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Combining DIRFloortime and Sensory Integration for Children With ASD

Courtney St. Germain-Dillon, MS, OTR/L
Occupational Therapist and Program Director
DIR Institute
Livingston, NJ

Stephanie Peters, MS, OTR/L
Occupational Therapist
DIR Institute
Livingston, NJ

This CE Article was developed in collaboration with **AOTA's Sensory Integration & Processing Special Interest Section**

ABSTRACT

The Developmental, Individual Difference, Relationship-Based (DIR) Model can be used in occupational therapy practice to intentionally promote the social-emotional development of children with autism spectrum disorder (ASD) by combining DIRFloortime strategies and sensory integration treatment. DIRFloortime offers a comprehensive framework that integrates self-regulation, engagement, and participation in everyday activities within a collaborative and supportive relationship while interacting in a sensory world.

This article provides a brief introduction to the DIR Model and its first three core functional emotional developmental capacities. In addition, this article advocates supporting sensory integration treatment by using DIRFloortime strategies that promote connection and attunement for children with ASD who have sensory modulation differences, as well as discusses potential adverse effects of neglecting and discrediting sensory modulation difference, which may include masking and social gaslighting for children with ASD.

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. Discuss the three principles of the DIR Model
2. Describe the model's first three core functional emotional developmental capacities in relation to sensory integration strategies
3. Identify the potential risks of not understanding and/or supporting the individual sensory processing differences of children with ASD
4. Describe sensory modulation patterns and their impact on facilitating social-emotional development

INTRODUCTION

Occupational therapists (OTs) and occupational therapy assistants (OTAs) play an important role in providing interventions for children with autism spectrum disorder (ASD) to support difficulties in sensory processing, fine motor skills, self-care, and play. Pfeiffer and colleagues (2018) found that "challenges in detecting, interpreting, and adaptively responding to sensory stimuli affect a child's ability to participate in meaningful and valued occupations." OTs are trained to evaluate and treat sensory processing challenges that affect overall functioning.

Children with ASD tend to exhibit a variety of *sensory features* (Watling & Hauer, 2015), more commonly known as *self-stimulatory behaviors* (e.g., hand flapping, rocking). These sensory features indicate difficulty with sensory modulation that may result in a maladaptive response. For children with ASD, these sensory modulation challenges affect the ability to engage in daily occupations, including play and social participation (Kashefimehr et al., 2018). Commonly used interventions for treating sensory features are either Ayres Sensory Integration (ASI®) or sensory-based interventions (SBIs) (Reynolds et al., 2017). In the sensory integration frame of reference, the outcomes of the sensory integrative process aim to improve:

- The ability to modulate, discriminate, and integrate sensory information from the body and from the environment

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- Self-regulation to regulate and maintain arousal level to focus on task
- Maintenance of postural control, ocular control, bilateral coordination, and laterality
- Praxis and organizing behavior for tasks and activities
- Development of self-esteem and self-efficacy (Schaaf et al., 2010).

These outcomes directly relate to a child's capacity for emerging social engagement. The risk of modulation differences for a child with ASD is in learning that their perceived world is too uncomfortable to the point where they no longer desire to understand and experience the myriad joy-filled relationships within it.

The Developmental, Individual Difference, Relationship-Based (DIR) Model, also known as DIRFloortime, offers a framework on how to engage with children whose differences in sensory processing have begun to limit their ability to connect and relate with others. Using the DIR Model empowers practitioners with information on how to understand the varying modulation patterns of children with ASD. Additionally, the DIR model highlights the importance of how to connect and respond to sensory differences, which allows for the power of transformative and therapeutic relationships between children and practitioners.

A common assumption of the DIR model is that it is an intervention in which a child can engage in pretend play “whereby they reveal their understanding of the world, their feelings, their relationships, and how they see themselves” (Wieder 2017, p. 260). DIRFloortime is an evidence-based practice in which symbolic and emotional development mirror each other as children grow—a process that begins in infancy in the relationship and signaling with one's parents (Wieder, 2017). This article provides a brief introduction to the DIR Model as well as an understanding of how DIR principles can inform occupational therapy interventions for children with ASD to create a foundation for later symbolic understanding and exploration of the world.

