on performance to improve the regulation of emotions. Using this curriculum within the school environment will enable children to adjust themselves to fit the demands of the situation and opportunities for teaching at the moment that the stressor occurs. The ability to generate multiple solutions, consider the consequences of potential solutions, and implement a solution is crucial for young children to develop effective coping strategies vs. maladaptive ones to ensure better psychosocial outcomes (Pincus & Friedman, 2004). Additional lessons on identifying body sensations, labeling emotions using a diverse vocabulary, identifying emotional triggers, employing both problem and emotion-focused coping strategies, using contemplative body tools, effective listening skills, conflict management, attention strategies, and how to set and assess goals in problem areas; will help establish a confident and emotionally well-adjusted child.

The use of a variety of evaluation tools is used to assess both degrees of change with independent and dependent variables as well as program feasibility. These multiple evaluations will help establish the reliability and validity of *My BF*. Using both teacher quantitative assessments of children and children's quantitative self-assessments will

assess change. Additionally, formative evaluations will be implemented to determine whether the program is feasible, accessible, and applicable. To monitor program effectiveness, summative evaluations will include mixed-methods forms to assess program content and the need for change. To establish accountability, this innovative evidence-based project will prove to be cost-effective, easy to implement, and impactful; improving the quality of social-emotional functioning. Finally, disseminating *My BF* to the public will have far-reaching implications informing regional and statewide policies through the use of social media and published materials, establishing the legitimacy of *My BF*.

**APPENDIX A Example Lesson from My Body Feelings**

<p><b>Introduction to My Body Feelings</b></p>	<p>Lesson 1 <b>SEL competency:</b> Self-Awareness</p>
<p><b>Enduring Understanding</b>  <b>The brain and the body are interconnected.</b>  <b>Various sensations (butterflies, heat, jumpy) are indicators of a feeling state.</b>  <b>Essential Question</b>  <b>What do the sensations in our bodies tell us? How do you know what your body needs when you feel certain sensations?</b>  <b>Objectives</b>  <b>Students will be skilled at . . .</b>          Identifying the range of body sensations you feel every day. (What body sensations can you feel every day?)  <b>Students will know . . .</b>          A bodily sensation is a response to something learned by the brain. Begin to learn how your brain and body feel.          Body Warm-up Deep Breathing (Repeat 3 times)</p> <div data-bbox="305 1226 711 1381" data-label="Image"> </div> <p style="text-align: right;"><a href="http://clipart-library.com">clipart-library.com</a></p> <p>Take a deep breath in through your nose coming from the stomach, then blow out from your mouth like blowing out a candle or blowing bubbles from a wand.          Materials          Pre-assessment-Essential Question, Students fill out Body Feelings Questions, <i>Listening to My Body</i> book or video, Body Outline Sheet. Exit ticket.</p>	<p><b>Lesson/Activities</b>  <u>-Body Feelings Questions-</u>          have students fill this out first.          -Interoception introduction  <a href="#">What is interoception video</a>          -Go over different sensations that your body can feel.          -Talk about external senses or Exteroception          -Have students fill in Body Outline Sheet with at least 5 sensations they have felt.  <b>Evaluation</b>          Students can identify 2 body sensations they may feel. Exit ticket.  <b>Other Resources</b>  <b>Feelings Book</b>  <a href="#">Listening to My Body</a> by Gabi Garcia  <a href="#">Listening to My Body Activity Guide</a>  <b>Video</b>  <a href="#">Listening to My Body YouTube</a>  <a href="#">This is why you feel the way you feel</a></p>

## Interoception

**Interoception** is the “internal detection of changes in one’s internal organs through specific sensory receptors (to be aware of, e.g., hunger, thirst, digestion, state of alertness)” (AOTA, 2020).



### Exteroception:

Designed by [Freepix](#)



Smell



Hearing



Sight



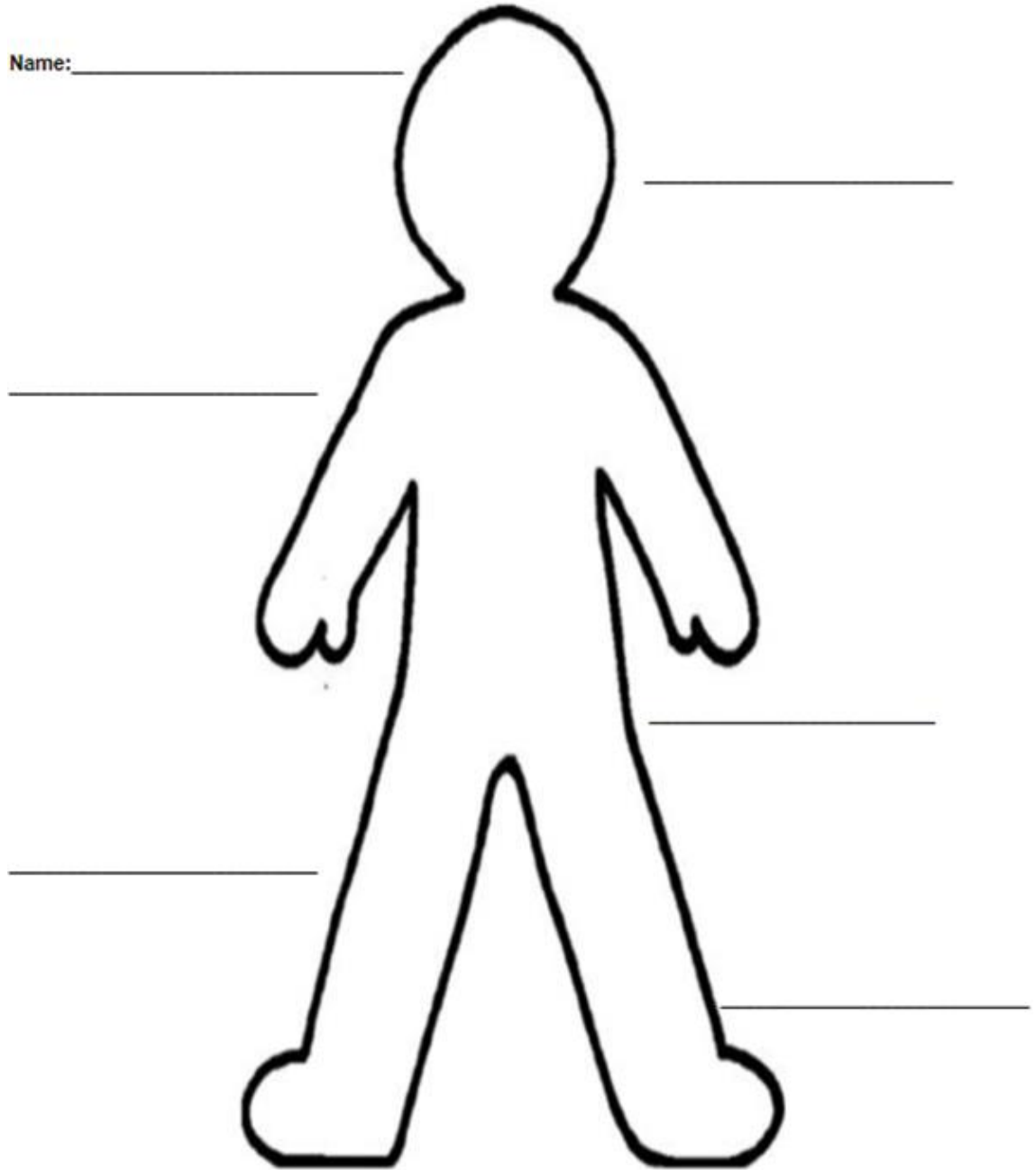
Taste



Touch

**Basic Sensations/Interoception:**

ants in my pants	lump in throat	tense
breathless	burning	relaxed
butterflies in your stomach	shaky	sick
calm	soft	jumpy
pounding	cool	pain
hungry	focused	tickle
clenched	wiggly	clammy
crummy	spacey	throbbing
dizzy	squirmy	dull
teary	squishy	shivering
fluttery	still	sore
strong	tingly	nauseous
full of energy	sweaty	bubbly
spacey	burning	radiating
chills	thirsty	buzzy
headache	tight	twitchy
tired	numb	light
stiff	dry	stretched
floppy	heavy	full
empty	itchy	jerky
flapping	loud	quiet



## EXIT TICKET

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Question: What are two sensations that your body may feel?

1) \_\_\_\_\_

2) \_\_\_\_\_

Rate your understanding of today's learning goal (Circle One):



I Understand



I Understand A Little



I Do Not Understand

### Teacher's Note Section

Check One Below:

-----Met Learning Goal

-----Progressing toward Goal

-----Did not meet Goal

Teacher Comments:

## APPENDIX B Summative Staff My Body Feelings Program Evaluation

4/14/2021

My Body Feelings Program Feedback

### My Body Feelings Program Feedback

I want to hear your thoughts or feedback on how I can improve My Body Feelings.

1. Were the lessons easy to understand?

*Mark only one oval.*

- Yes  
 No

2. Were the lessons engaging to students?

*Mark only one oval.*

- Yes  
 No

3. Did you find lessons helpful to decrease negative student behaviors?

*Mark only one oval.*

- Yes  
 No

4. What lessons were the most helpful?

---

5. What lessons were the most interesting?

---



## 6. What lesson strategies did you use most often in your classroom?

Check all that apply.

- Calming strategies
- Alerting strategies
- Problem focused coping
- Emotion focused coping
- Attentional strategies
- I feel...I can...
- Conflict management
- Body fizz
- Body Alarms
- Effective Listening
- Describing Feelings
- Body sensations/cues
- Intensity scales
- Setting Goals
- Self-assessment

## 7. What lesson strategies did students use most often in your classroom?

Check all that apply.

- Calming strategies
- Alerting strategies
- Problem focused coping
- Emotion focused coping
- Attentional strategies
- I feel...I can...
- Conflict management
- Body fizz
- Body Alarms
- Effective Listening
- Describing Feelings
- Body sensations/cues
- Intensity scales
- Setting Goals
- Self-assessment

8. What body cues/sensations were the students best able to identify?

*Mark only one oval.*

- butterflies
- breathless
- jumpy
- spacey
- lump in throat
- squirmy
- still
- thirsty
- tense
- heavy
- relaxed
- buzzy
- clenched
- tired
- pounding

9. What signs do you see from students that demonstrate more on-task learning?

---

10. How easy was it to understand the lessons?

*Mark only one oval.*

	1	2	3	4	5	
Confusing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Easy to understand

4/14/2021

My Body Feelings Program Feedback

11. What aspects of the program were less useful?

---

12. What other key issues or problems faced by participants were not addressed in the program?

---

---

---

---

---

13. Is the course delivery format suitable?

*Mark only one oval.*

- Yes  
 No  
 Maybe

14. Did participants gain perceived competence with regard to identifying body signs and connecting them to emotions?

*Mark only one oval.*

	1	2	3	4	5	
Not confident	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very confident

4/14/2021

My Body Feelings Program Feedback

15. Did your classroom environment improve due to the delivery of My Body Feelings?

*Mark only one oval.*

- Yes  
 No  
 Maybe

16. Suggestions for improvement

---

---

---

---

---

This content is neither created nor endorsed by Google.

Google Forms

**APPENDIX C Summative Student My Body Feelings Program Evaluation**

4/14/2021

My Body Feelings Program Feedback

## My Body Feelings Program Feedback

I want to hear your thoughts or feedback on how I can improve My Body Feelings.

\* Required

1. Were the lessons easy to understand?

*Mark only one oval.*

Yes

No

2. Were the lessons fun?

*Mark only one oval.*

Yes

No

Other: \_\_\_\_\_

## 3. What lesson strategies did you use most often?

Check all that apply.

- Calming strategies
- Alerting strategies
- Problem focused coping
- Emotion focused coping
- Attentional strategies
- I feel...I can...
- Conflict management
- Body fizz
- Body Alarms
- Effective Listening
- Describing Feelings
- Body sensations/cues
- Intensity scales
- Setting Goals
- Self-assessment

## 4. What lessons were the most helpful?

---

## 5. What lessons were the most interesting?

---

## 6. What body cues/sensations can you identify?

Mark only one oval.

- butterflies
- breathless
- jumpy
- spacey
- lump in throat
- squirmy
- still
- thirsty
- tense
- heavy
- relaxed
- buzzy
- clenched
- tired
- pounding

## 7. Are you more ready to learn?

Mark only one oval.

	1	2	3	4	5	
Somewhat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very



4/14/2021

My Body Feelings Program Feedback

8. How easy did you understand the lessons?

Mark only one oval.

	1	2	3	4	5	
Confusing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Easy to understand

9. What lessons were less useful? \*

---

10. Did you feel more confident in identifying body signs and connecting them to emotions?

Mark only one oval.

	1	2	3	4	5	
Not confident	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very confident

11. How do you find learning now?

Check all that apply.

- Easier  
 Same  
 No change

4/14/2021

My Body Feelings Program Feedback

12. Suggestions for improvement

---

---

---

---

---

13. Name

---

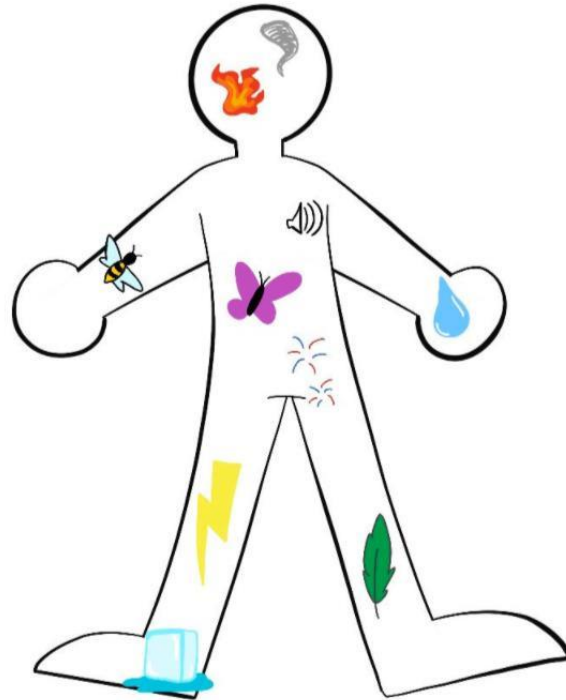
---

This content is neither created nor endorsed by Google.

