An Educational Guide on Research-Supported Self-Regulation Techniques for Parents and Caregivers of Preschool-Aged Children

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DISCLAIMER: This paper is not meant to replace or reduce the valuable and essential work of Marriage and Family Therapists, Occupational Therapists, and Early Intervention Educators. This resource is designed to empower parents and caregivers, who will learn how to empower their children better. This manual recognizes that every child is unique in their response and utilization of skills and activities suggested. This manual could be a door towards seeking additional support through a therapist or specialist.

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This literature review applies the polyvagal theory of therapeutic intervention to the importance of parental education in self-regulation and impulse control for preschool-aged children. The neurophysiological understanding of how children's bodies respond to a potential threat demonstrates the need for further practical application in the development of self-regulatory behavior in children. The intentionality behind parent education is to be a bridge between a child's social systems outside of their home and the life they live within their home space (Valsiner, 2005). The preoperational child works to accommodate and assimilate information based on prior knowledge and experience, which means that their brain is working to make millions of neuron connections per second (Siegler & Ellis, 1996). Children in new environments or with new stimuli often react in a way that reflects their level of comfort with the situation. This paper suggests that the polyvagal theory, a theory developed by Dr. Stephen Porges, can be utilized as a framework to identify how stages of nervous system reactivity in emotional ranges can be applied to children who are experiencing sensory overwhelm and may react in ways that are challenging for parents or caregivers to understand (Porges, 2011). As parents and caregivers utilize this resource, the goal is for them to be willing to build and maintain a stable relationship between their own regulated nervous system and their child's reactivity in order to participate in regulation from a state of trust (Dana, 2018). This resource aims to share ways to reach an ideal state of regulation to then support children as they imperfectly navigate their own world and perceptions of emotional behaviors around them. By acknowledging the physiological reactivity and variability of impulse control, the tools suggested within this literary analysis may be used to co-regulate and eventually support independent self-regulation in the lives of children (Bundy & Lane, 2019).

An Educational Guide on Research-Supported Self-Regulation Techniques for Parents and Caregivers of Preschool-Aged Children

The intention of this project is to educate caregivers on the importance of modeling and supporting self-regulatory behavior in preschool-aged children. Through establishing techniques that build impulse control, caregivers will respect a child's ability to understand themselves, which promotes the future success of younger generations. Early childhood education professionals such as teachers, occupational therapists, and school psychologists are aware of the nuances that make up the needs of children in terms of regulatory stimulation. To further this awareness, parents and caregivers are the necessary bridge between children and the rest of their spheres of influence within their social systems (Pandey et al., 2018). As they engage within their family circle, children will experience and demonstrate a variety of responses to certain sensory stimulations based on their own unique temperament (Li et al., 2022). Although some of these practices have been associated with therapies in response to developmental delays or exceptionalities, studies have shown that children exhibiting typical behavior also have positive responses to sensory processing and self-regulation support (Gomez et al., 2021, pp. 4-6). Parents who spend time with their children in a home environment will understand their child's reactive behavior more than anyone else. Parents may extend and apply that knowledge to make their child/children aware of their own response control over their own regulatory development. A child in this developmental stage will begin to grasp their integral role within a group setting, but caregivers can broaden this understanding on a more personal level (Gomez et al., 2021). Engaging a child in this form of self-reflection requires the initiation of behavioral responses on the child's behalf, but these are learned responses that must be established in early childhood (Delahooke, 2019). In its purest form, self-regulation aims to support children in their emotional

understanding, conceptual relation to themselves and others, and awareness of their own reaction to over-stimulating and under-stimulating environments.

Polyvagal Theory

The polyvagal theory was established in 1994 by S. Porges in order to better comprehend the relationship between human physiological reactions of the autonomic nervous system in connection to social behavior (Porges, 2011, pp. 3). Therapists have begun to apply this theory as a means to develop deeper foundations of trust in order to help patients understand their reactions to certain stimuli (Dana, 2018, pp. 64). The polyvagal theory can be applied to the way that children experience newness in their world. As children develop, they are forced into scenarios daily that encourage them to accommodate and assimilate new information (Siegler and Ellis, 1996). Within this new information can be an overwhelming of physiological responses and bodily awareness that they may not be able to process fully. This is where the nervous system reacts to feelings of being unsafe (Porges, 2011, pp. 142-147). J. Piaget developed a theory of stages of cognitive development in 1936. Piaget identified that in the second stage of life, a child will enter a preoperational stage of development from ages two through seven. The preoperational child will begin to learn through symbolic thinking (Siegler & Ellis, 1996). The information a child retains in their brain will be attached to a picture or symbol in order to developmentally make sense to them. Additionally, children are constructing knowledge from their own insights and gatherings, which means that they struggle with perspective and abstract thought (Nelson, 2009).