DIR Model Overview

DIRFloortime is a model that fits into the broader subset of developmental relationship-based interventions, which are “developmental approaches [that] focus on the relationship between child and caregiver and address functional capacities of the child” (Cullinane et al., 2017, p. 1). The DIR Model, developed more than 40 years ago by Dr. Stanley Greenspan, consists of three principles. This first principle of the DIR Model is *development*, which encompasses 16 core functional emotional developmental capacities (FEDCs) that are essential to all neurotypical and neurodiverse human development.

Greenspan and Wieder (2006) stated, “The DIR model has helped many children with ASD learn to relate to adults and peers with warmth and intimacy, communicate meaningfully with emotional gestures and words, and think with a high level of abstract reasoning and empathy” (p. 40).

DIRFloortime treatment typically focuses on the first six core capacities, as these are foundational to further human development, and are achieved in typical development by age 4 years.

The six core capacities are:

1. Self-Regulation and Interest in the World
2. Engagement and Relating
3. Two-Way Purposeful Communication
4. Complex Communication and Shared Social Problem-Solving
5. Using Symbols to Create Emotional Ideas
6. Logical Thinking and Building Bridges Between Ideas

Although understanding the importance of the FEDCs is imperative to well-informed DIRFloortime interventions, practitioners also need awareness of one's *individual differences*, which is the second principle of the DIR model. There are many individual differences, including but not limited to sensory and motor processing, trauma, visual spatial abilities, auditory processing, receptive and expressive language, learning styles, culture, attachment, family dynamics, and biomedical.

Although some individual differences are outside the scope of occupational therapy practice, this model promotes an interdisciplinary approach, which allows collaboration and deeper understanding of the whole person. Occupational therapy can use DIRFloortime to address occupational goals while supporting a child's social-emotional development as a part of a comprehensive program for “children with ASD [to] become meaningfully verbal, empathetic, creative, and reflective, and engaged in solid peer and family relationships” (Greenspan & Shanker, 2004, p. 69).

The third pillar that unites the FEDCs and individual differences is *affect*, or emotional signaling, which is used to facilitate engagement and fuel the connection between two individuals. Without a connection to someone who understands their ability to perceive and discriminate sensory and motor experiences, the child becomes isolated and loses their ability to make meaning of their environment. The strength of a relationship stems from taking into account a child's unique way of taking in and responding to their sensory environment, which is the first step of entering into a child's world. This reciprocal relationship becomes the proxy for a child's future social-emotional development and their ability to form social relationships with others.

FEDCS

The necessity of learning to feel safe and secure is the first core FEDC, *Self-Regulation and Interest in the World* (Greenspan & Lewis, 1999). This milestone, which typically develops within the first 3 months of life, relates to the idea of safety in regard to initial attachment as well as early experiences with taking in information from the world. In this capacity, children use and organize their “senses and motor system to take in sensations from [their] environment that have the potential to both intrigue and soothe [themselves]” (Greenspan & Lewis, p. 24), allowing the child to feel calm and regulated, which creates a deep sense of security.

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Security is described as having control over simple behaviors such as visually attending to facial expressions or orienting to environmental cues, which enables one to connect with a caregiver. Functionally, in early development, this happens when a child finds a caregiver's "face with [their] beautiful eyes when [they hear] your voice. But this is no mean feat. [They have] to first figure out where you are and then activate [their] muscles and turn [their] head in your direction" (Greenspan & Lewis, p. 25).

The DIR Model is informed by attachment theory, as attuned interaction helps create a secure primary attachment that allows for further development and other relationships (Wieder, 2017). The goal of the first capacity is a caregiver's ability to attune; attunement is the ability to act in synchrony with the individual differences of the child with ASD, which allows for accurate cue reading and the ability to provide an appropriate response (Greenspan & Lewis, 1999). Thus, the connection between one's ability to impact their world and initiate connection with a caregiver, and for the caregiver to respond with an attuned affective experience allows for shared attention (i.e., attention between people) and joint attention (i.e., attention on the same object) (Wieder, 2017).

Developmental interventions, such as DIRFloortime, "build on a child's sense of pleasure inherent in shared affective experiences to increase the spontaneous flow of affective communication and achieve increasingly more complex levels of interaction" (Cullinane et al., 2017, p. 1).