Google Forms

APPENDIX D Program Manual

My Body Feelings (My BF)©



Linking Body Cues to Emotions for Elementary Age Children: A Understanding by Design Curriculum for Social-Emotional Learning

Alisa TeSelle, OTD



As part of the Health Promotion & Wellness OT 610  
Written by Alisa TeSelle, OT  
OTD Candidate at Boston University

January 2021

## **Purpose and Intended Audience**

### **Purpose**

*My Body Feelings (My BF)* Curriculum addresses the increase in young children at school dealing with anxiety and attention-related symptoms resulting in decreased emotional-regulation. This program will use Social-Emotional Learning (SEL) competencies with the Understanding by Design (UbD) Framework (McTighe & Wiggins, n.d.). First, in addressing decreased self-regulation using SEL, this targeted curriculum will be directed towards children first to fifth grade that will teach children awareness about their own biofeedback signals, contextual cues, and develop strategies to deal with these signals in order to decrease dysregulation within a school environment. The second part of this program will be to implement the curriculum by having teachers learn these new concepts of interoception in order to better instruct children to connect these biofeedback signals of their bodies to specific feelings, which is the first step of self-awareness. A key ingredient of the curriculum will give students a list of coping strategies to use when they are feeling worried, stressed, confused, or sad. Emotional regulation and self-awareness are important in mitigating frustration tolerance, stress reduction, and self-control. Emotional regulation and self-awareness lead to supportive learning environments, improved attitudes about school, self, and others which leads to improved social behavior and self-esteem (Corcoran et al., 2018; Pincus & Friedman, 2004).

### **Intended Audience**

This program is created by an occupational therapist and would initially be facilitated by an occupational therapist within classroom settings. This program does have the potential to be utilized by teachers, educational assistants, special education staff, speech and language therapists, occupational therapists, school adjustment counselors, school psychologists, behavioral analysts, private counselors, and parents or caregivers. *My Body Feelings* Curriculum can be used in elementary schools, private schools, clinics, and homes.

## **Health Promotion and Wellness Issue**

### **Social Assessment**

Seven teachers or special education teachers, within the Town of Franklin, MA who works in the Helen Keller Elementary School, completed a Google Form Survey.

**86% identified attention and anxiety behaviors impacting learning**

**57% identified the school environment as what causes negative behaviors**

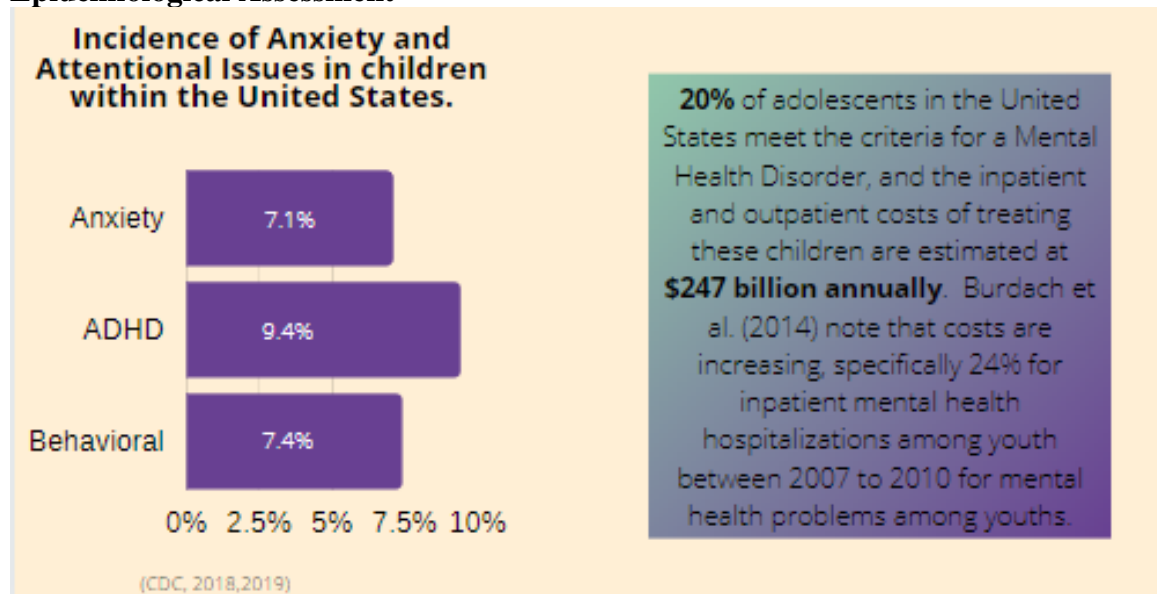
Teachers reported they have the following goals to address negative student behaviors that impact learning:

- To decrease the negative behaviors and increase positive behaviors.

- Getting more skilled at identifying the cause and function of behaviors. Teaching replacement behaviors.
- Focus more on the root of the issue.
- I would like to have strategies that work and support student learning.
- Having students aware of their behaviors and accepting of strategies that reduce behaviors.
- Get the student to a point where they are able to use strategies within the classroom to help them feel in control.

*“My goal is always for the students to be aware of how their behaviors impact their learning and how to use taught strategies and tools to be able to learn.”*

### Epidemiological Assessment



- Anxiety disorders are the most common childhood and adolescent psychiatric disorder (Bosquet & Egeland, 2006).
- Anxiety can impact a variety of areas in children including social acceptance, family functioning, cognitive perceptions, and quality of life, which might have impacts beyond the school-aged setting and persist into adulthood (Pella et al., 2017).
- Attention deficit disorder is also one of the most common childhood health disorders which results in academic underachievement (Frick et al., 1991).
- The presence of anxiety with Attention Deficit Hyperactivity Disorder occurs in approximately 30% of youth. Statistics from the Center for Disease Control and Prevention (2018) show an increase in ADHD diagnoses and a student’s ability to

function in the academic setting is negatively impacted by the presence of these two diseases and can impact cognitive functioning (Hammerness et al., 2010).

- Attention negatively impacts mental and physical health, and emotional regulation correlated with better mental and physical health.

Combined, there is an increased incidence of decreased emotional and self-regulation. The impacts of anxiety and decreased attention have larger ramifications for the classroom, as a child who exhibits deficits in this area, is prone to demonstrate more intense dysregulated behaviors that are more difficult to manage in the regular classroom environment. In young children, these health conditions can result in disruptive behaviors that impact a child’s ability to access the curriculum. In conclusion, these early childhood problem behaviors relating to anxiety and attentional problems, predicted lower academic outcomes, lower motivation, and attention connected to decreased self-regulation (Bulotsky-Shearer et al., 2011).

**Priority Group and Population**

The priority population would be children in grades 1-5. Since an inclusion classroom includes both typical students as well as students with different learning needs who may be on Individualized Education Programs, I would be providing primary and secondary prevention strategies. My program can be both group and population client levels. In working with classrooms (groups) and small groups of children more at-risk (also group), I will be able to impact the entire student body (population).

**Behavioral and Environmental Determinants**

<b>Behavioral</b>	<b>Environmental</b>
Children have increased use of technology which limits time to play, resulting in sleep deprivation, decreased exercise, and lack of positive coping behaviors. Lastly, our cultural attitude of instant gratification leads to decreased ability to wait and self-regulate.	<b>Home environment</b> -Educating families of the importance of having a calming place to be at home which could have an impact on some anxiety or attentional symptoms they observe in their children.
Parents have less knowledge of effective behavioral strategies to use with children.	<b>School environment</b> -More unpredictable and structured. More sensory issues such as noise, crowds, unpreferred activities, etc. cause stress. Within the school environment I would have posters in the hallways at the bathroom entrances and drinking fountains for brain breaks, (cognitive distractions such as mazes or hidden pictures) body breaks (planks, star-jumps, wall squats), and calming strategies (breathing, hook-ups) which would promote environmental influence.

**Recruitment of Population**

Within an inclusion classroom, there are typically about four students who have goals in the area of Self-Regulation and receive services from an occupational therapist. The classroom size is about 20 students with one classroom teacher and a special education teacher or educational assistant who provide services to students who are on an Individualized Education Program (IEP). This occupational therapist goes into the classroom once a week during a morning meeting time from 8:30 am to 9:00 am to provide a whole class lesson on different topics in the area of emotional regulation. This time is to provide occupational therapy inclusion services that were determined in their IEP's. During this time, one lesson of the curriculum would be delivered.

**Program Outcomes**

My overall purpose is to teach staff and students to notice body signs and learn different physiological calming strategies when they become dysregulated. In utilizing a curriculum that is based on teaching a hierarchical set of skills to address bodily sensations a) identifying sensations; b) labeling emotions using a diverse vocabulary; c) employing both problem and emotion-focused coping strategies; d) identifying emotional triggers; e) use of analogies in interventions to solidify learning; will fill the need for an evidence-based intervention to improve self-regulation and emotional well-being.

**Example Student Objectives:**

- Within a classroom setting, after twenty, 30-minute lessons connecting body cues to emotions, 90% of students will be able to identify the sensations they feel in their body (butterflies in stomach, change in heart rate or temperature, scattered thoughts) with a feeling state (frustrated, worried, angry) in 4 out of 5 opportunities.
- Within a classroom setting, after twenty, 30-minute lessons connecting body cues to emotions, 90% of students will begin to identify and name various triggers to their emotional state (frustration, anger, silly), and engage in a calming strategy when dysregulated, in 4 out of 5 opportunities.
- Within a classroom setting, after twenty, 30-minute lessons connecting body cues to emotions, 90% of students will demonstrate improved emotional control as evidenced by:
  - 1)improved on-task learning
  - 2)understanding of others' emotions
  - 3)utilization of coping strategies, in 4 out of 5 opportunities.

## **Guiding Theories**

### **Vygotsky's Sociocultural Learning Theory**

The sociocultural theory (Vygotsky, 1966/2016) addresses how adults and peers influence individual learning, but also how cultural beliefs and attitudes impact how instruction and learning take place in cultural contexts. A parent or caretaker implicitly plays a critical role in fostering a child's cognitive, emotional, and social development (Baker et al., 2012; Sanders et al., 2019). Berk et al. (2006) also state that self-regulation requires adult support to assist children in mastering fears and to help understand emotions. Emotional understanding and regulation are important components of early childhood development. In this early period of development, children begin to recognize and learn basic emotions such as anger, sadness, happiness, and fear (Kramar, 2014).

### **Bandura's Social Cognitive Theory**

The social cognitive theory also explains the problems associated with decreased self-regulation in children. In addition to the factors of observational learning through models (i.e., adults/teachers), Bandura's social cognitive theory (Bandura, 1977) includes self-efficacy and self-regulation as key factors that impact student learning (Schunk & Zimmerman, 2007). Self-efficacy "is a person's belief in his or her ability to succeed in a particular situation" (Cherry, 2019, p.1). Perceived self-efficacy can also influence a child's choice of activities and the setting in which they occur. If a child has a positive experience by practicing certain skills in order to achieve the desired grade, they will begin to engage in self-instruction, thus impacting how they feel about learning. If a child has a weak sense of self-efficacy, then they may avoid certain tasks, focus on their failings and negative outcomes, and lose confidence in their abilities. This negative cycle can lead to feelings of frustration, anxiety, and depression. Self-efficacy is gained by mastering experiences, through social modeling, and psychological responses (Cherry, 2019).

### **The Theory of Constructed Emotions**

This contemporary theory relates to the body's ability to maintain allostasis to balance, plan and execute the body's resources. Your brain is constantly regulating itself for optimal survival (Barrett, 2017b). As sensory information comes into the brain, this information is compared to past instances and categorized. When these sensations are categorized, the brain constructs meaning to these sensations and then guides actions and compared against past experiences of emotions to experience emotions or perceive that emotion (Barrett, 2017b). Thus, there is not one neural pathway for a specific emotion, but many. Body sensations can be categorized into an instance of emotion or to inform us if we are hungry, sick, hot, or to alert us of danger. Interoception is your "brain's



representation of all sensations from your internal organs and tissues, hormones, blood, and immune system” (Barrett, 2017a, p56). Interoception is the first step to emotional categorization (Barrett & Satpute, 2019). The brain constructs meaning by anticipating incoming sensations, and these sensations are categorized and compared against past experiences of emotions to guide action to experience emotions or perceive that emotion (Barrett, 2017b). Thus, there is not one neural pathway for a specific emotion, but many.

### Program Content

#### Role of Personnel

Personnel	Role
Occupational Therapist	Implement the program and train other staff. At the beginning of the school year, staff will be introduced to <i>My Body Feelings</i> Curriculum at a staff meeting. Through weekly classroom consults with teachers and special educators, school adjustment counselors, speech and language therapists, and behavior specialists, class issues will be brought up and this therapist will incorporate these examples into teachings.
Classroom teachers	Teachers are present in the room at the time the OT is giving the lesson so will learn content to carry over in class.
Educational Assistants	Educational Assistants are present in the room at the time the OT is giving the lesson so will learn content to carry over in class. Educational assistants can remind students of strategies and prompt students when needed.
Special Education Staff	Can use language and visuals from the program when teaching students.
Speech and Language therapists, school adjustment counselors, school psychologists, behavioral analysts, private counselors	Can use language and visuals from the program when working with students.
Parents/Caregivers	The therapist will have a website that will be shared with parents at the beginning of the year. Also, there is a curriculum night where a parent information brochure will be distributed. Each lesson has an Exit ticket of taught concepts to go home with children, each week.

#### Content

This program would be in the format of a book and online curriculum based on specific skill deficits in the area of self-regulation that are impacted by social-emotional factors (e.g., body cues of worry, frustration, and sadness). This curriculum would have 21 lessons and be carried out weekly in thirty-minute time intervals either at the beginning of the day, after recess, or at the end of the day. In addition, a mobile app or website to use with students at the moment within the classroom. This enables children to use taught skills and strategies within the context that problems occur.