Children's reactive tendencies are perfect examples of this interaction between many stages of nervous system response developed by Porges. The polyvagal theory covers the three levels of nervous system stimulation: the ventral, sympathetic, and dorsal vagal. In the ventral

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vagal, a child will be experiencing a state of calm and have the ability to be socially engaged or connected. Dropping to the sympathetic vagal means that the body is beginning to react and a child may demonstrate increased alertness or early signs of a reaction. Often in this phase of reactivity, a child will be responding to danger, and the body will regress into a flight or fight response state. (Porges, 2011). Finally, in the dorsal vagal stage, a child may completely shut down and dissociate from the world around them as the body's last resort to find safety. In the dorsal vagal response, a child will not be able to socially connect, nor will they be receptive to feedback or corrective assistance from an adult or caregiver (Dana, 2018, pp. 108-122). The sympathetic vagal phase is more common as an adaptive response in early childhood, while the dorsal vagal is more primal in nature. As a child begins to react to something that may feel uncertain, therapists and caregivers can support their processing of emotions in order to return to the ventral vagal state and to ultimately feel cues of safety in their environment (Porges, 2011, pp. 86).

Parent Role in Co-Regulation

The fields of child development and professional support of childcare and family systems are expanding exponentially due to advancements in brain research on architecture and influences of genes and experience in the first years of life (Nelson, 2009). In utilizing technological advancements and new ways to understand neural activity, scientists have suggested that children's initial cognitive, emotional, and social capacities in their younger years have strong neuroplasticity, which is when the brain's connections are actively linked to growth and reorganization based on external stimuli and bodily reactions (Pandey et al., 2018). When a child works to assimilate information that they already know by association or accommodate

more information by creating a new category, they will be experiencing socialization, a developmental response based on exposure and experience (Siegler & Ellis, 1996). A child's learning is happening simultaneously, however, it is up to parents and caregivers to work in a consistent realm of regulation in order for their children to develop a healthy relationship with themselves and the ways in which they engage in the world around them (Delahooke, 2019). The aim of this review is for the increased support of young children as they navigate their response to new stimuli in their environment through their parents or caregivers. The foundation of a child's emotional patterning and identification of their sensory responses begins with the cues that they observe in a caregiver or parent. Children are extremely receptive to states of behaviors and relationships, which means that in order to apply and model the regulation techniques identified, it is essential for the parent or caregiver to be present and in a ventral vagal state of regulation when guiding their children (Dana, 2018). Caregivers and educators may use modeling, correctional child-first language, and active listening/questioning to support a child in their reflective journey. A productive way to ensure that the parent/caregiver is in a safe zone to support their child's behaviors is to first perform the activities mentioned in this research for themselves (Delahooke, 2019). It is important for the caregivers and parents to dive into how these regulatory techniques apply their own perspective to what practices encourage their own posture of learning and openness to receive feedback. As parents and caregivers embark on their own journey of practicing impulse control, it is important to note that a reaction to or in front of their child outside of the ventral vagal state demonstrates a response not aligned with safety in the nervous system and is a form of impulse reactivity (Porges, 2011). When identifying the systems by which children are influenced, the practices and foundational learning all are reinforced through a parental or primary caregiver's influence and environment (Shonkoff &

Phillips, 2001). The identification of this behavior is the most important piece of this research and kindles the process of growing in safety-promoting techniques (Pandey et al., 2018). The process of parents and caregivers being able to recognize how their own regulation changes in response to their child's behavior signifies their own step in personal awareness, which, in turn, translates into the framework for building trust and a healthy relationship with their child/children.

Self-Regulation in Relation to Polyvagal Theory (Top-down + Bottom-up)

Young children do not have the vocabulary, conceptual understanding, or physical introspection to be able to understand this theory in an abstract therapeutic setting in the same manner that adult clients are grasping their impulsive behavior and emotional regulation. The preoperational child thinks abstractly and will engage only in the symbolic application of what they previously understood about a certain environment or stimuli around them (Daniel, et al., 2020). If a child has never learned how to soothe their bodies and minds through various sensory stimulations, there is no way for them to have the background of self-regulatory behaviors. Dr. M. Delahooke (2019), a pediatric psychologist developed a chart to signify a child's confusing reactivity called the "developmental iceberg" psychoeducational tool. Delahooke uses an image of the tip of the iceberg to be an "outburst" or a "defiance," when underneath is the individualized strain that a child may be experiencing such as "toxic stress" or "challenges in regulation" (p. 24). Parents and caregivers may use this visualization of an iceberg to remember that a child's behavior is a means of communication in replacement of verbal language. The behavior that a child exhibits is revealing a deeper, underlying need, for example, being overly tired, hungry, or stressed.