The Affect Diathesis Hypothesis suggests that emotional signaling (affect) within a co-regulating relationship is difficult for children with ASD because of a unique biological challenge that affects one's ability to "[connect] emotion to their emerging ability to plan and sequence their actions" (Greenspan & Shanker, 2004, p. 69), especially within multi-step, complex interactions that are not being guided by the child's needs, interests, or emotions. As a result, interactions remain simplistic and/or become repetitive.

Despite initial biological individual differences that limit affective communication, research indicates that this neurological physiology is not a finite state. Increased practice with meaningful emotional interactions can help children with ASD develop more robust social-emotional skills. Recent brain studies support the idea that alternate neural pathways can be created, as researchers have found "divergent connectivity in the limbic structures and the fusiform gyrus related to reciprocal communication and facial emotional processing in children with ASD" (Wieder, 2017, p. 266). DIRFloortime is an effective practice option that improves these outcomes (Casenhiser et al., 2013).

DIRFloortime provides a model that expands the emotional responses by attuning to the child's sensory experiences during sensory integration treatment. Sensory integration abilities and sensory-affective processing are essential for symbolic development. "Sensory-affective processing ... is the ability to perceive, interpret, and react to affect, including the capacity to connect 'intent' and affect to motor planning and sequencing, language,

and symbols" (Wieder, 2017, p. 266). This is achieved through attunement, providing emotional meaning and connection (Greenspan & Lewis, 1999), and co-regulation whenever a stress response is observed. Successful attunement begets a connection that facilitates self-regulation learned through the symbiotic nature of an interaction with a caregiver, which is called *co-regulation*. Binns and colleagues (2019) noted that self-regulation is often perceived as a skill that independently develops in isolation; however, co-regulation experiences help develop "more autonomous and independent abilities for self-regulation" (p. 2).

Co-regulation is required throughout development, as one's individual differences often result in constricted abilities to process one's sensory world, resulting in a biological stressor. Binns and colleagues (2019) noted that biological stressors include motor, sensory motor, and sensory processing skills. Children with these challenges, including 80% of children with ASD (Watling & Hauer, 2015) "may expend a great amount of energy organizing information from their daily sensory experiences" (Binns et al., p. 5). These differences require support from a caregiver to learn how to regulate through confusing or unpleasant sensory experiences.

Too many processing challenges results in increased mental strain to take in and interpret information. Increased cognitive load reduces leftover energy that could be put toward other areas of self-regulation, including metacognitive and executive functioning tasks needed to apply self-regulation strategies, in addition to limiting engagement and attention (Binns et al., 2019).

Occupational therapy practitioners offer a specialized understanding of sensory- and motor-related individual differences, but they need to account for the compounding effects of all individual differences on cognitive load. Factors such as increased verbal language, a novel environment, increased visual stimuli (e.g., increased visual spatial demands, clutter, fast-paced movement), presence of perceived threats, difficult motor activities, and additional task demands contribute to increased environmental stressors that may potentially limit functional social-emotional development.

Self-regulation is embodied and internalized co-regulation; this is a critical piece to enticing children with ASD to have an interest in a pleasurable, shared world. The DIR Model offers OTs a comprehensive framework on how to tailor interactions to support all of the individual differences to ultimately reduce cognitive load and allow for increased availability toward engagement, interaction, attention, and continued functional social-emotional development.

Floortime Strategies

OTs can incorporate DIRFloortime strategies to improve attunement during treatment. These strategies include but are not limited to goodness of fit; wait, watch, and wonder; pacing; cue reading/cue sending; and following the child's lead. Occupational therapy practitioners strive to have a strong goodness of fit with a child through keen cultivation and understanding

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of which sensory inputs are found to be intrinsically interesting and pleasurable; and conversely, be observant to any stress responses that can indicate further co-regulation or attunement is required.

Evaluation of a sensory and motor profile is just as important as one's ongoing ability to wait, watch, and wonder to observe what a child seeks out in a pleasurable way, and note their physiological response in order to grasp why the behavior is important to them. It is important to remember that there is meaning to all of the sensory features, which include hand flapping, spinning, withdrawal, rocking, ear covering, and intense staring (Watling & Hauer, 2015). It is essential to observe, attune, and understand what each behavior is communicating. For example, do practitioners notice that a child starts to stand on their tiptoes when our pacing, movements, and language becomes too fast, and ideas too large?