<b>Week/ Topic</b>	<b>Content and Activities</b>	<b>Research to Support the Program</b>	<b>Applicable Theory Principle</b>
Lesson One Body Feelings	<b>Enduring Understanding (EU): The brain and the body are interconnected.</b>	Children learn to recognize and label emotions, id how emotions are expressed bodily (Loevaas et al., 2019).	Theory of Constructed Emotion (Barrett, 2017a,b).
Lesson Two Body Sensations	<b>EU: Sensations give us important information about our body and feelings.</b>	Children learn to recognize and label emotions, id how emotions are expressed bodily (Loevaas et al., 2019).	Theory of Constructed Emotion (Barrett, 2017a,b).
Lesson Three Feelings and Categories	<b>EU: There are ways we can give context to the feelings we experience.</b>	SEL based curriculum. Mood Meter four-quadrant colored grid with high/low energy levels and unpleasant/pleasantness feelings. Acronym= <b>R</b> ecognizing emotions in the self and others, <b>U</b> nderstanding the causes and consequences of emotions, <b>L</b> abeling emotions with a diverse vocabulary, <b>E</b> xpressing emotions constructively across contexts, and <b>R</b> egulating emotions effectively (Nathanson et al., 2016).	Theory of Constructed Emotion (Barrett, 2017a,b).
Lesson Four Intensity Scales	<b>EU: Bodily sensations can help us monitor our energy levels and feelings.</b>	SEL based curriculum. Mood Meter four-quadrant colored grid with high/low energy levels and unpleasant/pleasantness feelings (Nathanson et al., 2016).	Theory of Constructed Emotion (Barrett, 2017a,b).
Lesson Five Pleasant Feelings	<b>EU: Some sensations and emotions can be categorized as pleasant.</b>	Instruction on Unpleasant/pleasantness feelings (Nathanson et al., 2016).	Theory of Constructed Emotion (Barrett, 2017a,b).
Lesson Six Difficult Feelings	<b>EU: Some sensations and emotions can be categorized as difficult-which helps us to understand what others are feeling.</b>	Unpleasant/pleasantness feeling (Nathanson et al., 2016).  Anxiety-related symptoms resulting in decreased emotional regulation in children within a school (Augustyniak et al., 2009). Doing programs within a school provides a way to also address these students. 10 courses: Situational	Theory of Constructed Emotion (Barrett, 2017a,b).

		perception, anger control, moral reasoning, recruiting supportive models, stress management, problem-solving, cooperation, empathy, and understanding groups.	
Lesson Seven Describe My Feelings	<b>EU: When others can connect with how we are feeling, then they can better understand us.</b>	Cooperation, empathy, and understanding groups (Augustyniak et al., 2009).	Theory of Constructed Emotion (Barrett, 2017a,b).
Lesson Eight Effective Listening	<b>EU: When I effectively listen to others, they will feel understood and cared for.</b>	Groups are important as peer feedback is more impactful on behavior than from an individual. Also due to the influence of multiple viewpoints, the group experience may provide new perspectives on strategies for self-regulation and coping (Augustyniak et al., 2009).	
Lesson Nine Measuring the Moment	<b>EU: What is happening at the moment helps us know how we are feeling and why we are feeling that way.</b>	Children learn cognitive restructuring on interpreting a situation (Loevaas et al., 2019).	
Lesson Ten Body Alarms	<b>EU: There are different ways our body notifies us that we are worried, frustrated, angry, etc.</b>		Theory of Constructed Emotion (Barrett, 2017a,b).
Lesson Eleven Where is your Fizz?	<b>EU: When we notice and deal with our sensations and emotions then we can avoid exploding like a soda bottle. People respond to and resolve frustration in a variety of ways.</b>	Use of feeling check in, feelings thermometer, stepping back and using imagery (umbrella protecting them). Adult modeling to reinforce adaptive behaviors. Teachers reinforced adaptive behaviors when caught in the classroom (Wyman, et al., 2010).	Theory of Constructed Emotion (Barrett, 2017a,b).
Lesson Twelve Calming Strategies/ Control your Fizz.	<b>EU: Participating in calming strategies will help when you have too much energy.</b>	Anxiety related symptoms resulting in decreased emotional regulation in children within a school (Augustyniak et al., 2009).  Some examples of kernels include: timeout, verbal or written praise notes, mystery motivator, time-out, self-monitoring, non-verbal signal,	Theory of Constructed Emotion (Barrett, 2017a,b).

		and breathing techniques (Embry & Biglan, 2008).	
Lesson Thirteen Alerting Strategies	<b>EU: Participating in alerting strategies will help when you have low energy. (tired, bored, unfocused or)</b>	Some examples of kernels include: timeout, verbal or written praise notes, mystery motivator, time-out, self-monitoring, non-verbal signal, and breathing techniques (Embry & Biglan, 2008).	Theory of Constructed Emotion (Barrett, 2017a,b).
Lesson Fourteen Problem Focused Coping Strategies	<b>EU: There are different coping strategies we can use depending on the situation and one of these being a problem focused coping strategy which we use to alter the environment or find resources to deal with stress.</b>	Situational perception, anger control, moral reasoning, recruiting supportive models, stress management, problem solving, cooperation, empathy and understanding groups (Augustyniak et al., 2009).	Transactional Model of Stress & Coping (Lazarus & Folkman, 1984).
Lesson Fifteen Emotion Coping Strategies	<b>EU: There are different coping strategies that I can use depending on the situation, one of these being an emotion focused coping strategy which helps us to manage our emotions during difficult situations.</b>	Kernels can address behavioral and environmental factors and can provide reinforcing factors for change. Some examples include: timeout, verbal or written praise notes, mystery motivator, time-out, self-monitoring, non-verbal signal, and breathing techniques (Embry & Biglan, 2008).	Transactional Model of Stress & Coping (Lazarus & Folkman, 1984).
Lesson Sixteen Conflict Resolution	<b>EU: Conflicts occur but effective communication, cooperation and collaboration are critical for successful relationships.</b>	Anxiety related symptoms resulting in decreased emotional regulation in children within a school (Augustyniak et al., 2009). Situational perception, anger control, moral reasoning, recruiting supportive models, stress management, problem solving, cooperation, empathy and understanding groups.	Transactional Model of Stress & Coping (Lazarus & Folkman, 1984).
Lesson Seventeen I Feel...I Can...	<b>EU: People use strategies everyday to regulate themselves when their needs or wants are unmet, handle disappointments and failures, and work toward success.</b>		Transactional Model of Stress & Coping (Lazarus & Folkman, 1984).
Lesson Eighteen Attention, Attention!	<b>EU: Paying attention is key to effective learning and social skills.</b>	Anxiety related symptoms resulting in decreased emotional regulation in children within a school (Augustyniak et al., 2009). Groups are important as	

		peer feedback is more impactful on behavior than from an individual. Also due to the influence of multiple viewpoints, the group experience may provide new perspectives on strategies for self-regulation and coping. Second students who have more internal problems vs. externalized behaviors are missed for interventions.	
Lesson Nineteen Setting Goals	<b>EU: Developing and implementing a plan to reach realistic goals increases the likelihood of reaching those goals.</b>		
Lesson Twenty My Feelings Flipbook	<b>EU: I can use all that I have learned about sensations and feelings to help control my body and feelings.</b>	Timeout, verbal or written praise notes, mystery motivator, time-out, self-monitoring, non-verbal signal, and breathing techniques. (Embry & Biglan, 2008).	Transactional Model of Stress & Coping (Lazarus & Folkman, 1984).
Lesson Twenty-one How am I doing?	<b>EU: On-going self assessment and reflection are essential to defining and enhancing an individual's growth.</b>	Children learn to recognize and label emotions, id how emotions are expressed bodily, practice relaxation skills, think more positively, cognitive restructuring on interpreting a situation (Loevaas et al., 2019).	

**Key Ingredients**

- ❖ Based on the 5 CASEL (2020), Social and Emotional Learning competencies of self-awareness, self-management, social awareness, relationship skills, and responsible decision making.
- ❖ Developed from the most current neuroscience research, including the concept of interoception (sense of the physiological condition of our bodies that monitors our internal processes and sends status updates to the brain).
- ❖ Use of Understanding by Design Framework offers a three-stage backward design process for curriculum planning. UbD’s primary goal is teaching for understanding should be the assurance that students can use their acquired understandings and knowledge independently in real-world situations and scenarios. The UbD uses Enduring Understandings for big ideas that the students will know after the lesson or course. Essential Questions are questions that foster inquiry and understanding of learning and can be used as an assessment of knowledge (Bowen, 2017; McTighe & Wiggins, n.d.; McTighe & Associates Consulting, n.d.).
- ❖ Research-based kernels of interventions within a school setting. Important

components of kernels include that they are not lengthy or complex interventions, require no training or support, are cost-effective, easy to implement, have good generalization and ease of maintenance, and are evidence-based. These kernels cover a wide range of age and developmental ranges and can influence behavior in context.

- ❖ Transdiagnostic approach that targets common underlying mechanisms, and the interventions are flexible enough to target various symptom categories and disorders, and that they are based on a theory explaining diverse problems with one or several shared mechanisms.

### **Administrative Assessment**

#### **Resources, Facilitators, Policies**

##### ***Resources needed:***

- Printed curriculum, website, web-related app.
- Physical space=Classroom or common area.
- Computers for web application within the classroom. The school has Chrome book carts for classrooms.

##### ***Facilitators to program development or implementation:***

- The Franklin Public Schools (n.d.) is a supportive district that realizes the importance of SEL and has monthly competencies in this area and is a leader within the state of Massachusetts that other districts follow.
- Support from district SEL website and administrators.

##### ***Policies, regulations that influence or impact program development or implementation:***

- Statewide initiatives for Social and Emotional Learning. The Massachusetts Department of Elementary and Secondary Education (DESE),(DESE, 2019) has partnered with CASEL (The Collaboration for Academic, Social, Emotional Learning, 2019) to join the Collaborating States Initiative (CASEL, 2017), on Social and Emotional Learning (SEL).

### **Budget Factors**

#### **Payers**

In a public school, the district has a yearly budget that is funded by federal, state, and town taxes (See Table 1). The yearly school budget is developed by the administration and school committee who proposes the budget to the town. The school committee works closely with the town-wide joint budget committee. It is important to know that 76% of the proposed school budget goes to staff salaries (Franklin, n.d.a). Instead of a special education teacher who is paid around \$68,675/year to provide direct services to a

highly dysregulated student, with the implementation of *My Body Feelings Curriculum* and the web application, an educational assistant (who is paid about \$25,800/year) could be utilized instead. From the school district's perspective, financially, the program is beneficial as it will decrease the number of support staff needed and will allow teachers to spend more time on learning and less time on behavior management. In conclusion, this proposal could save the school budget \$41,277 within a year.

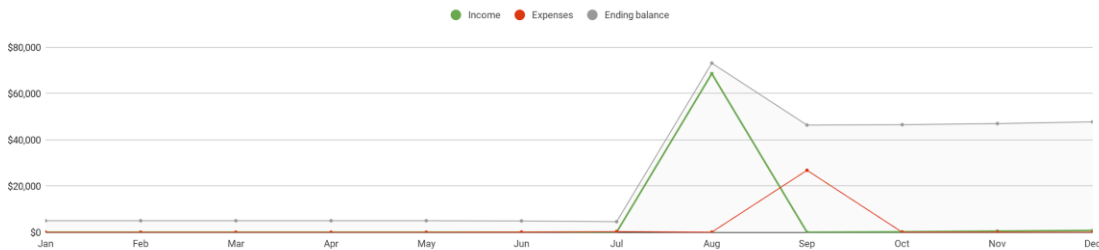
**Expenses**

Expenses		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Average
My Body Feelings Curriculum	Monthly totals:	\$0	\$0	\$0	\$0	\$0	\$56	\$21	\$21	\$1,000	\$0	\$0	\$0	\$1,098	\$92
	Publishing 100 books +25 free at \$8/book(48 hour books,									\$1,000				\$1,000	\$1,000
	Copyright (U.S. Copyright Office, n.d.)						\$35							\$35	\$35
	Design-3 month use (Adobe, 2020,b)						\$21	\$21	\$21					\$63	\$21
Website Design and Maintenance	Monthly totals:	\$0	\$0	\$0	\$0	\$0	\$35	\$302	\$27	\$27	\$6	\$6	\$6	\$409	\$34
	Website design (Adobe, 2020,a)							\$21	\$21	\$21				\$63	
	Copyright (U.S. Copyright Office, n.d.)						\$35							\$35	\$35
	Trademark (United States Patent and Trademark Office, 2020, February 15)							\$275						\$275	\$275
	Hosting including SSL and Domain (Hostinger, 2004-2020)							\$6	\$6	\$6	\$6	\$6	\$6	\$36	\$6
Cost of Services	Monthly totals:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$25,800	\$0	\$0	\$0	\$25,800	\$2,150
	Salary 1 Full time Educational Assistant(\$20/hr at 6 per day)									\$25,800				\$25,800	
														<b>\$28,814</b>	

**Income**

Income		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Average
Sales	Monthly totals:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$68,675	\$0	\$186	\$480	\$750	\$70,091	\$5,841
	Special Education Teacher								\$68,675					\$68,675	\$68,675
	Publish and sell My Body Feelings Curriculum to the public at \$40/each										\$80	\$160	\$320		
	Website extension or mobile app will be \$100/year for 50 students										\$100	\$300	\$400		
	Teachers Pay Teachers (n.d.) income with \$2 resources										\$6	\$20	\$30		
														<b>\$70,091</b>	

**Savings**



**Budget Summary**

The initial expenses include one-time expenses of designing and printing of the curriculum, copyright fees, trademark fees, web-design which totals \$3,406. One ongoing expense is website hosting and maintenance which is \$6/month or \$36/year. However, I will gain back these expenses by promoting the curriculum through posting

free and then low-cost materials on Teacher Pay Teachers (n.d.) or Boom Learning (2020). When the website is in full swing, web searches as well as posts on social media, familiarization with *My Body Feelings* Curriculum would increase, and I could start selling this curriculum online. The pricing of *My Body Feelings* Curriculum will be \$60 for a softcover bound curriculum book. The use of a website extension or mobile app will be \$100/year for 50 students.

### **Evaluation Plan**

#### **Qualitative and Quantitative Assessments**

- A one-page quantitative student checklist/screener which is modified from the Devereux Student Strengths Assessment-Mini Assessment 2 (DESSA-mini) (Aperture Education, 2020) to assess the areas of social-emotional competencies in the school environment.
  - This checklist would be used to identify areas of decreased emotional knowledge.
  - The checklist would also be used as a diagnostic tool in order to identify students who demonstrate lower emotional regulation. The checklist will be completed by the child at the beginning of the school year and then at the end of the school year in order to assess progress on SEL related skills as a summative assessment.
- A quantitative data collection tool (Multidimensional Assessment of Interoceptive Awareness Version 2 (MAIA-2). Mehling, W.E. (2018) through Google Forms.
  - This tool assesses the students' understanding of taught concepts of body cues to emotions, environmental context, and self-regulation strategies.
  - This is completed as formative and summative assessments.
  - This tool is utilized in order to monitor taught concepts and student responses to the SEL curriculum.
- A formative survey through Google Forms to assess teacher and student satisfaction of the program.