In this manner, parents and caregivers may begin to introduce sensory activities in various ways and watch their children's responses. They can identify if a child is in a safe nervous system state by noticing their various zones of emotion and effective regulatory techniques (Kuypers & Winners, 2011). Williams and Shellenberger's pyramid of learning developed in 1996 and re-imaged through Dana in 2018, demonstrates how the sensory system relates to sensory-motor, perceptual motor, and cognitive development and processing. This system of understanding helps conceptualize how sensory input translates into nervous system understanding and response (Nelson, 2009). Two distinct interventions have emerged from this pyramid of learning theory, top-down processing, and bottom-up processing.

Top-down assessment focuses on teaching regulation strategies and bottom-up strategies first work on regulating a child's body and the different systems of the body as a means to work towards supporting higher levels of regulation. Top-down assessment will examine a child's abilities as they are relevant to them through their ability to attain regulatory skills while bottom-up processing assessments focus primarily on a child's state of safety in a more indirect fashion until a state of readiness for learning is achieved (Brown & Chien, 2010). This means that there are two ways to utilize these theories in application to sensory integrative awareness and responses. Top-down activities include writing a social story, building a brain/brain map, designing emotion charts, and coming up with a "safe word" or hand signal. Bottom-up processing begins with a child's feeling of safety in the body. A parent or caregiver may work with this child to provide safety cues that initiate the process of reaching a ventral vagal state. This process is achieved by creating a secure environment, or by engaging in peaceful activities that relieve tension (Brown & Chien, 2010). A few examples of this may include breathwork, spending time in a fort or cozy corner, or push-pull/heavy work activities that encourage the nervous system to feel more regulated. In a regulated state, the parent or caregiver will first build safety in the body and nervous system by moving from function to activity, to bring the child to a level of safety in their awareness and activities (Nelson, 2019).

Top-down processing includes bringing a direct awareness to a child's emotional zones and states of regulation, while they are in the ventral vagal system of safety. This may include creating a body map, identifying how to use emotional charts and zones, and validating emotions. The best mindset that a therapist or caregiver can apply to a top-down intervention is to first validate a child's emotions (Brown & Chien, 2010). By beginning in a space of understanding, a child will be in a trusting state and be more willing to walk through a social story, which is a way to reframe an experience in a new emotional state (Dana, 2018). In this stage, the therapist or caregiver will first validate and engage in an exploration of a child's experience and participate in activities that bring awareness to their emotional reactivity and their body's behavior (Delahooke, 2019, pp. 197).

This research compiles activities that include both Top-down and Bottom-up processing, as well as explains the ways to engage in both to develop and model strong relationships with one's body. In order to encourage and establish safety within these practices, a parent or caregiver must be modeling a posture of both willingness to understand and listen to their child, and a regulated state of calm emotions (Mahoney & Nam, 2011). Oftentimes, children will be communicating their needs in ways that may look like defiance, so it is important to begin processes of support through active listening and observation (Shonkoff & Phillips, 2001, pp. 240). The act of doing this may require less language, and instead is more based on asking:

"What the body is telling you?" Perhaps one of the first practices could be taking the approach of identification and space created for emotional regulation and understanding.

Educational Regulation Techniques and Practices

Emotional Identification and Understanding

The "Zones of Regulation" was developed and published by Kuyperss in 2012. It is a program that promotes self-understanding of emotional concepts in children and adolescents. However, these emotional zones may be used by all individuals aiming to identify feelings and create a safe space for meaningful connection (Kuypers & Winners, 2011). Programs, books, and resources that promote emotional identification in order to evaluate one's space and ability to connect to one's emotional behavior have been prevalent in the therapy and education world for quite some time. Thes emotional resources and themes are becoming more popularized in classroom posters, children's books, and even media, for example, the movie "Inside Out" released by Disney in 2015. The intent of these emotional concept maps is to draw out tangible emotional understanding from the preschool-age child, who is unable to fully conceptually understand the emotions behind their reactivity (Daniel et al., 2020). Because of the developmental stage a pre-operational-aged child is in, a way to approach emotional regulation begins with attaching emotion to a symbol, color chart, or zones to identify the emotion (Shonkoff & Phillips, 2001). As a parent or caregiver, it is significantly important when in a questioning state of a child's emotional reaction not to be critical if a child identifies with an unstable stage. If they are willing to share their state, this child is demonstrating a form of trust and reliance, supporting a version of introspection that makes the most sense to them (Siegler & Ellis, 1996). This is the first activity introduced as a means to support self-regulation in children and their relationship with the parent/caregiver because, without a foundation of trust in