Understanding the functional implication of a child's sensory modulation abilities allows occupational therapy practitioners to consciously change their pacing in play by slowing down movements and/or voices to attune and co-regulate with a child who displays sensory over-responsivity (SOR) or sensory under-responsivity (SUR) secondary to ASD. This supports connection and sustained regulation to allow for further engagement and participation in various occupations.

Occupational therapy practitioners can also apply the strategy of wait, watch, and wonder if a child is avoiding others (e.g., by paying localized attention to a spot on the wall or floor). Through understanding possible differences in visual sensory processing, including one's visual spatial, ocular motor, and visual perceptual abilities, occupational therapy practitioners can support children with ASD by using smaller visual fields to reduce cognitive load and increase engagement. This narrow way of seeing the world often can be used as a coping strategy during challenging tasks.

In this example, practitioners can follow the child's lead as well as cultivate a strong therapeutic use of self by not taking away one of the few strategies that a child has learned to keep themselves regulated. Rather, practitioners can start by joining in on their experience to communicate a sense of understanding, connection, and relatedness demonstrating that the child's play partner knows how to respect their cognitive load and will not push them toward having to further retreat inward as a protective mechanism. Initially, connection occurs within the context of what a child with ASD finds pleasurable and meaningful. Attunement needs to come first so that a child is not stuck in a stress fight/flight/freeze response (Siegel & Bryson, 2015) while interacting with their environment. This allows for increased availability to integrate all input within the nervous system.

After establishing this emotional connection, occupational therapy practitioners can apply other DIR/Floortime strategies to further engage a child with ASD in a shared world. After a shared world has been achieved, practitioners can meaningfully and mindfully introduce additional senses, activities, exercises, or emotional and affective back-and-forth interactions while continuously attuning. Well-attuned relationships are "the

vehicles for learning, encouraging initiative and intentionality, respecting agency, and also providing the security to feel safe, accepted, and loved, taking priority over all other goals across the lifespan" (Wieder, 2017, p. 266). Without co-regulation occurring through continuous attunement, cues may be missed that indicate productive learning is no longer accessible because of loss of engagement and/or stressed cognitive load.

After achieving regulation, occupational therapy practitioners can take the next step in fostering the relationship and moving a child to the next capacity. The second core FEDC, *Engagement and Relating*, is the experience of having shared closeness with a child (Greenspan & Wieder, 2006). Caregivers are encouraged to observe what brings the child pleasure, then tune in to the child's rhythms, emotions, and how they use their senses and body, thereby identifying moments of availability and optimal level of alertness for opportunities for engagement. By attuning to and following a child's lead in this way, the stage is set for shared pleasure and closeness.

In this core FEDC, practitioners are looking to find a sparkle of delight (i.e., gleam in the eye) that signals that an adult or caregiver is on their way to fostering a strong connection of understanding. Over time, this pattern of being with a child creates a deep sense of relatedness (Greenspan & Wieder, 2006). The goal of this capacity is to connect to a child in their experience to pull them into a pleasurable and shared world that they intrinsically want to be a part of with joy, warmth, and trust.

After a connection has been established, intentional two-way communication offers a child with ASD an opportunity to integrate environmental sensory input in the context of a back-and-forth exchange with a co-player through gestures, sounds, and/or words. The goal of the third core FEDC, *Two-Way Purposeful Communication*, is to respond to the child's overtures, creating circles of communication. By obtaining successful responses, a child begins to learn the effect they have on the world. The child's "sense of self is both part of your relationship and at the same time is beginning to be experienced as separate and purposeful" (Greenspan & Lewis, 1999, p. 115), which enables play exploration and play participation.

However, children with ASD have more challenges with understanding and interpreting nonverbal social cues, which impact social participation and the ability to develop and maintain relationships as indicated by the diagnostic criteria in the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 2013).