To begin evaluating my program, I would send the teachers a Google survey at three months after the initiation of the program. At the same time, I would send a Google survey to students to assess their thoughts and suggestions. As I have a quantitative data collection tool as well as a quantitative student screener (DESSA-mini), these surveys will provide me with qualitative results on how students are improving. Google Sheets would be used to analyze all data. After analyzing the components and effectiveness of *My Body Feelings* curriculum, I would revise any needed program content or method of delivery. Because Massachusetts state policies and regulations are supportive of SEL, this will enable sustainability of this program.



### Critical Review

#### Barriers and Challenges of Implementation

Initially, I foresee the building administration and school committee being a roadblock. In using any new program, this committee would have to show that benefits outway risks, which hopefully this proposal has shown. Second, I foresee teachers not supportive of another new program on top of the many demands they have. I would reiterate to teachers that initially an Occupational Therapist or other service providers could go in for 30 minutes during snack time or after recess to teach these lessons. Also, many of the activities incorporated into *My BF curriculum* were developed by teachers who already use them on a daily basis within the classroom. Newer research-based interventions are also incorporated into this curriculum for teachers to learn new concepts of interoception in order to better instruct children to connect these biofeedback signals of their bodies to specific feelings, which is the first step of self-awareness. Self-awareness would decrease episodes of disruptive behavior leading teachers to spend less time on behavior management and more time on teaching.

#### Strengths and Limitations of Evidence

In knowing these strengths and limitations, it is important to be mindful when developing a new program.

Strengths	Limitations
Augustyniak et al., (2009) had a treatment and control group. Those with the group intervention <i>The Prepare Curriculum</i> is typically imparted in schools. Lessons can be done in any order to address needs of participants	Group facilitators were professional psychologists or school adjustment counselors. Students had mostly externalizing problems so may not carry over to students with internalizing problems. Implementers of the program need to be knowledgeable in what strategies to use since it is more flexible
Understanding Kernels can contribute to the public health goal of decreasing the prevalence of problems and increasing wellbeing (Embry & Biglan, 2008).	It was questioned on how lasting the impact was of Kernels.
Loevaas et al., (2019) is a newer study that used mixed methods. This was used in 36 schools in Norway to provide a national sample. Implementation was in a natural school setting to provide ecological validity.	Results may not have been exclusively due to intervention since there were differences between intervention and control groups at baseline.
Looked at multiple studies using this program. Looked at over a 2-yr period in one study (Nathanson et al., 2016).	Lack of developmentally sequenced and performance-based evaluations of Emotional Intelligence skills.
Randomized controlled trial. Group intervention. Focused on children with behavioral, social emotional, or off-task behaviors and relevant to both internalizing and externalizing behavioral concerns.	Teacher expectation bias. Reliance on teacher ratings may miss internalizing symptoms.

<p>Children already exhibited symptoms. Hierarchical ordered set of skills.</p> <p>Provided opportunities for children to practice skills when upset (Wyman et al., 2010).</p>	
--	--

### **Conclusion**

To date, there is a lack of SEL curriculum within the American 1-5 school base that includes teaching children body cues and various coping strategies in connection with emotions within the context the emotion occurs. Emotional regulation and self-awareness are important in mitigating frustration tolerance, stress reduction, and self-control. The ability to control emotions leads to supportive learning environments, improved attitudes about school, self and others which leads to improved social behavior and self-esteem (Corcoran, Cheung, Kim & Xie, 2018; Pincus & Friedman, 2004). *My Body Feelings* Curriculum would fill this gap leading to improved emotional control and self-regulation within elementary-aged children by using proven evidence-based intervention methods. Using this curriculum within the school environment will enable children to adjust themselves in order to fit the demands of the situation and opportunities for teaching at the moment that the stressor occurs. The ability to generate multiple solutions, consider the consequences of potential solutions, and implement a solution is crucial for young children to develop effective coping strategies vs. maladaptive ones to ensure better psychosocial outcomes (Pincus & Friedman, 2004). *My Body Feeling* Curriculum will be the first of its kind to utilize both SEL competencies with the Understanding by Design Framework to promote brain-based learning and opportunities to apply their learning to new situations in the moment and receive timely feedback on their performance to help them improve regulating their emotions for improved health and well-being.

## **APPENDIX E Executive Summary**

### **Executive Summary**

In today's primary classrooms, students are struggling to stay focused and experience heightened feelings of anxiety due to the daily demands of the school environment. Meanwhile, teachers are struggling to find effective methods to reach these students. The increasing number of anxiety and attention deficit disorders in the United States is impacting children's ability to be self-regulated in the classroom (CDC, 2018; CDC, 2019; Hammerness et al., 2010). The critical act of self-regulation includes sensory processing, executive functioning, and emotional regulation (Kuypers, 2011) which impacts a child's ability to be self-aware, attend to the teacher, ignore other distractions, follow-multi-step directions, initiate work, remember previously learned information, and modulate behavior and emotions. Effective self-regulation results in improved classroom participation and social relationships requiring less teacher attention, thus leaving more time for teachers to teach the curriculum.

Many districts, states, and national organizations are employing social and emotional learning (SEL) programs within the public-school setting (CASEL, 2021) to combat these problems in elementary classrooms. Although there are many SEL programs available, there is a lack of disseminated research on curricula teaching children body cues, within the school environment. This void in curricula that specifically instructs children on a direct correlation between body cues and emotions is being addressed by current neuroscience studies of interoception which is "an internal sensory system in which the internal physical and emotional states of the body are noticed,

recognized/identified and responded to” (Government of South Australia, 2019, p. 16). Interoception is the origin of emotional intelligence and social-emotional skills. Children with well-developed interoception can use both logic and emotions to respond to their environment. Meanwhile, children deficient in interoception skills have to think through each situation which, over time, becomes extremely tiring and can contribute to overload, shutdown, meltdowns, anxiety, and depression.

This author's program will utilize evidence-based research to develop an SEL curriculum. This newly developed SEL curriculum will focus on incorporating specific activities aimed at incorporating body cues and connecting them to emotions. This connection will drive situation-specific coping skill development. The anticipated outcome is improved emotional health and well-being of today's elementary-aged children.

### **Program Overview**

*My Body Feelings (My BF)* is an educational curriculum developed to address decreased self-regulation in children grades 1-5 within a school setting. This curriculum is designed using current evidence-based research combining sociocultural theory with social cognitive theory to illustrate many of the contributing factors associated with decreased self-regulation in children. The theory of constructed emotions with understanding by design framework (UbD) (McTighe & Wiggins, n.d.; McTighe & Associates Consulting, n.d.) supports the foundation of an intervention program. This unique design begins with bodily self-awareness and uses brain-based learning to improve emotional understanding and self-regulation in elementary-aged children. Brain-

based learning supports executive functions which are responsible for attention, reasoning, judgment, flexible thinking and emotional self-regulation, and self-management. Thus, *My BF* curriculum enables children to build on previous knowledge in order to apply new learning to real-life situations using the understanding by design framework (McTighe & Willis, 2019) within. Each of the 21 lessons includes an Essential Question to foster inquiry and understanding of learning and can be used as an assessment of knowledge (Bowen, 2017; McTighe & Wiggins, n.d.; McTighe & Associates Consulting, n.d.). Lessons are tied to one of the five social and emotional learning competencies (CASEL, 2020), and are hierarchical in design, starting with an enduring understanding, followed by an essential question, and finishing with what the student will be skilled at and know after the lesson.

A body warm-up is then taught based on contemplative practices to improve attention and reduce stress. This involves a specific lesson with activities that connect body cues to emotions. A final exit ticket will provide caregivers with key lesson concepts to facilitate the carry-over of taught knowledge within the home setting. This innovative evidence-based project has the potential to be a cost-effective, easy to implement, and impactful program, improving the quality of social-emotional functioning.

#### **Causes Contributing to Decreased Self-regulation in Children**

The literature was reviewed to prove or disprove hypothesized factors that contribute to decreased self-regulation. Overall findings supported that instant gratification in American society, lack of parent knowledge regarding childhood

development, and lack of knowledge of body cues all impact children's self-regulation capabilities.

Research revealed a relationship between children's self-regulatory skills which include emotional regulation, delay of gratification, or inhibitory control (Baker et al., 2019). Instant gratification is being precipitated from a growth in mobile devices and technology, often used by parents to keep their children 'entertained' (Radesky, et al., 2016), leading to changes in a child's behavior, attention, play, somatic symptoms, and social-emotional functioning (Baker et. al., 2019; Hosokawa, 2018; Rosen et al., 2014). Furthermore, time spent on media can reduce the time children spend in physical play which is critical for social success (Bundy, et al., 2017; Lindsey & Colwell, 2013), and cognitive abilities (Sattelmair & Ratey, 2009). The positive benefits of technology, including supporting academics, visual-spatial skills, and promoting socialization (Chen & Chiu, 2016; Jackson et al., 2011; O'Keeffe & Clarke-Pearson, 2011; Smith, 1999) need to be balanced with the potential for harm. Most parents are not aware of the studies or the current research that connects emotional self-regulation to anxiety and attentional issues, so they are not aware that these factors can impact their children. Some key findings or influences on self-regulation include parent's self-regulatory skills, child-parent interactions, and parenting practices (Baker et al., 2019; Morawska et. al., 2019; Sanders et. al, 2019). Parents would benefit from knowing the parenting practices most suited to their children's stage of development to be aware of any deficits (Sanders et al., 2019). A lack of consensus remains regarding research pointing to specific body cues to identify certain emotions, so there is a need to educate the public on variations and

certain potential biases (Aviezer et al., 2012; Kret & DeGelder, 2010; Kret et al., 2013; Stock et al., 2007). This will be equally important when looking at an intervention to teach children body cues connection to self-regulation. Education on cultural awareness, differing perceptions, as well as specific instruction on variations of body cues connected to emotions is needed to make progress in the area of interoceptive instruction.

### **Evidence-based Solutions**

An extensive literature review was conducted to both explore factors contributing to challenges in self-regulation and to explore effective school-based interventions. The findings support solutions to the problem of decreased self-regulation and include improvements in the following areas: self-awareness of arousal states, self-efficacy and participation in daily skills, executive functioning skills, emotional regulation, friendship skills, academic success, use of varied coping skills, and reduction of anxiety symptoms. These improvements were found following evidence-based intervention components. Key features of programs included identifying body sensations, labeling emotions, identifying emotional triggers, and employing coping strategies at the moment the dysregulation occurs, as well as including peer feedback (Augustyniak et al., 2009; Loevaas et al., 2019; Malboeuf-Hurtubise, et al., 2017; Nathanson et al., 2016; Pincus & Friedman, 2004; Webster-Stratton & Reid, 2003, 2004; Wyman et al., 2010). The use of analogies was also incorporated into many interventions. (Nathanson et al., 2016; Webster-Stratton & Reid, 2003; 2004). These analogy-based techniques help support brain-based learning (Willis, 2009) and mind, brain, and education science (MBE) (Abdurachmanov, 2017). Pincus and Friedman (2004) found emotion-focused strategies

and cognitive distractions were important to use with children to promote self-efficacy and to provide a variety of coping strategies. Webster-Stratton & Reid (2003; 2004) used evidence-based kernels that are adaptable to each cultural context for children with varying developmental abilities based on ongoing dialogue and collaboration between participants and leaders to effectively impact self-regulation. Another important program component included it being transdiagnostic to reach a diverse patient population in varied diagnostic categories. Additionally, adding a home-based component including parental involvement or home practice will help with carry-over and consistency across settings (Essau et al., 2019; Hahn-Markowitz, et al., 2017; Loevaas et al., 2019; McNally et al., 2013). Finally, using contemplative practices such as meditation, yoga, and participating in repetitive engaging and relaxing activities mediate executive functioning, behavior control, and academic well-being (Shapiro et al., 2015). Taken together, these evidence-based intervention components are important for recognizing emotions in self and others, understanding the causes and consequences of emotions, labeling emotions with diverse vocabulary, expressing emotions across contexts, and regulating emotions effectively which impact SEL programs. All these effective, evidence-based intervention components have been included in *My BF* curriculum.

### **Recommendations and Conclusions**

Overall, it is imperative that moving forward, intervention programs that include direct instruction on body sensations be incorporated to extend research on current interoceptive studies. Occupational therapy practitioners are experts at promoting self-regulation and identifying sensory dysregulation when it occurs. School-based occupational therapists are in a unique position to impact a challenge facing students



today. In teaching children to become aware of their internal body senses, that child's health and well-being will be positively impacted. This curriculum is based on teaching a hierarchical set of skills to address bodily sensations and will fill the need for an evidence-based intervention to improve self-regulation and emotional well-being. In doing so, this curriculum answers an imperative that SEL intervention includes evidence-based instruction on body sensations based on the extensive research which indicates that interoception is the origin of emotion.

*My BF* is implemented in a 30-minute weekly lesson over a 21-week time frame. These 21 lessons aim to increase social and emotional competencies as well as interoceptive awareness among children in grades 1–5 within a public-school setting. This unique curriculum is the first known SEL intervention to combine the Theory of Constructed Emotions (Barrett, 2017), the Understanding by Design Framework (Bowen, 2017; McTighe & Wiggins, n.d.; McTighe & Associates Consulting, n.d.), and evidence-based intervention. Furthermore, this program is developed by an occupational therapist, who recognizes the impact on health management, education, play, and social participation which occur in the areas of occupation (AOTA, 2020). *My BF* will be widely available for use by any interested person.