emotional sharing, there will be a lack of clarity in methods of support and promotion of regulation. A child needs to feel that there is a partnership in the relational sharing and supporting emotions with their familial system of support. When a parent/caregiver initially identifies a child in a state of need for regulation, modeling and questioning support is the first step in promoting a ventral vagal state (Porges, 2011).

The following example references have been developed and observed through practicing occupational therapists. These models may be posed as touchpoints for children and parent/caregiver interactions as a means to deepen emotional understanding (Kids on the Point Occupational Therapy, personal communication, August-October 2022).

Ask Directly

- I noticed you are _____ (ex. Sniffling, breathing heavy, not wanting to sit still) right now. Are you feeling like you need a body break?
- I am feeling overwhelmed because _____ (ex. that big truck went by and surprised me), I am wondering if you feel that too.
- I am seeing that you are upset right now, I am sorry you feel that way. Can you tell me what color your body feels?
- Can you tell me what part of your body feels _____ (ex, angry, sad, scared,) right now?
- I am needing a break because I am _____ can you come with me?
- Can you squeeze my hands right now and then tell me what feeling your body has right now?

By translating feelings into symbols and simplistic language, parents and caregivers can continue to develop trust though remaining in their own calm state of regulation, demonstrating their own simple identification of emotions, and providing validation of challenging reactions (Shonkoff & Phillips, 2001, pp. 122). Emotional regulation has been shown to be a powerful tool in both protective and promotive spheres of influence (Daniel et al., 2020). The ways that a parent and caregiver model emotionally regulated behavior may be through a variety of symbolic thoughts or wordage, but in a manner that will make sense to the child. Identifying emotions encourages promotive measures for both the child and parent/caregiver while establishing lasting systems of communication and emotional understanding to negate possible defiance and develop protective environments for children to thrive in (Daniel et al., 2020). By using tools to manage emotional reactions and develop insight into the impact of those behaviors, parents and caregivers set a foundation for diving into further intervention techniques from a space of trust.

Brain Messages

A few preschools and childcare systems are working to implement self-regulatory understanding by incorporating a curriculum that encourages mindfulness as means to support stronger relational communication. In a study published in 2015, researchers from the University of Wisconsin-Madison conducted a "12-week mindfulness-based Kindness Curriculum delivered in a public school setting on executive function, self-regulation, and prosocial behavior in a sample of 68 preschool children" (Flook et al., 2015, pp. 44). The intent of this study demonstrated how linked social-emotional regulation is to academic performance and teacher/student relationships, which in turn, carried over into relationships at home as well. Although the lessons were only two times a week for 20-30 minutes, the researchers found improvement in students' social competence and executive functioning at the end of their intervention (Flook et al., 2015, pp. 49). In this study, children engaged in prosocial behavior understanding, which means they were learning that the messages they were sending to their

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bodies and brains affected the way that they engaged with their peers and adult figures.

Caregivers can support a child's brain messages and pro-social engagements by paying attention to and responding to the words that they may say. For example, an observed intervention phrase using this technique may be:

- Child: "I hate this project."
- Parent/Caregiver: "Is that message you are sending to yourself going to help you finish your project? What is a different message you could send to your brain?"
- Child: "I'm bad at writing/drawing/jump rope"
- Parent/Caregiver: "Are you bad? Or is this something you're working on?"
- Child: "I am not good enough at this."
- Parent/Caregiver: "Can you give it your best? What does your best look like right now?"

(Kids on the Point Occupational Therapy, personal communication, April 2022).