Casenhiser and colleagues (2013) found that the amygdala was 13% larger in children with ASD between the ages of 2 years to 4 years and 11 months, compared with a control group of children without ASD. These differences in the limbic system, which is responsible for social-emotional and sensory processing, provide a deeper insight into the effect of sensory modulation differences and social communication skills for children with ASD. For example, a child with ASD who presents with SOR may avoid interacting with caregivers, peers, and/or practitioners because their perception of this interaction is overwhelming, painful, or uncomfortable; this avoidance further affects their

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relationships due to increased difficulty with accurately reading and responding to the co-players' overtures.

Subsequently, if a child has difficulty understanding and responding to social cues, then they will also have difficulty expanding their ability to communicate and engage in shared problem solving, as cognitive skills are developed from gestural communication skills (Greenspan & Lewis, 1999). Therefore, "without two-way communication, all other progress will be difficult" (Greenspan & Wieder, 2006, p. 81).

Because challenges with understanding and interpreting cues (i.e., cue reading) affect the success of back-and-forth communication, occupational therapy practitioners must constantly keep a lookout for signs of dysregulation (i.e., cue sending). By maintaining awareness of sensory modulation and regulation needs, practitioners can facilitate sustained engagement and expanded gestural communication through emotional signaling that becomes the foundation for more sophisticated play in the higher FEDCs, as well as improved sensory integration, praxis and motor planning skills, and ADLs.

Understanding Sensory Modulation as an Individual Difference

The DIR model is "well suited to core principles of occupational therapy ... and is described as a comprehensive intervention targeting developmental deficits and building functional capacities" (Boshoff et al., 2020, p. 154). FEDC development occurs when the individual differences of sensory processing skills are supported via the relationship. Occupational therapy practitioners foster a therapeutic alliance by attuning to children with ASD by creating a strong emotional connection. This allows a practitioner to maintain regulation and engagement without overwhelming the child's cognitive load. Practitioners specialize in understanding the nuances of how sensory information is perceived, its impact on sensory modulation patterns, and the possible negative and detrimental effects on occupation.

One of the underlying reasons for behavioral and/or occupational challenges prevailing in children with ASD may be "the reduced ability to process and integrate sensation" (Kashefimehr, et al., 2018, p. 75). Sensory modulation is defined as "the ability to self-organize and regulate reactions to sensory inputs in a graded and adaptive manner" (Brown et al., 2019). Three subtypes of sensory modulation dysfunction have been identified based on "unique symptom clusters that may respond differently to treatment" (Schoen et al., 2018, p. 1). Therefore, accurately identifying specific sensory processing difficulties is imperative to providing the emotional support needed in conjunction with occupational therapy treatment for children with ASD. These sensory modulation subtypes include sensory craving, SUR, and SOR; therefore it is imperative to understand that every sensation gives rise to an emotional reaction that enhances the meaning of one's sensory experience (Greenspan & Lewis, 1999).

Occupational therapy practitioners need to understand the emotional reaction to various sensations and environmental stressors to facilitate adaptive responses. Chronic environmental stressors, such as the modulation challenges that result from existing in a sensory world that constantly feels overwhelming

(Binns et al., 2019), can reduce a sense of safety that affects the ease and willingness to engage in a shared world. Only when one's nervous system has determined that the environment is safe will the circuitry that supports social behavior and emotional regulation become available (Porges, 2017). Thus, an occupational therapy practitioner's understanding of which sensory capacities are affecting one's ability to feel safe in their environment is directly related to enabling a client's ability to socially engage and connect.

Sensory Strategies

Sensory integration interventions for children with ASD support their ability to process and integrate sensory information, resulting in increased organization and adaptive behaviors. An SBI, more widely known as a sensory diet, "occurs in the child's natural environment and consists of applying adult-directed sensory modalities to the child with the aim of producing a short-term effect on self-regulation, attention, or behavioral organization" (Watling & Hauer, 2015). When providing an SBI, the selection of sensory modalities should be informed by the child's individual profile but remain adaptable based on their modulation needs in that moment and executed based on their readiness and engagement.