### References

- Abdurachmanov, B. (2017, June 28). *MBE resource page*. The Learning Mind.  
<http://thelearningmind.com/mbe-resource-page>
- American Occupational Therapy Association. (2020). Occupational therapy practice framework: Domain and process (4th ed.). *American Journal of Occupational Therapy*, 74(2), 1-87. <https://doi.org/10.5014/ajot.2020.74S2001>
- Augustyniak, K. M., Brooks, M., Rinaldo, V. J., Bogner, R., & Hodges, S. (2009). Emotional regulation: Considerations for school-based group interventions. *The Journal for Specialists in Group Work*, 34(4), 326-350.  
 doi:10.1080/01933920903219060
- Aviezer, H., Trope, Y., & Todorov, A. (2012). Body cues, not facial expressions, discriminate between intense positive and negative emotions. *Science* 338(6111), 1225-1229. <https://www.jstor.org/stable/41704094>
- Baker, S., Morawska, A., & Mitchell, A. (2019). Promoting children's healthy habits through self-regulation via parenting. *Clinical Child and Family Psychology Review*, 22(1), 52-62. doi:10.1007/s10567-019-00280-6
- Barrett, L. F. (2017). The theory of constructed emotion: an active inference account of interoception and categorization. *Social Cognitive and Affective Neuroscience*, 12(1), 1-23. doi: 10.1093//scan/nsw154
- Bowen, Ryan S., (2017). *Understanding by Design*. Vanderbilt University Center for Teaching. <https://cft.vanderbilt.edu/guides-sub-pages/understanding-by-design/>

Bundy, A., Engelen, L., M., Wyver, S., Tranter, P., Ragen, J., Bauman, A., Baur, L., Schiller, W., Simpson, J. M., Niehues, A. N., Perry, N., Jessup, G., & Naughton, G. (2017). Sydney playground project: A cluster-randomized trial to increase physical activity, play, and social skills. *The Journal of School Health.*, 87(10), 751-759. CASEL (2021). *Collaborating States Initiative*.

<https://casel.org/collaborative-state-initiative/>

Center for Disease Control and Prevention. (2018). Attention-deficit/hyperactivity disorder (ADHD). Data and statistics about ADHD.

<https://www.cdc.gov/ncbddd/adhd/data.html>

Center for Disease Control and Prevention (CDC). (2019). Data and statistics on children's mental health. <https://www.cdc.gov/childrensmentalhealth/data.html>

Chen, C., & Chiu, C. (2016). Employing intergroup competition in multitouch design-based learning to foster student engagement, learning, achievement, and creativity. *Computers & Education*, 103, 99-113.

doi:10.1016/j.compedu.2016.09.007

Collaborative for Academic, Social, and Emotional Learning (CASEL). (2020). *Core SEL competencies*. <http://www.casel.org/core-competencies/>

Embry, D., & Biglan, D. (2008). Evidence-based kernels: Fundamental units of behavioral influence. *Clinical Child and Family Psychology Review*, 11(3), 75-113. doi:10.1007/s10567-008-0036-x

Essau, C., Sasagawa, S., Jones, G., Fernandes, B., & Ollendick, T. (2019). Evaluating the real-world effectiveness of a cognitive behavior therapy-based transdiagnostic

program for emotional problems in children in a regular school setting. *Journal of Affective Disorders*, 253, 357-365. <https://doi-org.ezproxy.bu.edu/10.1016/j.jad.2019.04.036>

Government of South Australia. Department of Education (2019). *Ready to learn:*

*Interoceptive kit*. Government of South Australia.

<https://www.education.sa.gov.au/sites/default/files/ready-to-learn-interoception-kit.pdf>

Hahn-Markowitz, J., Berger, I., Manor, I., & Maeir, A. (2017). Impact of the cognitive-functional (Cog-Fun) intervention on executive functions and participation among children with attention deficit hyperactivity disorder: A randomized controlled trial. *The American Journal of Occupational Therapy*, 71(5), 1-9.

doi:10.5014/ajot.2017.022053

Hammerness, P., Geller, D., Petty, C., Lamb, A., Bristol, E., & Biederman, J. (2010).

Does ADHD moderate the manifestation of anxiety disorders in children?

*European Child & Adolescent Psychiatry*, 19(2), 107-12. doi:10.1007/s00787-009-0041-8

Hosokawa, R. (2018). Association between mobile technology use and child adjustment in early elementary school age. *PLoS One*, 13(7), e0199959.

doi:10.1371/journal.pone.0199959

Jackson, L. A., Von Eye, A., Witt, E. A., Zhao, Y., & Fitzgerald, H. E. (2011). A longitudinal study of the effects of internet use and videogame playing on academic performance and the roles of gender, race and income in these

relationships. *Computers in Human Behavior*, 27(1), 228-239.

doi:10.1016/j.chb.2010.08.001

Kret, M. E., Stekelenburg, J. J., Roelofs, K., & De Gelder, B. (2013). Perception of face and body expressions using electromyography, pupillometry and gaze measures.

*Frontiers in Psychology*, 4, 28. doi:10.3389/fpsyg.2013.00028

Kret, M. E., & Gelder, B. (2010). Social context influences recognition of bodily expressions. *Experimental Brain Research*, 203(1), 169-180. doi:10.1007/s00221-010-2220-8

Kuypers, L. M. (2011). *The zones of regulation: A curriculum designed to foster self-regulation and emotional control*. Think Social Publishing.

Lindsey, E. W., & Colwell, M. J. (2013). Pretend and physical play: Links to preschoolers' affective social competence. *Merrill-Palmer Quarterly: Journal of Developmental Psychology*, 59(3), 330-360.

<http://dx.doi.org.ezproxy.bu.edu/10.1353/mpq.2013.0015>

Loevaas, M. E., Sund, A. M., Lydersen, S., Neumer, S. P., Martinsen, K., Holen, S.,

Patras, J., Adolfsen, F., & Reinfjell, T. (2019). Does the transdiagnostic

EMOTION intervention improve emotion regulation skills in children? *Journal of Child and Family Studies*, 28(3), 805-813. doi:10.1007/s10826-018-01324-1

McNally Keehn, R., Lincoln, A., Brown, M., & Chavira, D. (2013). The coping cat program for children with anxiety and autism spectrum disorder: A pilot

randomized controlled trial. *Journal of Autism and Developmental Disorders*,

43(1), 57-67. <http://dx.doi.org.ezproxy.bu.edu/10.1007/s10803-012-1541-9>

McTighe & Associates Consulting (MAC). (n.d.). *Resources*.

<https://jaymctighe.com/resources/>

McTighe, J. & Wiggins, G. (n.d.). *Understanding by design framework*. ASCD.

[https://www.ascd.org/AS.CD/pdf/siteASCD/publications/UbD\\_WhitePaper0312.pdf](https://www.ascd.org/AS.CD/pdf/siteASCD/publications/UbD_WhitePaper0312.pdf)

McTighe, J., & Willis, J. (2019). *Upgrade your teaching: Understanding by design meets neuroscience*. ASCD.

Malboeuf-Hurtubise, C., Lacourse, E., Taylor, G., Joussemet, M., & Ben Amor, L.

(2017). A mindfulness-based intervention pilot feasibility study for elementary school students with severe learning difficulties: Effects on internalized and externalized symptoms from an emotional regulation perspective. *Journal of Evidence-Based Complementary & Alternative Medicine*, 22(3), 473-481.

<https://doi-org.ezproxy.bu.edu/10.1177%2F2156587216683886>

Morawska, A., Dittman, C., & Rusby, J. (2019). Promoting self-regulation in young children: The role of parenting interventions. *Clinical Child and Family Psychology Review*, 22(1), 43-51. doi:10.1007/s10567-019-00281-5

Nathanson, L., Rivers, S., Flynn, L., & Brackett, M. (2016). Creating emotionally intelligent schools with RULER. *Emotion Review*, 8(4), 305-310.

<https://doi.org/10.1177/1754073916650495>

O'Keeffe, G. S., & Clarke-Pearson, K. (2011). The impact of social media on children, adolescents, and families. *Pediatrics*, 127(4), 800. doi:10.1542/peds.2011-0054

- Pincus, D. B., & Friedman, A. G. (2004). Improving children's coping with everyday stress: Transporting treatment interventions to the school settings. *Clinical Child and Family Psychology Review*, 7(4), 223-240. doi:10.1007/s10567-004-6087-8
- Radesky, J. S., Peacock-Chambers, E., Zuckerman, B., & Silverstein, M. (2016). Use of mobile technology to calm upset children: Associations with social-emotional development. *JAMA Pediatrics*, 170(4), 397.  
doi:10.1001/jamapediatrics.2015.4260
- Rosen, L. D., Lim, A. F., Felt, J., Carrier, L. M., Cheever, N. A., Lara-Ruiz, J. M., Mendoza, J. S. & Rökkum, J. (2014). Media and technology use predicts ill-being among children, preteens and teenagers independent of the negative health impacts of exercise and eating habits. *Computers in Human Behavior*, 35, 364-375. doi:10.1016/j.chb.2014.01.036
- Sanders, M., Turner, R., & Metzler, K. (2019). Applying self-regulation principles in the delivery of parenting interventions. *Clinical Child and Family Psychology Review*, 22(1), 24-42.
- Sattelmair, J., & Ratey, J. J. (2009). Physically active play and cognition: An academic matter? *American Journal of Play*, 1(3), 365-374.
- Shapiro, S., Lyons, K., Miller, R., Butler, B., Vieten, C., & Zelazo, P. (2015). Contemplation in the classroom: A new direction for improving childhood education. *Educational Psychology Review*, 27(1), 1-30. doi:10.1007/s10648-014-9265-3

- Smith, C. A. (1999). Family life pathfinders on the new electronic frontier. *Family Relations*, 48(1), 31-34. doi:10.2307/585679
- Stock, J. V. D., Righart, R., & De Gelder, B. (2007). Body expressions influence recognition of emotions in the face and voice. *Emotion*, 7(3), 487-494. doi:10.1037/1528-3542.7.3.487
- Webster-Stratton, C., & Reid, M. J. (2003). Treating conduct problems and strengthening social and emotional competence in young children: The dina dinosaur treatment program. *Journal of Emotional and Behavioral Disorders*, 11(3), 130-143. doi:10.1177/10634266030110030101
- Webster-Stratton, C., & Reid, M. J. (2004). Strengthening social and emotional competence in young children—The foundation for early school readiness and success incredible years classroom social skills and problem-solving curriculum. *Infants and Young Children*. 17(2), 96-113. <https://doi.org/10.1097/00001163-200404000-00002>
- Willis, J. (2009). What you should know about your brain. *Educational Leadership*, 67(4), 1-3.
- Wyman, P. A., Cross, W., Brown, C. H., Yu, Q., Tu, X., & Eberly, S. (2010). Intervention to strengthen emotional self-regulation in children with emerging mental health problems: Proximal impact on school behavior. *Journal of Abnormal Child Psychology*, 38(5), 707-720. doi:10.1007/s10802-010-9398-x



## APPENDIX F Fact Sheet



### Linking Body Cues to Emotions for Elementary Age Children: An Understanding by Design Curriculum for Social-Emotional Learning

Alisa TeSelle, OT  
OTD Candidate

#### *Introduction to the problem*

- The increasing number of anxiety and attention deficit disorders in the United States is impacting children's ability to be regulated in the classroom (CDC, 2019; Hammerness et al., 2010).
- Impaired self-regulation impacts a child's ability to be self-aware, attend to the teacher, ignore other distractions, follow-multi-step directions, initiate work, remember previously learned information, and modulate behavior and emotions.
- There is a void within school-based interventions linking body cues to emotions as these body cues are the first signs to inform action and emotional responses. These interoceptive based intervention components impact attention and anxiety symptoms, improving overall regulation capabilities, and social-emotional health.

#### *Introduction to the Solution: My Body Feelings (My BF) curriculum*



#### **Evidence-based Program Components**

*My Body Feelings (My BF)* is an educational, social-emotional curriculum that directly addresses decreased self-regulation in children. The skills developed in the program will drive situation-specific coping skill development in children in grade levels 1-5. The anticipated outcome is improved emotional health and well-being of today's elementary-aged children impacting their important occupational role as students.

- An occupational therapist provides a 30-minute whole class lesson, once a week for 21 weeks
- Curriculum teaches a hierarchical set of skills identifying and labeling body sensations
- Other lessons include: effective listening, conflict management, attention strategies, goal-setting, and self-reflection
- Take home Exit Tickets to increase parental knowledge and carry-over of taught concepts
- Uses two standardized measures of program outcomes as well as mixed method teacher and student surveys to monitor program effectiveness
  - 1) Multidimensional Assessment of Interoceptive Awareness Version 2 (MAIA-2) measuring interoceptive awareness
  - 2) Devereux Student Strengths Assessment-Mini Assessment 2 (DESSA-mini) measuring social-emotional competencies

### Theory and Evidence-Base



(Barrett, 2017; Bodrova et al., 2013; Cherry, 2019)

- Uses a Transdiagnostic approach that targets common underlying mechanisms, is flexible enough to target various symptom categories and disorders
- Lessons are organized as well as structured for the instructor using the Understanding by Design Framework
- Teaches children to connect body sensations to feelings
- Uses both emotion and problem-focused coping strategies
- Uses contemplative practices to mediate executive functioning and behavior control
- Analogies and visuals to support mind, brain, and education science (MBE)
- Includes evidence-based kernels that are easy for teachers to incorporate into daily practice

(Abdurachmanov, 2017; Embry & Biglan, 2008; Essau et al., 2019; Loevaas et al., 2019; McTighe & Willis, 2019; Pincus & Friedman, 2004; Shapiro et al., 2015; Webster-Stratton & Reid, 2004)

### Impact on Occupational Therapy Practice

This program is developed by an occupational therapist. Occupational therapy practitioners are well equipped at promoting self-regulation, identifying sensory dysregulation when it occurs, and providing interoceptive interventions with children. In the *American Occupational Therapy practice framework: Domain and process (4th ed.)* (AOTA, 2020), interoception was added to the client factors category of body functions, under sensory functions. *My BF* starts with the body first. Having children become educated and aware of their internal body senses, will positively impact self-regulation, resulting in improved classroom participation, social relationships, and health outcomes.



### References

- Barrett, L. F. (2017). The theory of constructed emotion: an active inference account of interoception and categorization. *Social Cognitive and Affective Neuroscience*, 12(1), 1-23. doi: 10.1093/scan/nsw154
- Bodrova, E., Germeroth, C., & Leong, D. J. (2013). Play and self-regulation: Lessons from Vygotsky. *American Journal of Play*, 6(1), 111-123.
- Center for Disease Control and Prevention (CDC). (2019). Data and statistics on children's mental health. <https://www.cdc.gov/childrensmentalhealth/data.html>
- Embry, D., & Biglan, D. (2008). Evidence-based kernels: Fundamental units of behavioral influence. *Clinical Child and Family Psychology Review*, 11(3), 75-113. doi:10.1007/s10567-008-0036-x
- Essau, C., Sasagawa, S., Jones, G., Fernandes, B., & Ollendick, T. (2019). Evaluating the real-world effectiveness of a cognitive behavior therapy-based transdiagnostic program for emotional problems in children in a regular school setting. *Journal of Affective Disorders*, 253, 357-365. <https://doi-org.ezproxy.bu.edu/10.1016/j.jad.2019.04.036>
- McTighe, J., & Willis, J. (2019). *Upgrade your teaching: Understanding by design meets neuroscience*. ASCD.