Parents and caregivers can support brain message re-framing by suggesting new phrases and using them in day-to-day situations. Research is showing that children respond more effectively and thoughtfully to positive, goal-oriented language re-framing. C. Dweck's (2006) idea of the growth mindset as a means to center value on effort and perseverance rather than the outcome alleviates the fear of failure in children (Dweck, 2006). These re-framed affirmation phases may look like:

- "I can't do this yet"
- "I am still learning"
- "This is a challenge"

- "I am being brave while I work on this."
- "I want to keep trying"

By addressing the negative impact that a child's message may have on themselves and those around them, a parent/caregiver brings awareness to the way that language relates to regulatory behavior, and may correct developing self-deprecating habits (Dweck, 2006). These phrases tie into the field of psychology in the form of Cognitive Behavioral Therapy (CBT), which is a form of language reframing. CBT aims to alleviate psychological suffering through activities and interventions that change thinking patterns. Language and affirmation statements have become a piece of this therapy and work to break unhealthy negative self-talk. CBT is typically utilized as a tool within a variety of emotional regulation techniques in therapies. Parents and caregivers may use this form of brain messaging and language affirmations as an educational technique in day-to-day interactions (American Psychological Association, 2017).

Additionally, applying growth-mindset language promotes a child's self-awareness as they work through something challenging. (Pfeiffer et al., 2018). G. Mahoney and S. Nam (2011) expanded studies on the parenting model developmental educational techniques by identifying that responsive interaction in parental interactions with their children improves reciprocal relationship engagement and sensitivity through modeling (pp. 96). Their "Responsive teaching logic model" (pp. 108) proposed that an enhanced parental reaction leads to an enhanced child pivotal developmental behavior which will contribute to either enhanced cognitive and language development, or strengthen social-emotional functioning. A parent/caregiver's consistently enhanced responsiveness and instruction of their child is tied to the ways that their children both mirror behavior and develop executive functioning (p. 118). Parents who demonstrate effective support through modeling the growth mindset and using positive brain messages reveal both attentiveness and progress praising, which a child will observe as a confirmation that their best is enough (Dweck, 2006).

Parents and caregivers may need to practice these language activities and explore how the growth mindset relates to their parenting style in order to learn how to model this behavior for their children (Dweck, 2006). These practices may feel unnatural at first but are the first steps in building consistency in thoughtful interactions and intentional praise within family systems (Porges, 2011). A child's development of self-concept and grit will begin with the parent/caregivers' commitment to acknowledge when they drop into a sympathetic or dorsal stage and reframe their own reactive activity (Seligman, 2011). It can be beneficial to acknowledge those emotions as well if a child shows an awareness or response to the situation by saying:

- "That was really challenging. I am breathing to get my brain to a calm state."
- "I feel frustrated right now so I am going to take a break."
- "I said something when I was really sad, and that is okay, but now I need to apologize because that was not a good message."
- "I do not think the message I just sent to myself helped me figure out that problem. I am going to try again."

(Kids on the Point Occupational Therapy, personal communication, April 2022).

Mindfulness studies reveal how children respond thoughtfully to a curriculum that promotes prosocial and emotional processing as a means to deepen relationships. Additionally, the concepts of growth mindset and modeling responsive interactions are tools that parents and caregivers may use as a means to develop awareness for both themselves and their children as they work through challenges and reactivity. By using a new framework of interaction and response, parents and caregivers have the opportunity to encourage enhanced developmentally appropriate functioning as well as positive responsiveness.

Sensory Techniques

In 1972, J. Ayres published research defining sensory integration as an integration of the vestibular, tactile, and proprioceptive sensations in a therapeutic manner to support information processing (Ayres, 1981). Ayres believes that the body learns awareness from motor control and reinforcement and that brain functioning is deeply linked to the sensory information children receive and process. Sensory integrative therapy consists of activities that stimulate the brain and body in ways that support better reception and integration of input. In a way, the brain is striving to make connections, like dots, that string together information based on the body's understanding of the sensory world. Using sensory integrative therapy is a way to support the connectivity of these dots (Bundy & Lane, 2019). The ability to process sensory information from the world in safe ways is what establishes a child in an environment in a way that makes sense to them. Avres laid the foundation and developed terminology regarding the way that children and adults engage with sensory information. The research by Ayres (2005) and others, began identifying the impact that parents and caregivers have on their children through co-regulation and impulse control, which in turn, affects future engagements and co-occupations (Pierce, 2009). Occupational therapists currently support that there must be a partnership and recognition of both art and science when it comes to meaningful rehabilitation using sensory integrative therapy (Bundy & Lane, 2019).