In contrast, ASI is used "to increase the child's ability to process and integrate sensory information and thereby demonstrate more organized and adaptive behaviors" (Kashefimehr et al., 2018, p. 75). ASI is "a play-based method that uses active engagement in sensory-rich activities to elicit the child's adaptive responses and improve the child's ability to successfully perform and meet environmental challenges" (Watling & Hauer, 2015). One of the 10 process elements that characterizes ASI is called *ensuring safety*. Ensuring that a child is safely monitored as they navigate through sensory equipment and experiences to guard against physical harm is essential.

Although physical safety is an identified element of ASI, practitioners must also consider the nonverbal, sensory, and environmental factors that contribute to a sense of safety. This perceived sense of safety affects the sympathetic or parasympathetic nervous system response (Porges & Buczynski, n.d.), which is the neurological foundation of self-regulation. Without adequate self-regulation skills, one's social availability decreases (Porges, 2017), resulting in withdrawal, anxiety, aggressive behaviors, etc. (Schoen et al., 2018).

From a DIRFloortime lens, the concept of safety is broader than solely creating an environment in which practitioners ensure physical safety through close supervision. DIRFloortime facilitates a sense of safety by understanding and accounting for one's individual differences and their impact on the developmental process for children with ASD.

ASI therapy promotes improved occupational performance in children with ASD, as researchers have found significant improvements in all of the Short Child Occupational Profile domains and Sensory Profile domains, with the exception of emotional reactions and emotional/social responses (Kashefimehr et al., 2018). Incorporating principles of the

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DIR Model within ASI treatment provides strong affective exchanges during a challenging motor task, allowing practitioners to enhance the emotional meaning of the sensory integrative experience. Therefore, we suggest that DIRFloor-time may be a missing link in increasing the emotional development needed to improve sensory modulation and reactivity outcomes.

Case Example

Jo was a 7-year-old boy with ASD with a comorbid diagnosis of attention deficit hyperactivity disorder who was referred to occupational therapy to address his self-care needs. Goals included increasing independence with dressing, tooth brushing, self-feeding, and increased attention. Jo's sensory profile consisted of mixed sensory modulation subtypes and emotional overreactivity. His treatment plan included semi-structured activities to promote flexibility and reduce avoidant behaviors in response to adult direction and boundary setting to engage in targeted sensory motor experiences to support regulation and sensory processing.

Initial clinical observation indicated that Jo presented with decreased muscle tone; hyperactivity, with a preference for jumping and crashing activities; constant chewing on his shirt collar or chewy tube; spitting; drooling; throat clearing; echolalic speech; and poor engagement with and attention to adult-directed activities. He attended public school in a self-contained applied behavior analysis (ABA) program, where he received occupational therapy and speech therapy in addition to home-based ABA.

Jo's initial occupational therapy sessions were characterized by repetitive use of preferred sensory motor equipment, which led to self-absorbed behaviors. When the OT changed or added to any piece of this obstacle course, Jo responded with escalating levels of emotional over-reactivity, including immediate crying, throwing, biting, kicking, spitting, and pushing over equipment. No amount of time was successful in allowing Jo to habituate, calm, or orient to a boundary set by the therapist, and no progress was made toward goals.

Reflective supervision with a DIR Expert Training Leader revealed that the OT's perception of Jo's limiting factors were secondary to differences in body awareness, visual processing, and praxis, which made it very difficult for Jo to know how to react and respond to new environments. The supervisor encouraged the OT to reflect on her need to facilitate adaptive responses by changing the environment to challenge Jo, and conversely, what attuning or emotionally connecting would allow for.

The following session, Jo began in the same repetitive pattern. However, this time, when the OT attempted to move a piece of equipment, and Jo responded by screaming, the OT warmly, slowly, and affectively proclaimed, "Oh, that's not right!" Jo responded by pausing, calming, and socially referencing the OT before moving onto the next step of the sensory-motor activity. Over time and with increased practice, Jo responded to changes with increased affective expression by adding gestural and verbal

communication. Eventually, he assisted the OT in returning the misplaced piece of equipment. Gradually, the OT facilitated co-construction and expansion that included offering multiple choices and continued opportunities for Jo to say no to the OT's ideas, which facilitated self-generated ideation.