For more information Visit [mybodyfeelings.com](http://mybodyfeelings.com)

### References

- Abdurachmanov, B. (2017, June 28). *MBE resource page*. The Learning Mind.  
<http://thelearningmind.com/mbe-resource-page>
- ADVANCE for Occupational Therapy Practitioners (n.d.). *Home* [Facebook page].  
 Facebook. Retrieved February 11, 2021 from  
<https://www.facebook.com/ADVANCEforOTs/>
- Advancing Health Equity: ETR. (2019). *HealthSmart*. <https://www.etr.org/healthsmart/>
- Alsop, R. (2014, July 17). Instant gratification and its dark side. *Bucknell University Magazine*. <https://www.bucknell.edu/about-bucknell/communications/bucknell-magazine/recent-issues/summer-2014/instant-gratification-and-its-dark-side>
- American Occupational Therapy Association (2014). Occupational Therapy Practice Framework: Domain and Process (3rd ed.). *American Journal of Occupational Therapy*, 68 (Supplement 1), S1-S48.
- American Occupational Therapy Association. (2021). *School-based practice*. AOTA  
<https://www.aota.org/Practice/Children-Youth/School-based.aspx>
- American Occupational Therapy Association. (2020). Occupational therapy practice framework: Domain and process (4th ed.). *American Journal of Occupational Therapy*, 74(2), 1-87. <https://doi.org/10.5014/ajot.2020.74S2001>
- American Academy of Pediatrics (2016). Media and young minds: Council on communications and media. *Pediatrics*, 138(5) doi:10.1542/peds.2016-2591

American Academy of Pediatrics (2020). *Media and Communications Toolkit*.

<https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/Pages/Media-and-Children.aspx>

Andrade, B. F., Browne, D. T., & Naber, A. R. (2015). Parenting skills and parent readiness for treatment are associated with child disruptive behavior and parent participation in treatment. *Behavior Therapy, 46*(3), 365-378.

doi:10.1016/j.beth.2015.01.004

Anxiety and Depression Association of America (ADAA). 2010-2018. Facts and statistics. Retrieved March 15, 2019, from <https://adaa.org/about-adaa/press-room/facts-statistics>

Anxiety Disorders Association of America. (2010-2020). *Anxiety Disorders in Children*.

<https://adaa.org/sites/default/files/Anxiety%20Disorders%20in%20Children.pdf>

Aperture Education. (2020). *DESSA-mini: Social and emotional development assessment*.

Aperture Education, LLC. <https://apertureed.com/dessa-overview/the-dessa-mini/>

Augustyniak, K. M., Brooks, M., Rinaldo, V. J., Bogner, R., & Hodges, S. (2009).

Emotional regulation: Considerations for school-based group interventions. *The Journal for Specialists in Group Work, 34*(4), 326-350.

doi:10.1080/01933920903219060

Aviezer, H., Trope, Y., & Todorov, A. (2012). Body cues, not facial expressions, discriminate between intense positive and negative emotions. *Science 338*(6111),

1225-1229. <https://www.jstor.org/stable/41704094>

- Bailey, R., & Jones, S. M. (2019). An integrated model of regulation for applied settings. *Clinical Child and Family Psychology Review*, 22(1), 2-23.  
<http://dx.doi.org.ezproxy.bu.edu/10.1007/s10567-019-00288-y>
- Baker, C. N., & Hoerger, M. (2012). Parental child-rearing strategies influence self-regulation, socio-emotional adjustment, and psychopathology in early adulthood: Evidence from a retrospective cohort study. *Personality and Individual Differences*, 52(7), 800-805. doi:10.1016/j.paid.2011.12.034
- Baker, S., Morawska, A., & Mitchell, A. (2019). Promoting children's healthy habits through self-regulation via parenting. *Clinical Child and Family Psychology Review*, 22(1), 52-62. doi:10.1007/s10567-019-00280-6
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191-215. doi:10.1037/0033-295X.84.2.191
- Barnes, K., Vogel, K., Beck, A., Schoenfeld, H., & Owen, S. (2008). Self-regulation strategies of children with emotional disturbance. *Physical & Occupational Therapy in Pediatrics*, 28(4), 369-387. doi: 10.1080/01942630802307127
- Barrett, L. F. (2017a). *How emotions are made: The secret life of the brain*. Houghton Mifflin Harcourt.
- Barrett, L. F. (2017b). The theory of constructed emotion: an active inference account of interoception and categorization. *Social Cognitive and Affective Neuroscience*, 12(1), 1-23. doi: 10.1093//scan/nsw154

- Barrett, L. F., & Satpute, A. B. (2019). Historical pitfalls and new directions in the neuroscience of emotion. *Neuroscience Letters*, *693*, 9–18.  
<https://doi.org/10.1016/j.neulet.2017.07.045>
- Barshay, J. (2019, March 4). A cheaper, quicker approach to social-emotional learning? *The Hechinger Report*. <https://hechingerreport.org/a-cheaper-quicker-approach-to-social-emotional-learning/>
- Bazyk, S. (2011). *Mental health promotion, prevention, and intervention with children and youth: A guiding framework for occupational therapy*. AOTA Press.
- Berk, L. E., Mann, T. D., & Ogan, A. T. (2006). *Make-believe play: Wellspring for development of self-regulation*. Oxford University Press.  
[doi:oso/9780195304381.003.0005](https://doi.org/10.1016/09780195304381.003.0005)
- Bijlstra, G., Holland, R. W., Dotsch, R., & Wigboldus, D. H. J. (2018). Stereotypes and prejudice affect the recognition of emotional body postures. *Emotion*, *19*(2), 189-199. <http://dx.doi.org/10.1037/emo0000438>
- Block, J. (2002). *Personality as an affect-processing system toward an integrative theory*. Mahwah: Taylor & Francis Group.
- Bodrova, E., Germeroth, C., & Leong, D. J. (2013). Play and self-regulation: Lessons from Vygotsky. *American Journal of Play*, *6*(1), 111-123.
- Boom Learning. (2020). *Boom Cards*. <https://wow.boomlearning.com/>
- Bosquet, M., & Egeland, B. (2006). The development and maintenance of anxiety symptoms from infancy through adolescence in a longitudinal sample. *Development and Psychopathology*, *18*(2), 517. [doi:10.1017/S0954579406060275](https://doi.org/10.1017/S0954579406060275)

Boston University Wheelock College of Education & Human Development (n.d.).

*Educator Learning Grants Program: 2020-2021 Call for Proposals.*

<https://www.bu.edu/wheelock/research-action/join-the-consortium/grants/>

Bowen, Ryan S., (2017). *Understanding by Design*. Vanderbilt University Center for Teaching. <https://cft.vanderbilt.edu/guides-sub-pages/understanding-by-design/>

Brooker, R. J., Moore, M. N., Van Hulle, C. A., Beekman, C. R., Begnoche, J. P., Lemery-Chalfant, K., & Goldsmith, H. H. (2020). Attentional control explains covariation between symptoms of attention-deficit/hyperactivity disorder and anxiety during adolescence. *Journal of Research on Adolescence*, 30(1), 126-141. <https://doi.org/10.1111/jora.12506>

Brown, C. M., & Mcconnell, A. R. (2011). Discrepancy-based and anticipated emotions in behavioral self-regulation. *Emotion*, 11(5), 1091-1095. doi:10.1037/a0021756

Bulotsky-Shearer, R., Fernandez, V., Dominguez, X., & Rouse, H. L. (2011). Behavior problems in learning activities and social interactions in head start classrooms and early reading, mathematics, and approaches to learning. *School Psychology Review*, 40(1), 39-56.

Bundy, A., Engelen, L., M., Wyver, S., Tranter, P., Ragen, J., Bauman, A., Baur, L., Schiller, W., Simpson, J. M., Niehues, A. N., Perry, N., Jessup, G., & Naughton, G. (2017). Sydney playground project: A cluster-randomized trial to increase physical activity, play, and social skills. *The Journal of School Health.*, 87(10), 751-759. <https://doi.org/10.1111/josh.12550>

- Campbell, S. B., Shaw, D. S., & Gilliom, M. (2000). Early externalizing behavior problems: Toddlers and preschoolers at risk for later maladjustment. *Development and Psychopathology*, *12*(3), 467-488.
- CASEL (2021). *Collaborating States Initiative*. <https://casel.org/collaborative-state-initiative/>
- Centers for Disease Control and Prevention. (2018). Attention-deficit/hyperactivity disorder (ADHD). Data and statistics about ADHD. <https://www.cdc.gov/ncbddd/adhd/data.html>
- Centers for Disease Control and Prevention. (n.d.) *Data & Statistics on Autism Spectrum Disorder*. [cdc.gov. https://www.cdc.gov/ncbddd/autism/data.html](https://www.cdc.gov/ncbddd/autism/data.html)
- Chen, C., & Chiu, C. (2016). Employing intergroup competition in multitouch design-based learning to foster student engagement, learning, achievement, and creativity. *Computers & Education*, *103*, 99-113. doi:10.1016/j.compedu.2016.09.007
- Cherry, K. (2019, July 5). Self-efficacy: *Why believing in yourself matters*. Verywellmind. <https://www.verywellmind.com/what-is-self-efficacy-2795954>
- Chesley, N. (2005). Blurring boundaries? linking technology use, spillover, individual distress, and family satisfaction. *Journal of Marriage and Family*, *67*(5), 1237-1248. doi:10.1111/j.1741-3737.2005.00213.x
- Clark-Polner, E., Wager, T. D., Satpute, A. B., Barrett, L. F. (2016). Neural fingerprinting; Meta-analysis, variation and the search for brain-based essences in the science of emotion. In: Barrett, L. F., Lewis, M., & Haviland-Jones, J. M.



(Eds.). (2016). *Handbook of emotions*. ProQuest Ebook Central

<https://ebookcentral.proquest.com>

Collaborative for Academic, Social, and Emotional Learning (CASEL). (2017). *Key*

*Implementation Insights from the Collaborating Districts Initiative*. Chicago.

<http://www.casel.org/wp-content/uploads/2017/06/CDI-Insights-Report-May.pdf>

Collaborative for Academic, Social, and Emotional Learning (CASEL). (2020). *Core*

*SEL competencies*. <http://www.casel.org/core-competencies/>

Common Sense Media (2017). *The common sense census: Media use by kids age zero to eight 2017*.

[https://www.commonsensemedia.org/sites/default/files/uploads/research/csm\\_zeroeight\\_fullreport\\_release\\_2.pdf](https://www.commonsensemedia.org/sites/default/files/uploads/research/csm_zeroeight_fullreport_release_2.pdf)

Compas, B. E. (1987). Stress and life events during childhood and adolescence. *Clinical*

*Psychology Review*, 7, 272-302. [https://doi.org/10.1016/0272-7358\(87\)90037-7](https://doi.org/10.1016/0272-7358(87)90037-7)

Corcoran, R. P., Cheung, A. C. K., Kim, E., & Xie, C. (2018). Effective universal school-

based social and emotional learning programs for improving academic

achievement: A systematic review and meta-analysis of 50 years of research.

*Educational Research Review*, 25, 56-72. doi:10.1016/j.edurev.2017.12.001

Côté, S. M., Boivin, M., Liu, X., Nagin, D. S., Zoccolillo, M., & Tremblay, R. E. (2009).

Depression and anxiety symptoms: Onset, developmental course and risk factors

during early childhood. *Journal of Child Psychology and Psychiatry*, 50(10),

1201-1208. doi:10.1111/j.1469-7610.2009.02099.x

- Dael, N., Mortillaro, M., & Scherer, K. R. (2012). Emotion expression in body action and posture. *Emotion, 12*(5), 1085-1101. doi:10.1037/a0025737
- Darwin, C. E. (1965). *The expression of the emotions in man and animals*. University of Chicago.
- De Gelder, B. (2009). Why bodies? Twelve reasons for including bodily expressions in affective neuroscience. *Philosophical Transactions of the Royal Society B, 364*(1535), 3475-3484. doi:10.1098/rstb.2009.0190
- Denham, S. A. (2015). Assessment of SEL in educational contexts. In Durlak et al. (Eds.), *Handbook of social and emotional learning research and practice* (pp. 285-300). The Guilford Press.
- De Paola, M., & Gioia, F. (2017). Impatience and academic performance. Less effort and less ambitious goals. *Journal of Policy Modeling, 39*(3), 443-460.  
doi:10.1016/j.jpolmod.2016.11.001
- Department of Elementary and Secondary Education (DESE). (2018). *Massachusetts department of elementary and secondary education highlights from participation in the collaborating states initiative facilitated by the collaborative for academic, social and emotional learning summer 2016 – winter 2018*.  
<http://www.doe.mass.edu/candi/SEL/csi-sum.pdf>
- Dereli, E. (2016). Prediction of emotional understanding and emotion regulation skills of 4-5 age group children with parent-child relations. *Journal of Education and Practice, 7*(21), 42-54.