In 2018, a systematic review and meta-analysis were published by *JAMA Pediatrics* to evaluate "The effectiveness of universal self-regulation–based interventions in children and adolescents" (Pandey, et al., 2018). Their study compiled over 32 clinical studies from various

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published peer-reviewed journals and studies covering the topic of sensory regulation using techniques such as mindfulness and yoga, family-based, exercise-based, and social and personal skills strategies (p. 566). From this study, the discussion of the effectiveness of self-regulation techniques was evaluated. The research found positive trends in behavior, response, and especially, in relation to authority figures such as their teachers and aides in the classrooms. The compilation of such a vast amount of data stands as a qualitative analysis of the effectiveness of sensory integration, while also relating to the truth that each child requires a self-regulation response plan unique to them, due to their own diverse socialization (Shonkoff & Phillips, 2001, pp. 108). That being said, the role of a parent and caregiver is to be responsive to the needs that their child demonstrates and develop a plan to promote regulation using tools that encourage growth and give space for reciprocal engagement. The field of occupational therapy and the demand for continuing intervention addresses the stimulation of the vestibular systems such as balance and bodily awareness, tactile systems such as touch and sensation, and proprioceptive sensations such as body force. Skilled occupational therapists use many of the skills and processes described in this manual in an elevated fashion by supporting children's bodies in processing input and gaining safety and control over their reactions. Occupational therapists are specialists in knowing the field of sensitivity in relation to bottom-up processing, as well as how each child's needs are applicable to the various methodologies used in therapy (Pfeiffer et al., 2018).

Gomez et al., (2021) conducted a questionnaire study that suggested that a child's temperament is significantly tied to their own processing of the sensory world they engage in. Sensory therapy has been proven to be meaningful in the lives of children with exceptionalities, as well as typical children, but it may look different from child to child (Gomez et al., 2021). A

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parent/caregiver that spends many hours of the week with their child is likely aware of their triggers, reactivity, and response behavior to certain over-stimulation or simulation cravings. It is also essential to note that children may demonstrate signs of needing more sensory input, or that they may be overstimulated and require less stimulation. If a child is needing more sensory stimulation, they may show signs of squirming, chewing on nails, touching other children, or struggling to focus on one topic at a time. When a child is sensory seeking a parent/caregiver may provide resources for them to stay in one space or area while still being present with the task at hand. In contrast, a child who is overstimulated may be clenching their fists, have closed-off body language, lack energy, demonstrate strong emotions to small changes, or become very tired (Delahooke, 2019). Both spectrums of these symptoms are revealing a deeper need within the child and environment relationship. Preschool-aged children often lack the proper awareness to explain that the TV is too loud or they need a sensory toy to focus, which is why they provide cues to their needs through body language and reactivity. With these signals in mind, a parent/caregiver may begin to explore various forms of reactivity in relation to the various tools of sensory support they can provide (Bundy & Lane 2009).

Sensory Integrative Therapy Activities

- Blowing bubbles through a straw.
- Laying under a weighted blanket or heavy sheet.
- Having a crunch snack and taking a break.
- Swinging on a swing.
- Doing "crashes" on a soft surface.
- Playing with putty.
- Chewing gum.

- Doing five jumping jacks.
- Singing a song or listening to music.

(Activities inspired through observed interaction, March-October 2022).

These activities will bring direct awareness to re-framing feelings or reactive behavior in a stimulating setting, utilizing the bottom-up approach, other interventions suggested include the top-down process of curating restorative activities that encourage dropping back into the ventral vagal state of calm (Brown & Chien, 2010). One of the best ways to enforce these activities is to create a space, typically in a home environment, where a child can engage in sensory activities or even just practice stillness that feels both safe and secure (Porges, 2011). A parent/caregiver may build this space with their child in order to reinforce that their need for time to reflect and reset is both important and understood. Parents and caregivers can support the process of designing this space in the corner of a bedroom, under a bed, or on a chair, and engage in questioning such as "what things do you want in your _____ (EX. safe space/cozy corner/reset station)?" A child should create a space that accesses their senses and provides a calming feeling based on their own unique likes and temperament. For example, a child may want coloring books, putty, weighted blankets, projector lights, soft toys, or puzzles as mindfulness activities. Having a safe space will promote ventral vagal regulation and self-advocacy as children learn to use the space and advocate for their need to find their state of calm when they are feeling reactive?" (Observed interaction, August 2022). Nitecki and Chung (2016) recognize in their literature review published in the International Journal of Early Childhood Environmental Education, that children require a personalized safe space to return to in order to respond to their need for rest and de-escalate their emotions throughout their play and as they engage with the world. Parents and caregivers may provide this space as well as respect a child's need for moving into this safe

location as needed (Nitecki & Chung, 2016). Because the preoperational child's brain is constantly making sense of their world, children need time where they can give their minds time to process and relax (Valsiner, 2005). Parents and caregivers can support a child's autonomy in advocating for a safe space by constructing it with their child, discussing the purpose, and allowing their child to utilize it as needed.