With this pattern of attunement and use of relationship, Jo made strong progress toward his OT goals. The OT noted prolonged moments of sustained engagement, turn taking, and collaboration in other games and activities, as well as increased persistence through challenging sensory-motor tasks. Improved adaptive responses were evidenced by increased independence with tooth brushing. The approach also fostered improvements in praxis, vestibular sensory processing, visual perceptual, and visual spatial skills, as evidenced by Jo's ability to maintain balance while transitioning across dynamic surfaces. Lastly, the approach reduced emotional reactivity, resulting in increased participation without meltdowns or tantrums with a renewed sense of joy.

IMPLICATIONS

The DIR Model emphasizes the importance of the child-co-player relationship, and this article emphasizes how practitioners can use principles of attunement and co-regulation to create a sense of safety to ultimately allow for developing higher functional social-emotional capacities. In prioritizing a sense of safety, this model supports a paradigm shift in cultivating an interpersonal relationship for children in which their lived perspective is validated, understood, and empathized with. It is imperative that a practitioner understand a child's sensory modulation profile to enable an adaptive response that balances one's sensory perceptions within the confines of a world scaffolded to support neurotypical experiences and development. This practice allows for compassionate social connection rooted in a child's relationship to their world rather than disconnection over what a child with ASD's experience should be like based on societal norms.

Unfortunately, the societal pressure to improve a child's adaptive response may have the unwanted effect of harming the relationship between adult and child. For example, one possible clinical repercussion is a practice of thrusting children into sensory experiences with the aim for them to accommodate or habituate. This is often done without taking into consideration the loss of opportunity to use that moment for connection and to help teach a child to recognize and process their internal state as a launching point for improved self-regulation and self-awareness. Additionally, misunderstanding the root behind sensory features often results in attempts to change, control, or modify these behaviors. Practitioners need to take care to consider the regulatory effects and meaning a sensory feature may have for the child, as it may be their adapted response to the difficulty of coping in a sensory world for which their nervous system is not yet equipped.

An unintended result of not understanding the root behind sensory features may be to inadvertently teach a child to mask their ASD and try to appear neurotypical, in part to increase the

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comfort level of others and improve social integration. Masking may result in a “double empathy problem,” in which undue pressure teaches a child with ASD to be more empathetic and acculturate to the neurotypical experience, without addressing how to do so. As the privileged neurotypical majority, we need to work toward empathizing with, validating, and supporting the ASD experience (Rose, 2020).

Social gaslighting, through which children’s experiences are not validated and they begin to disbelieve themselves, can have a detrimental effect on the relationship (Minchin & Bird, 2020). When this occurs, rather than supporting a child to recognize their sensory experience–related feelings in a shared capacity, practitioners are possibly teaching them that their experiences do not matter, or even not to trust that they are happening.

CONCLUSION

Before the fourth core FEDC, *Complex Communication and Shared Social Problem Solving*, can emerge, the first three core FEDCs must be addressed. DIRFloortime-informed occupational therapy uses principles of self-regulation, engagement, and two-way communication to create a foundation for successive strengths in the occupation of play for children with ASD. In DIRFloortime, practitioners work to understand the origin of a stress response and the cues a child is communicating about their current connection with regulation and their sense of safety in their environment. Well-attuned relationships are used to foster connection through understanding the reason behind a sensory feature to support a child in gaining self-awareness of what the behavior is telling us about their internal reaction to their environment (e.g., acknowledging that the child is excited to watch a video or enter a room, or overwhelmed by too much movement or sound).

Providing co-regulation will strengthen well-attuned relationships and can support a child to re-engage successfully during a challenging or novel task. The purpose of this practice originates from a need to “listen to our own body’s responses and respect the responses of others as we help ourselves and others navigate in an inherently dangerous world to find safe environments and trusting relationships” (Porges, 2017, p. 44). Practitioners need to honor the *emotional response first* and maintain engagement and connection before moving on, or teaching a child to incorporate a regulatory SBI strategy. This holds true whether we are encountering an adverse response while putting on socks and shoes, transitioning in or out of a space, placing a child on sensory motor equipment, or introducing a sensory bin activity.

DIR-informed practitioners prioritize how interaction with sensory mediums can support or hinder regulation, and tailor their observations and actions to support the emotional meaning associated with these factors to improve occupation-based outcomes that include play, motor development, behavior, sleep, and more (Greenspan & Lewis, 1999). DIRFloortime practitioners foster opportunities for children with ASD to live within the safety that is nurtured through understanding, allowing for further developmental gains within a shared world.