- Dubow, E. F., & Tisak, J. (1989). The relation between stressful life events and adjustment in elementary school children: The role of social support and social problem-solving skills. *Child Development, 60*(6), 1412-1423.  
doi:10.2307/1130931
- Duckworth, A. L. (2011). The significance of self-control. *Proceedings of the National Academy of Sciences of the United States of America, 108*(7), 2639.  
doi:10.1073/pnas.1019725108
- Education Commission of the States. (2020a). *State Funding for Students with Disabilities: All States All Data, June 2015*.  
<http://ecs.force.com/mbdata/mbquest3D?rep=SD10>
- Education Commission of the States. (2020b). *K-12 Special Education Funding State Profile - Massachusetts, March 2019*. bcefb745e88b8d?state=Massachusetts
- Education First (2021). *SEL in Action Awards*. <https://education-first.com/sel-in-action-awards/>
- Education First/NoVo Foundation (2021). *Social and Emotional Teacher Practices: Presented by Education First and NoVo Foundation: Innovation Awards*.  
<https://selforteachers.org/innovation-awards/>
- Edwards, S. (2014). Towards contemporary play: Sociocultural theory and the digital-consumerist context. *Journal of Early Childhood Research, 12*(3), 219-233.  
doi:10.1177/1476718X14538596

- Ehrenreich-May, J., & Chu, B. C. (2014). Overview of transdiagnostic mechanisms and treatments. In J. Ehrenreich-May & B. C. Chu (Eds.), *Transdiagnostic treatments for children and adolescents: principles and practice*. Guilford Press.
- Eigsti, I., Zayas, V., Mischel, W., Shoda, Y., Ayduk, O., Dadlani, M. B., & Casey, B. J. (2006). Predicting cognitive control from preschool to late adolescence and young adulthood. *Psychological Science, 17*(6), 478-484. doi:10.1111/j.1467-9280.2006.01732.x
- Eisenberg, N., Fabes, R. A. & Guthrie, I. K. (1997). Coping with stress: The roles of regulation and development. In S. A. Wolchik & I.N. Sandler (Eds.), *Handbook of children's coping: Linking theory and intervention*. Plenum.
- Ekman, P., & Cordaro, D. (2011). What is meant by calling emotions basic. *Emotion Review, 3*(4), 364-370.
- Elias M. J., Leverett, L., Duffell, J. C., Humphrey, N., Stepney, C., & Ferrito, J. (2015). Integrating SEL with related prevention and youth development approaches. In Durlak et al. (Eds.), *Handbook of social and emotional learning research and practice* (pp. 285-300). The Guilford Press.
- Embry, D., & Biglan, D. (2008). Evidence-based kernels: Fundamental units of behavioral influence. *Clinical Child and Family Psychology Review, 11*(3), 75-113. doi:10.1007/s10567-008-0036-x
- Essau, C., Sasagawa, S., Jones, G., Fernandes, B., & Ollendick, T. (2019). Evaluating the real-world effectiveness of a cognitive behavior therapy-based transdiagnostic

program for emotional problems in children in a regular school setting. *Journal of Affective Disorders*, 253, 357-365. <https://doi.org/10.1016/j.jad.2019.04.036>

Fourati, N., & Pelachaud, C. (2015). Relevant body cues for the classification of emotional body expression in daily actions. *International Conference on Affective Computing and Intelligent Interaction (ACII)*, 267-273, doi: 10.1109/ACII.2015.7344582.

Franklin Public School District. (n.d.) *Annual Reports 2018-2019*. Franklin School District.  
[https://www.franklinps.net/sites/g/files/vyhlf4431/f/uploads/2019\\_annual\\_report.pdf](https://www.franklinps.net/sites/g/files/vyhlf4431/f/uploads/2019_annual_report.pdf)

Franklin Public School District (2019). *District strategy for improvement*.  
[https://www.franklinps.net/sites/g/files/vyhlf4431/f/news/district\\_improvement\\_plan\\_2019-2020-final.pdf](https://www.franklinps.net/sites/g/files/vyhlf4431/f/news/district_improvement_plan_2019-2020-final.pdf)

Friedrich, E., Sivanathan, V., Lim, C., Suttie, A., Louchart, T., Pillen, N., & Pineda, S. (2015). An effective neurofeedback intervention to improve social interactions in children with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 45(12), 4084-4100. doi:10.1007/s10803-015-2523-5

García, T., Rodríguez, C., González-Castro, P., Álvarez-García, D., & González-Pienda, J. A. (2016). Metacognition and executive functioning in elementary school. *Anales de psicología*, 32(2), 474. <https://dx.doi.org/10.6018/analesps.32.2.202891>

Goodall, E. (2016). *Thriving at school: How interoception is helping children and young people engage in learning everyday*. Griffith University.

[https://www.griffith.edu.au/\\_\\_data/assets/pdf\\_file/0023/1182353/Publication-Thriving-at-School-how-interoception-is-helping-children-and-young-people-engage-in-learning-everyday.pdf](https://www.griffith.edu.au/__data/assets/pdf_file/0023/1182353/Publication-Thriving-at-School-how-interoception-is-helping-children-and-young-people-engage-in-learning-everyday.pdf)

Government of South Australia. Department of Education (2019). *Ready to learn:*

*Interoceptive kit*. Government of South Australia.

<https://www.education.sa.gov.au/sites/default/files/ready-to-learn-interoception-kit.pdf>

Grob, G. F. (2015) Writing for impact (p. 739-764). In K.E. Newcomer, H.P. Hatry, & J.S. Wholey. (Eds.) *Handbook of practical program evaluation*. Jossey-Bass.

Guarnera, M., Hichy, Z., Cascio, M. I., & Carrubba, S. (2015). Facial Expressions and Ability to Recognize Emotions from Eyes or Mouth in Children. *Europe's journal of psychology*, *11*(2), 183–196. <https://doi.org/10.5964/ejop.v11i2.890>

Gupta, R., & Kar, B. R. (2009). Development of attentional processes in ADHD and normal children. *Progress in Brain Research*, *176*, 259-276.

[https://doi.org/10.1016/S0079-6123\(09\)17614-8](https://doi.org/10.1016/S0079-6123(09)17614-8)

Guhlin, M. (2010, July 13). Build your PLN. *Moving at the Speed of Creativity*.

<https://www.speedofcreativity.org/2010/07/13/4467/>

Hahn-Markowitz, J., Berger, I., Manor, I., & Maeir, A. (2017). Impact of the cognitive-functional (Cog-Fun) intervention on executive functions and participation among children with attention deficit hyperactivity disorder: A randomized controlled trial. *The American Journal of Occupational Therapy*, *71*(5), 1-9.

[doi:10.5014/ajot.2017.022053](https://doi.org/10.5014/ajot.2017.022053)

- Hammerness, P., Geller, D., Petty, C., Lamb, A., Bristol, E., & Biederman, J. (2010). Does ADHD moderate the manifestation of anxiety disorders in children? *European Child & Adolescent Psychiatry, 19*(2), 107-12. doi:10.1007/s00787-009-0041-8
- Hardman, E. L., & Smith, S. W. (2003). Analysis of classroom discipline-related content in elementary education journals. *Behavioral Disorders, 28*(2), 173-86.  
<https://ezproxy.bu.edu/login?url=https%3A%2F%2Fwww.proquest.com%2Fscholarly-journals%2Fanalysis-classroom-discipline-related-content%2Fdocview%2F62168161%2Fse-2%3Faccountid%3D9676>
- Hoffman, J. (2018) *The effects of implementing a zones of regulation curriculum in a third grade classroom* (Publication No. 6) [Master's thesis, Moorehead].  
<https://red.mnstate.edu/thesis/62>
- Hosokawa, R. (2018). Association between mobile technology use and child adjustment in early elementary school age. *PLoS One, 13*(7), e0199959.  
doi:10.1371/journal.pone.0199959
- Izard, C. E. (1994). Innate and universal facial expressions. *Psychological Bulletin, 115*(2), 288-299.
- Jackson, L. A., Von Eye, A., Witt, E. A., Zhao, Y., & Fitzgerald, H. E. (2011). A longitudinal study of the effects of internet use and videogame playing on academic performance and the roles of gender, race and income in these relationships. *Computers in Human Behavior, 27*(1), 228-239.  
doi:10.1016/j.chb.2010.08.001

- Javanbakht, A, Saab, L. (2017, October 26). The science of fright: Why we love to be scared. *The Conversation*. <https://theconversation.com/the-science-of-fright-why-we-love-to-be-scared-85885>
- John-Steiner, V., & Mahn, H. (1996). Sociocultural approaches to learning and development: A Vygotskian framework. *Educational Psychologist*, 31(3-4), 191-206. doi:10.1080/00461520.1996.9653266
- Jones, E.D, Greenberg, M., & Crowley, M. (2015). Early social-emotional functioning and public health: The relationship between kindergarten social competence and future wellness. *American Journal of Public Health*, 105(11), 2283-2290. <https://dx.doi.org/10.2105%2FAJPH.2015.302630>
- Jones, A., Silas, J., Todd, J., Stewart, A., Acree, M., Coulson, M., & Mehling, W. E., (2020). Exploring the multidimensional assessment of interoceptive awareness in youth aged 7–17 years. *Journal of Clinical Psychology*, 77(3), 661-682. <https://doi.org/10.1002/jclp.23067>
- Kinne, S., Patrick, D. L., & Doyle, D. L. (2004). Prevalence of secondary conditions among people with disabilities. *American Journal of Public Health*, 94, 443–445. <https://doi.org/10.2105/AJPH.94.3.443>
- Knell, G., Durand, C. P., Kohl, H. W., Wu, I. H. C., & Gabriel, P. K. (2019). Prevalence and likelihood of meeting sleep, physical activity, and screen-time guidelines among US youth. *JAMA Pediatrics*, 173(4), 387–389. <https://doi.org/10.1001/jamapediatrics.2018.4847>



- Kohn, A. (2008). Why self-discipline is overrated: The (troubling) theory and practice of control from within. *Phi Delta Kappan*, 90(3), 168-176.
- Korpershoek, H., Harms, T., de Boer, H., van Kuijk, M., & Doolaard, S. (2016). A meta-analysis of the effects of classroom management strategies and classroom management programs on students' academic, behavioral, emotional, and motivational outcomes. *Review of Educational Research*, 86(3), 643–680.  
<https://doi.org/10.3102/0034654315626799>
- Krachman, S. B., & Larocca, B. (2017, September). *The scale of our investment in social-emotional learning*. (Working Paper) Transforming Education.  
<https://transformingeducation.org/wp-content/uploads/2017/10/Inspire-Paper-Transforming-Ed-FINAL-2.pdf>
- Kramer, L. (2014). Learning emotional understanding and emotion regulation through sibling interaction. *Early Education and Development*, 25(2), 160-184, DOI: 10.1080/10409289.2014.838824
- Kret, M. E., Stekelenburg, J. J., Roelofs, K., & De Gelder, B. (2013). Perception of face and body expressions using electromyography, pupillometry and gaze measures. *Frontiers in Psychology*, 4, 28. doi:10.3389/fpsyg.2013.00028
- Kret, M.E., & Gelder, B. (2010). Social context influences recognition of bodily expressions. *Experimental Brain Research*, 203(1), 169-180. doi:10.1007/s00221-010-2220-8
- Kuypers, L. M. (2011). *The zones of regulation: A curriculum designed to foster self-regulation and emotional control*. Think Social Publishing.

Lewis, A., & Spann, H. (n.d.). *Powerfully you*. Powerfully You.

<https://www.powerfullyyou.org/our-services>

Liang, H., Xue, Y., Pinsonneault, A., & Wu, Y. (2019). What users do besides problem-focused coping when facing IT security threats: An emotion-focused coping perspective. *MIS Quarterly*, *43*(2), 373-394. doi:10.25300/MISQ/2019/14360

Lindsey, E. W., & Colwell, M. J. (2013). Pretend and physical play: Links to preschoolers' affective social competence. *Merrill-Palmer Quarterly: Journal of Developmental Psychology*, *59*(3), 330-360.

<http://dx.doi.org/10.1353/mpq.2013.0015>

Loevaas, M. E., Sund, A. M., Lydersen, S., Neumer, S. P., Martinsen, K., Holen, S., Patras, J., Adolfsen, F., & Reinfjell, T. (2019). Does the transdiagnostic EMOTION intervention improve emotion regulation skills in children? *Journal of Child and Family Studies*, *28*(3), 805-813. doi:10.1007/s10826-018-01324-1

McCloud, B. D., Wood, J.J., & Weisz, J.R. (2007). Examining the association between parenting and childhood anxiety: a meta-analysis. *Clinical Psychological Review*, *27* 155-72.

McCoy, D. C. (2019). Measuring young children's executive function and self-regulation in classrooms and other real-world settings. *Clinical Child and Family Psychology Review*, *22*(1), 63-74. <https://doi.org/10.1007/s10567-019-00285-1>

McNally Keehn, R., Lincoln, A., Brown, M., & Chavira, D. (2013). The coping cat program for children with anxiety and autism spectrum disorder: A pilot

randomized controlled trial. *Journal of Autism and Developmental Disorders*, 43(1), 57-67. <http://dx.doi.org/10.1007/s10803-012-1541-9>

McQuaid, E. (2018). Feasibility Study: Implementing the zones of regulation® curriculum at a whole-class level. *The American Journal of Occupational Therapy*, 72(4.1 Suppl.), 7211505083. <https://doi.org/10.5014/ajot.2018.72S1-PO1014>

McTighe & Associates Consulting (MAC). (n.d.). *Resources*.

<https://jaymctighe.com/resources/>

McTighe, J. & Wiggins, G. (n.d.). *Understanding by design framework*. ASCD.

[https://www.ascd.org/AS.CD/pdf/siteASCD/publications/UbD\\_WhitePaper0312.pdf](https://www.ascd.org/AS.CD/pdf/siteASCD/publications/UbD_WhitePaper0312.pdf)

McTighe, J., & Willis, J. (2019). *Upgrade your teaching: Understanding by design meets neuroscience*. ASCD.

Madigan, K., Cross, R. W., Smolkowski, K., & Strycker, L. A. (2016). Association between school wide positive behavioural interventions and supports and academic achievement: A 9-year evaluation. *Educational Research and Evaluation*, 22(7-8), 402-421. doi:10.1080/13803611.2016.1256783

Malboeuf-Hurtubise, C., Lacourse, E., Taylor, G., Joussemet, M., & Ben Amor, L. (2017). A mindfulness-based intervention pilot feasibility study for elementary school students with severe learning difficulties: Effects on internalized and externalized symptoms from an emotional regulation perspective. *Journal of*

*Evidence-Based Complementary & Alternative Medicine*, 22(3), 473-481.

<https://doi.org/10.1177%2F2156587216683886>

Marshall, J., Coulter, M. L., Gorski, P. A., & Ewing, A. (2016). Parent recognition and responses to developmental concerns in young children. *Infants & Young Children*, 29(2), 102-115.