Another method that promotes sensory relief for children, especially those in the overstimulated state, involves rhythm and the repeated crossing of the midline. Bill Hubert (2001) studied how a child's academic performance and focus were tied to the development of their rhythm and balance through repetitive bouncing activities completed with sand-filled bags. The program developed, Bal-A-Vis-X, stands for Balance/Auditory/Vision eXercises which engages the whole mind-body system and encourages physiological communication, as well as focused attention (Hubert, 2001). Crossing the midline entails a child moving the opposite limb over the invisible line that cuts their body in half moving vertically. This means that they are engaging both the left and the right hemisphere communication centers of their brain, which is very grounding for their bodies and mind (Bundy & Lane, 2009). By engaging in activities that require them to cross their midline, such as Bal-A-Vis-X, children will be able to be more physically aware, as well as conscious of themselves in a more regulated state (Hubert, 2014). Crossing the midline can be extremely challenging for children who do not practice activities that require this kind of motion, but is essential for daily life tasks such as tying shoes, balance, motion control, and hand dominance. Children who experience delays in motor control may only be engaging with one side of their body which will hinder their control over both sides of their body (Ayres, 1963, pp. 133). The Wilbarger Protocol (Brushing) for Sensory Integration developed and promoted through the National Autism Resources (2023) is another form of a

physically calming activity involving sensory/tactile therapy. This protocol involves the firm, steady brushing motion of a child's legs, arms, and back, using a sensory brush. The repetitive brushing motion as well as the flow of constant, anticipated touch, may relieve anxiety and enhance a child's engagement, and reduce fear of tactile stimulation (The Wilbarger Protocol, 2023).

Hubert and The Wilbarger Protocol (Brushing) for Sensory Integration program aligns with a popular theme of "flow activities" rising in the realm of positive psychology. Flow, as defined by M. Seligman 2011, in the book *Flourish: A visionary new understanding of happiness and well-being*, is the act of being beyond wrapped up in an activity that one's brain reaches an unconscious state of repetition while still engaging meaningfully with the task at hand. These tasks may be an activity such as playing the piano, bouncing a ball, or exercising, however, they all must promote a state of peace in performance (Seligman, 2011). Through the support of a parent or caregiver, a child may learn to establish these flow activities in their life as a form of self-regulating behavior. Oftentimes, these flow activities will contain an element of rhythm, repetition, or patterning that is supporting brain connection and bodily awareness (Ayres, 1963, pp. 130). Occasionally, children will need support in engaging in more midline-crossing activities. If a child is demonstrating a need to participate in this balancing of connectivity and sensitivity which can be practiced through new flow activities such as brushing, or even games such as Bal-A-Vis-X.

Research conducted by N. Jaegermann and pp. Klein (2010) published in the *Infant Mental Health Journal*, examined the quality of mother and child interactions. Their research revealed that quality intervention in sensory support enhances the ability for child/mother bonding and the opportunity for soothing the sensory needs of infants and young children (Jaegermann & Klein, 2010). As occupational therapists and specialists work with mothers, they found that the improvement of the mother's interactions and communication with her child was significant in the ways that they demonstrated bonding and mutual trust in one another (Porges, 2011). Although seemingly simple, when a child is revealing a deeper need through a meltdown, tantrum, or impulsive behavior, the ways that not only mothers but all parents/caregivers respond and seek to understand their child is how mutual trust and understanding are built (Jaegermann & Klein, 2010). Children are both responsive and aware of the time and effort that their parents/caregivers show towards them, and without the modeling and questioning, they likely lack the skills to self-regulate on their own.

Top-down/ Bottom-up Differentiation in Application

The American Journal of Occupational Therapy (2018) published a similar meta-analysis that compiled and reviewed studies completed in both cognitive interventions and occupation-based interventions affirming the benefits of occupational-based interventions from both a top-down and bottom-up perspective. While specific sensory integrative therapies teach occupational skills such as brushing, spinning in a swing, painting with bubbles, and shaving cream, other therapies involve direct cognitive support such as body awareness activities and designing social stories (The Wilbarger Protocol, 2023). If parents and caregivers work to understand how their child responds to various methods of stimulation within the various strategies, children gain the tools to begin using their preferred sensory tools at home as a regulatory habit (Jaegermann & Klein, 2010). These techniques engage children in questioning what their bodies need and how they feel safe. By being able to voice and conceptualize their reactions in a way that makes sense to them, children will safely connect with the world around them in a posture of openness so they may flow more, and fight/flight less (Bundy & Lane,

2019). Parents and caregivers can utilize both the bottom-up and top-down approaches to develop support and trust from a posture of appreciation for the process of development. As the preoperational child grows in their self-concept in self-regulation, these sensory tools will promote a safer environment for them to grow in awareness, trust, and emotional regulation (Valsiner, 2005).