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Although the study conducted by Kashefimehr and colleagues (2018) supports “the effectiveness of sensory integration in improving occupational performance of children with ASD” (p. 79), further research is needed to enhance the understanding of sensory modulation subtypes in conjunction with promoting sensory integration and social-emotional development. After all, no two people have the same individual differences, but we are all united by our ability to share, connect, and unite over our need to have safe and trusting relationships.

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Final Exam

Article Code CEA0121

Combining DIRFloortime and Sensory Integration for Children With ASD

To receive CE credit, exam must be completed by
January 31, 2023

Learning Level: Intermediate

Target Audience: Occupational Therapists and Occupational Therapy Assistants

Content Focus: Domain: Areas of Occupation and Performance Skills; OT Process: Interventions; Professional Issues: Contemporary Issues and Trends

1. What are the three principles of DIRFloortime?

- A. Diligence, Individualized, Responsiveness
- B. Development, Individual Differences, Affect
- C. Diversity, Intervention, Respect
- D. Developmental, Individual Features, Relationship.

2. What is the goal of the first core functional emotional developmental capacity of DIRFloortime?

- A. Attunement, secure attachment, self-regulation, and interest in the world
- B. Engagement and relating
- C. Sensory integration
- D. Play and connection

3. What is the difference between Ayres Sensory Integration (ASI®) and sensory-based interventions (SBIs)?

- A. ASI uses sensory equipment and SBI does not.
- B. ASI integrates sensory information by following a child's lead, whereas SBI is adult-led and uses sensory tools for short-term regulation.
- C. ASI teaches regulation and SBI uses sensory tools for self-regulation.
- D. ASI integrates vestibular input by using swings, whereas SBI integrates tactile input with sensory tools.

4. What are the three sensory modulation subtypes identified by Schoen and colleagues (2018)?

- A. Over seeking, under seeking, and neutral
- B. High exposure, low exposure, and baseline
- C. Sensory craving, sensory under-responsivity, and sensory over-responsivity
- D. Sensory addicted, sensory avoiding, and sensory sensitive

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5. The Affect Diathesis Hypothesis states that social emotional development is affected by:

- A. Difficulty connecting and sequencing emotional signaling
- B. Early play experiences
- C. Exposure to symbolic toys
- D. Trauma

6. Occupational therapy practitioners contribute their knowledge of the differences between sensory modulation, sensory reactivity, sensory integration, and DIRFloortime's individual differences by:

- A. Teaching how to use sensory bins
- B. Adapting pencils
- C. Informing a team about what may be adding to cognitive load
- D. Offering strategies on how to replace a sensory feature

7. DIRFloortime supports occupational therapy practice for ASI and SBI by:

- A. Encouraging more play
- B. Eliminating all demands
- C. Encouraging a child to do whatever they want
- D. Promoting social-emotional development

8. Occupational therapy practitioners support a feeling of safety by:

- A. Validating and acknowledging emotional responses to sensory experiences to enable a physiological response to social availability
- B. Allowing a child to avoid all demands and stressors
- C. Removing challenges because they are too hard
- D. Teaching a child to act more neurotypical to make friends

9. Occupational therapy practitioners enhance a relationship by:

- A. Teaching strategies to regulate
- B. Providing attunement, emotional validation, and co-regulation
- C. Setting no boundaries
- D. Providing toys and sensory opportunities

10. From a DIRFloortime perspective, crying indicates:

- A. Purposeful avoidance
- B. A stress response
- C. Rigidity
- D. Disinterest

11. In the DIRFloortime Model, sensory features should be regarded as:

- A. Behaviors not to be reinforced
- B. Communication
- C. Distracting features
- D. Unique to people with ASD or neurodiversities

12. Identify the potential risks of not understanding and/or supporting the individual differences of children with ASD:

- A. Nothing
- B. Continued rigidity, insecure attachment
- C. Poor behavior, limited social emotional development, sensory over responsivity
- D. Restricted therapeutic relationship, social gaslighting, masking

Now that you have selected your answers, you are only one step away from earning your CE credit.



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