Martinez, L., Falvello, V. B., Aviezer, H., & Todorov, A. (2015). Contributions of facial expressions and body language to the rapid perception of dynamic emotions. *Cognition and Emotion*, 30(5), 1-14. doi:10.1080/02699931.2015.1035229

Massachusetts Department of Elementary and Secondary Education. (2018, May). Social and Emotional Learning for All. *Access, Cultural Proficiency, and Cultural Responsiveness*. Retrieved from <https://www.doe.mass.edu/sfs/sel/>

Massachusetts Department of Elementary and Secondary Education. (2018, November 18). *Social and Emotional Learning in Massachusetts*. <http://www.doe.mass.edu/candi/SEL.html>

McLeod, B. D., Wood, J. J., & Weisz, J. R. (2007). Examining the association between parenting and childhood anxiety: A meta-analysis. *Clinical Psychology Review*, 27(2), 155-172. doi:10.1016/j.cpr.2006.09.002

Mehling, W. E., Gopisetty, V., Daubenmier, J., Price, C. J., Hecht, F. M., & Stewart, A. (2009). Body awareness: Construct and self-report measures. *PLoS One*, 4(5), E5614. <https://doi.org/10.1371/journal.pone.0005614>

- Milteer, R. M., & Ginsburg, K. R. (2012). The importance of play in promoting healthy child development and maintaining strong parent-child bond: Focus on children in poverty. *Pediatrics*, *129*(1), e204. doi:10.1542/peds.2011-2953
- Mischel, W., Shoda, Y., & Rodriguez, M. L. (1989). Delay of gratification in children. *Science*, *244*(4907), 933-938.
- Miyazaki, K., Miyazaki, K. W., Doya, K. (2012). The role of serotonin in the regulation of patience and impulsivity. *Molecular Neurobiology* *45*, 213-224.  
doi:10.1007/s12035-012-8232-6
- Morawska, A., Dittman, C., & Rusby, J. (2019). Promoting self-regulation in young children: The role of parenting interventions. *Clinical Child and Family Psychology Review*, *22*(1), 43-51. doi:10.1007/s10567-019-00281-5
- Munro, K. L. (2017). *The efficacy of zones of regulation in teaching grade 3 and 4 students self-regulation skills* [Master's thesis, City University of Seattle].
- Murray, J., Scott, H., Connolly, C., & Wells, A. (2018). The attention training technique improves children's ability to delay gratification: A controlled comparison with progressive relaxation. *Behaviour Research and Therapy*, *104*, 1-6.  
doi:10.1016/j.brat.2018.02.003
- Nathanson, L., Rivers, S., Flynn, L., & Brackett, M. (2016). Creating emotionally intelligent schools with RULER. *Emotion Review*, *8*(4), 305-310.  
<https://doi.org/10.1177/1754073916650495>
- Nelson, T. D., Kidwell, K. M., Jennifer, M. N., Tomaso, C. C., Hankey, M., & Kimberly, A. E. (2018). Preschool executive control and internalizing symptoms in

elementary school. *Journal of Abnormal Child Psychology*, 46(7), 1509-1520.

<http://dx.doi.org/10.1007/s10802-017-0395-1>

Nielsen, L. (2008, October 12). 5 things you can do to begin developing your personal learning network. <https://theinnovativeeducator.blogspot.com/2008/04/5-things-you-can-do-to-begin-developing.html>

Oberle, E., Domitrovich, C. E., Meyers, D. C., & Weissberg, R. P. (2016). Establishing systemic social and emotional learning approaches in schools: A framework for schoolwide implementation. *Cambridge Journal of Education*, 46(3), 277-297. doi:10.1080/0305764X.2015.1125450

O'Keeffe, G. S., & Clarke-Pearson, K. (2011). The impact of social media on children, adolescents, and families. *Pediatrics*, 127(4), 800. doi:10.1542/peds.2011-0054

Pella, J., Drake, K., Tein, J., & Ginsburg, G. (2017). Child anxiety prevention study: Impact on functional outcomes. *Child Psychiatry & Human Development*, 48(3), 400-410. doi:10.1007/s10578-016-0667-y

Phillips, C. A., Rolls, S., Rouse, A., & Griffiths, M. D. (1995). Home video game playing in schoolchildren: A study of incidence and patterns of play. *Journal of Adolescence*, 18(6), 687-691. doi:10.1006/jado.1995.1049

Pincus, D. B., & Friedman, A. G. (2004). Improving children's coping with everyday stress: Transporting treatment interventions to the school settings. *Clinical Child and Family Psychology Review*, 7(4), 223-240. doi:10.1007/s10567-004-6087-8

Piquero, A., Jennings, W., Farrington, D., Diamond, B., & Gonzalez, J. (2016). A meta-analysis update on the effectiveness of early self-control improvement programs

to improve self-control and reduce delinquency. *Journal of Experimental Criminology*, 12(2), 249-264. doi:10.1007/s11292-016-9257-z

Plowman, L. McPake, J., & Stephen, C. (2010). Supporting young children's learning with technology at home and in preschool. *Research Papers in Education*. 25(1), 1-21. doi:10.1080/02671520802584061

Pressley, M. (1979). Increasing children's self-control through cognitive interventions. *Review of Educational Research*, 49(2), 319-370.

Radesky, J. S., Peacock-Chambers, E., Zuckerman, B., & Silverstein, M. (2016). Use of mobile technology to calm upset children: Associations with social-emotional development. *JAMA Pediatrics*, 170(4), 397.  
doi:10.1001/jamapediatrics.2015.4260

Reinhard, M. J. (2017). *Pagosa springs elementary school: A study of teachers' collaborative use of time*. Stanford, CA: Stanford Center for Opportunity Policy in Education. <https://edpolicy.stanford.edu/sites/default/files/Pagosa%20Final.pdf>

Roberts, P. (2014, September 8). Instant gratification: As the economy gets ever better at satisfying our immediate, self-serving needs, who is minding the future? *The American Scholar*. <https://theamericanscholar.org/instant-gratification/#.XSiTj-hKiUI>

Rosen, L. D., Lim, A. F., Felt, J., Carrier, L. M., Cheever, N. A., Lara-Ruiz, J. M., Mendoza, J. S. & Rökkum, J. (2014). Media and technology use predicts ill-being among children, preteens and teenagers independent of the negative health

- impacts of exercise and eating habits. *Computers in Human Behavior*, 35, 364-375. doi:10.1016/j.chb.2014.01.036
- Salovey, P., & Mayer, J. D. (1990). Emotional Intelligence. *Imagination, Cognition and Personality*, 9(3), 185–211. <https://doi.org/10.2190/DUGG-P24E-52WK-6CDG>
- Samuel A. (2017, February 7). What’s so bad about instant gratification? *JSTOR Daily*. Retrieved from <https://daily.jstor.org/whats-bad-instant-gratification/>
- Sanders, M., Turner, R., & Metzler, K. (2019). Applying Self-Regulation Principles in the Delivery of Parenting Interventions. *Clinical Child and Family Psychology Review*, 22(1), 24-42.
- Sattelmair, J., & Ratey, J. J. (2009). Physically active play and cognition: An academic matter? *American Journal of Play*, 1(3), 365-374.
- Schmidt, M. E., Pempek, T. A., Kirkorian, H. L., Lund, A. F., & Anderson, D. R. (2008). The effects of background television on the toy play behavior of very young children. *Child Development*, 79(4), 1137-1151. doi:10.1111/j.1467-8624.2008.01180.x
- Schonert-Reichl, K. A. (2017). Social and emotional learning and teachers. *The Future of Children*, 137-155.
- Schunk, D. H., & Zimmerman, B. J. (2006). Influencing children's self-efficacy and self-regulation of reading and writing through modeling. *Reading & Writing Quarterly*, 23(1), 7-25. <https://doi.org/10.1080/10573560600837578>



- September, S. J., Rich E. G., & Roman, N. V. (2015). The role of parenting styles and socio-economic status in parents' knowledge of child development. *Early Child Development and Care*, 1-19. <https://doi.org/10.1080/03004430.2015.1076399>
- Shapiro, S., Lyons, K., Miller, R., Butler, B., Vieten, C., & Zelazo, P. (2015). Contemplation in the classroom: A new direction for improving childhood education. *Educational Psychology Review*, 27(1), 1-30. doi:10.1007/s10648-014-9265-3
- Shin, W. (2015). Parental socialization of children's internet use: A qualitative approach. *New Media & Society*, 17(5), 649-665. doi:10.1177/1461444813516833
- Shure, M. B., & Spivack, G. (1982). Interpersonal problem-solving in young children: A cognitive approach to prevention. *American Journal of Community Psychology* 10(3), 341-56. <https://doi.org/10.1007/bf00896500>
- Siegel, E. H, Sands, M. K, Van den Noortgate, W., Condon, P., Chang, Y., Dy, J., Quigley, K. S., Barrett, L. F. (2018). Emotion fingerprints or emotion populations? A meta-analytic investigation of autonomic features of emotion categories. *Psychological Bulletin*, 144(4), 343-393. <http://dx.doi.org/10.1037/bul0000128>
- Smith, C. A. (1999). Family life pathfinders on the new electronic frontier. *Family Relations*, 48(1), 31-34. doi:10.2307/585679
- Social Emotional Learning Alliance for Massachusetts (SEL4MA). (2019). *Join us*. <https://sel4ma.org/get-involved/join/>

- Stock, J. V. D., Righart, R., & De Gelder, B. (2007). Body expressions influence recognition of emotions in the face and voice. *Emotion, 7*(3), 487-494.  
doi:10.1037/1528-3542.7.3.487
- Suades-González, E., Forns, J., García-Esteban, R., López-Vicente, M., Esnaola, M., Álvarez-Pedrerol, M., Julvez, K., Caceres, A., Basangna, X., Lopez-Sala, A., & Sunyer, J. (2017). A longitudinal study on attention development in primary school children with and without teacher-reported symptoms of ADHD. *Frontiers in Psychology, 8*, 655.  
<https://www.frontiersin.org/article/10.3389/fpsyg.2017.00655>
- Susa, G., Pitică, I., Benga, O., & Miclea, M. (2012). The self regulatory effect of attentional control in modulating the relationship between attentional biases toward threat and anxiety symptoms in children. *Cognition & Emotion, 26*(6), 1069–1083. <https://doi.org/10.1080/02699931.2011.638910>
- Teachers Pay Teachers. (n.d.) *Teaching resources and lesson plans*.  
teacherspayteachers.com <https://www.teacherspayteachers.com/>
- Tell, D., & Davidson, D. (2015). Emotion recognition from congruent and incongruent emotional expressions and situational cues in children with autism spectrum disorder. *Autism, 19*(3), 375-379. <https://doi.org/10.1177/1362361314535676>
- Thompson, R. A. (2014). Stress and child development. *The Future of Children, 24*(1), 41–59. <https://doi.org/10.1353/foc.2014.0004>
- Tichovolsky, M. H., Arnold, D. H., & Baker, C. N. (2013). Parent predictors of changes in child behavior problems. *Journal of Applied Developmental Psychology, 34*(6),

336-345. doi:10.1016/j.appdev.2013.09.001

U.S. Department of Education (n.d.) Every Student Succeeds Act (ESSA).

<https://www.ed.gov/essa?src=rn>

Vygotsky, L. S. (2016). Play and its role in the mental development of the child. (N.

Veresov, & M. Barrs, Trans.) *International Research in Early Childhood*

*Education*, 7(2), 3-25. (Original work published 1966).

Webster-Stratton, C., & Reid, M. J. (2003). Treating conduct problems and strengthening

social and emotional competence in young children: The dina dinosaur treatment

program. *Journal of Emotional and Behavioral Disorders*, 11(3), 130-143.

doi:10.1177/10634266030110030101

Webster-Stratton, C., & Reid, M. J. (2004). Strengthening social and emotional

competence in young children—The foundation for early school readiness and

success incredible years classroom social skills and problem-solving curriculum.

*Infants and Young Children*. 17(2), 96-113. [https://doi.org/10.1097/00001163-](https://doi.org/10.1097/00001163-200404000-00002)

200404000-00002

Weissberg, R. P., Durlak, J. A., Domitrovich, C. E., & Gullotta, T. P. (2015). Social and

emotional learning: Past, present, and future. In Durlak et al. (Eds.), *Handbook of*

*social and emotional learning research and practice* (pp. 3-19). The Guilford

Press.

Weisz, J. R., McCabe, M., & Dennig, M. D. (1994). Primary and secondary control

among children undergoing medical procedures. Adjustment as a function of

coping style. *Journal of Consulting and Clinical Psychology*, 62(2), 324-332.

<http://dx.doi.org/10.1037/0022-006X.62.2.324>

Wells, A., & Matthews, G. (1996). Modeling cognition in emotional disorder: The S-REF model. *Behaviour Research and Therapy*, 32, 867-870.

Williams, M. S., Shellenberger, S. (1996). *How does your engine run? A leader's guide to the alert program for self-regulation*. TherapyWorks Inc.

Willis, J. (2009). What you should know about your brain. *Educational Leadership*, 67(4), 1-3.

Wright, A., Lamont, A., Wandersman, A., Osher, D., & Gordon, E. S. (2015).

Accountability and SEL programs: The getting to outcomes approach. In Durlak, J.A., Domitrovich, C. E., Weissberg, R. P., & Gullotta, T. P. (Eds.), *Handbook of social and emotional learning: Research and practice* (pp. 500-515). The Guilford Press.

Wu, W. C. V., Yen, L. L., & Marek, M. (2011). Using online EFL interaction to increase confidence, motivation, and ability. *Journal of Educational Technology & Society*, 14(3), 118-129.

Wyman, P. A., Cross, W., Brown, C. H., Yu, Q., Tu, X., & Eberly, S. (2010).

Intervention to strengthen emotional self-regulation in children with emerging mental health problems: Proximal impact on school behavior. *Journal of Abnormal Child Psychology*, 38(5), 707-720. doi:10.1007/s10802-010-9398-x

Yang, C., Bear, G. G., & May, H. (2018). Multilevel associations between school-wide social-emotional learning approach and student engagement across elementary,

middle, and high schools. *School Psychology Review*, 47(1), 45-61.

doi:10.17105/SPR-2017-0003.V47-1

Zimmerman, B. J., & Schunk, D. H. (1989). *Self-regulated learning and academic achievement: Theory, research, and practice*. Springer-Verlag.

Zins, J. E., Bloodworth, M. R., Weissberg, R. P., & Walberg, H. J. (2007). The scientific base linking social and emotional learning to school success. *Journal of Educational and Psychological Consultation*, 17(2-3), 191-210.

doi:10.1080/10474410701413145

**CURRICULUM VITAE**