Benefits as Applicable to Individuals

Positive shifts that occur in emotional understanding and self-regulating skills are not attained overnight. The partnership of a parent/caregiver presence in their child's development is the best and first step in creating a child who understands and operates from a safe space in their body (Porges, 2011). Children are fully capable of identifying their needs, however, they lack certain introspection to be able to communicate them in the same ways that adults do (Ayres, 2005). By giving children tools to identify, relate to, understand, and act upon their impulses and emotional behavior, children become more self-aware of themselves and their impact on their families and communities. Parents and caregivers must note that working on using these tools may result in reactive behavior. Patience and consistency are how children will find safety in the activities proposed in this literature review. Children will know their bodies and reactions better than anyone else, and to establish a relationship based on active sharing and regulation, a parent/caregiver must be in a ready state to receive what their child has to share with them. Studies have shown that it is not just children demonstrating direct impulsivity and reactivity that need regulatory tools (Gomez, et al., 2021, pp. 7). In fact, parents and caregivers seeking to deepen their relationship with their child may use this as a means to form more meaningful interactions in general.

Conclusion

This paper does not acknowledge certain exceptional needs such as childhood adverse traumas, severe disabilities, or children that demonstrate greater need. While these techniques may be restorative and significant for individuals demonstrating a greater need for intervention as well, the aim of the techniques suggested in this paper is meant to address more subtle childhood behaviors and support a parent to navigate the promotion of regulation techniques. It is important to request additional opinions from specialists in the field of family sciences who engage directly with children about healthy practices and recommendations for care and support. Using top-down and bottom-up processing techniques, this literature review confirms that there are various methodologies that parents can apply when they are grounded in safety and support healthy relationships (Daniel, et al., 2020). By modeling the ventral vagal stage of operation, children will begin to look for cues of safety and support from a state of trust through the adults in their lives (Porges, 2011). This parental educational resource is a tool meant to be used as a guide to support children and families in their emotional regulation, and sensory processing understanding of one another. However, this resource is not a replacement for the intervention and application of certified occupational therapists. Occupational therapists work closely with children as skilled professionals in the field of everyday living and participation. This resource only covers a very specific area and theory within the realm of the much larger occupational field, and many of the tools referenced are elevated and effectively implemented in an occupational therapy session.

The current resources surrounding behavioral education techniques available for parents are vast, and at times overwhelming. The process of picking through books and articles to address the needs of each child may seem daunting, however, this resource is a means to empower parents to recognize their valuable influence on the behaviors and self-concept of their children. The example conversation texts provided are real-life applications of effective language techniques to re-word emotional perspectives and encourage regulatory behavior. The intention of including these details is to offer parents and caregivers a tangible starting space as they begin the process of co-regulation with their child.

Every young child will have unique tendencies and needs, this is why the field of child development is focusing on building a parent's toolbox and supporting the systems surrounding the child as they grow into meaningful occupation and engagement with the world around them. Although resources are a powerful foundation for knowledge in supporting children, the intentionality that a parent/caregiver will pour into and modeling is essentially the framework for the way a child learns to regulate their behavior and understand their own emotions.

Podcasts

In order to connect with families, and the parents and caregivers who work every day to understand and relate to their child/children, this literature review has been broken up into podcasts linked here: <u>https://www.buzzsprout.com/2091055/episodes/12351687</u>

Podcasts are easy, on-the-go ways to attain relevant advice and tangible educational resources while not being overwhelmed with a surplus of information. These podcasts are simply meant to summarize and allow parents to gain little steps towards first regulating themselves, then co-regulating in relationship to their children who may be needing emotional regulation and impulse control. As children begin to understand their bodies and their reactivity, parents/caregivers will be able to develop deeper relationships in the foundational trust essential for bonding. These podcasts are about the research conducted in this guide and are cited as such. Additional material is suggested if parents desire to expand their knowledge of the ideas

presented in the podcasts. The podcasts are meant to be methods of support for parents and caregivers and are used to enhance regulation skills and self-understanding.

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