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Review Article

A Conceptual Framework for Social Interaction Skills in Youth with Autism: A Synthesis of Research and Clinical Experiences

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Abstract

Effective social interactions depend on the seamless integration of three essential elements: thinking, feeling, and doing. Thinking encompasses social cognitive processes like understanding social norms, interpreting contextual cues, and reading nonverbal signals. Feeling involves emotional regulation, which can positively or negatively influence our thoughts and behaviors. Doing pertains to the execution of social skills, where we make and carry out decisions smoothly during interactions. These elements operate simultaneously and dynamically, adding complexity to social interactions. This article underscores the significance of these components and presents a conceptual framework for understanding social interaction skills in youth with autism. Seminal and contemporary research studies will be reviewed and integrated with the author's experience as both a researcher and clinician in the field of autism over the last four decades. The conceptual model presented in this article highlights the necessity for strategies that enhance social cognition, improve emotional regulation, and facilitate behavioral execution.

Individuals with autism often experience significant difficulties in social communication and interpersonal functioning [1]. These challenges affect both social cognitive processing, such as perspective-taking, joint attention, cognitive flexibility, restricted interests, and social problem-solving, and social skills, including initiating interactions, responding to others, and maintaining reciprocal interactions. Social skill difficulties often result in substantial impairments in forming and maintaining peer relationships and are linked to negative outcomes like social failure, peer rejection, bullying, anxiety, depression, academic issues, substance abuse, suicidal ideation, delinquency, and other forms of psychopathology [2-6]. Longitudinal research shows that social skills at the start of kindergarten are strong indicators of future employment, criminal behavior, mental health, substance abuse, and educational attainment in young adulthood [7]. Despite its critical importance, finding effective social skills programs for children and youth with autism has been a challenging task for both practitioners and researchers [8].

There is a pressing need for effective social skills programs for children and youth with autism, however teaching these skills effectively is a complex and difficult process [8]. Numerous literature reviews and meta-analytical studies have examined social skills interventions for children and adolescents with and without autism [9-15]. While these studies show varied and conflicting results regarding the main effects of interventions, they consistently highlight issues with poor generalization of skills. Social skill difficulties are a pervasive and enduring feature of autism, and generalizing learned social skills can be particularly challenging for this group. Effective social skills programs that enhance acquisition of social skills and promote skill generalization are crucial for children with autism.

Successful social interactions incorporate the successful integration of three integrated components: Thinking (i.e., social cognitive processing), Feeling (i.e., emotional regulation), and Doing (i.e., behavioral execution) [2]. For example, every social interaction requires us to engage in social cognitive processing. This involves understanding social rules, social norms and customs, reading contextual cues from the environment, and interpreting the nonverbal signals of those with whom we are interacting. This cognitive processing also helps us to consider and understand another person's perspective while also monitoring and regulating our own thoughts, feelings, and behaviors. Ultimately, these processes lead us to make more effective behavioral decisions. Alongside cognitive processing, we also experience emotions that can influence our thoughts and behaviors in both positive and negative ways. Positive emotions enhance social engagement and pleasure, while negative emotions can cause physiological stress, self-defeating thoughts, and behavioral avoidance. Therefore, successful social interactions require not only effective social-cognitive processing but also the ability to actively regulate emotions that might hinder performance. In addition to effective social-cognitive processing and emotional regulation, successful social interactions also require the integration of one additional component: behavioral execution, or Doing. Social interactions are dynamic performances that demand us to continually make behavioral decisions and then execute them smoothly and effectively. This involves coordinating our motor movements and language production while staying in sync and rhythm with the movements and speech of the person with whom we are interacting. Lastly, and perhaps most critically, it's important to remember that all these components-Thinking, Feeling, and Doing-happen simultaneously during social interactions. Makes solving algebraic equations seem easy by comparison, doesn't it? This article explores these three interconnected components, particularly in the context of social interactions of youth with autism and lays the conceptual groundwork for the development and implementation of effective social skill programming.

Thinking: Social Cognition

As humans, we constantly need to understand ourselves, others, and the world around us. We use this understanding to analyze social situations and make behavioral decisions that lead to social success. As such, the Thinking domain involves social cognitive processing. For children with autism, six processes within the social-cognitive domain are particularly crucial: knowledge (know-how), social problem-solving, perspective-taking, self-awareness, observational learning, and attention.

Knowledge

Understanding social norms, customs, and values is crucial for successful social interactions and is shaped by our social cognition [16]. This can be challenging for youth with autism, as they sometimes struggle with grasping the unwritten rules and nuances of social behavior. The complexity of the unwritten social rules can sometimes be vexing and overwhelming. For instance, consider the social rule of "don't call people names." Sometimes, it is appropriate to call people names, but how do we decide when it is and when it isn't appropriate? Which names are appropriate and which names are inappropriate? In what context is it okay to call people names? Who can we call names? Unfortunately, there isn't a social rule book to consult every time a question like this arises. We learn these unwritten rules through exposure to and processing of social situations and dilemmas, as well as by observing others navigate these challenges. For children with autism, this can be particularly perplexing. Knowledge, or know-how, is crucial for successful social interactions. Cognitive theorists identify two types of knowledge: declarative and procedural [17]. Declarative knowledge refers to understanding facts and information, while procedural knowledge involves knowing how to perform tasks and actions. Both types of knowledge are essential for navigating social situations effectively. Declarative knowledge involves understanding facts, social rules, definitions, and task sequences. It encompasses the recollection and verbal expression of information we've encountered. This type of knowledge is crucial for social interactions. For example, if someone compliments your new hairstyle, you know that an appropriate response is "thank you." If you want to join a game, declarative knowledge tells you to catch the other person's eye and then ask, "May I join you?"

Declarative knowledge. Declarative knowledge can range from simple to complex, and from concrete to abstract. For instance, you might need to know that you should only ask to join an activity during a pause in the action, or speak louder in a noisy room. This knowledge helps us understand the unwritten social rules and customs of society, such as not telling a stranger they're overweight or that their breath stinks. It also aids in interpreting idioms like "raining cats and dogs," which means "raining heavily." While declarative knowledge is essential for successful social interactions, it isn't sufficient on its own. Knowing what to do doesn't always equate to performance. For example, you might memorize a dance sequence and explain the steps, but that doesn't mean you can perform the dance. Similarly, children might know what they should do in a social situation, but still may not be capable of performing a particular social behavior. For that, they need procedural knowledge.

Procedural knowledge. Procedural knowledge involves knowing how to do something and then actually doing it. It goes beyond simply understanding the rules or what to do. It is acquired through experience and repeated practice. Social skills programs that focus mainly on declarative knowledge are likely to fail. Knowing "what to do" is only part of the equation for successful social interactions. The key to success is being able to perform socially with peers. This doesn't diminish the importance of declarative knowledge. In fact, well-developed and organized declarative knowledge is crucial for acquiring and demonstrating procedural knowledge. Procedural knowledge often starts as declarative knowledge [18]. When learning a new task, we might first memorize the steps and even verbalize them. With practice, the procedure becomes more fluent until we reach a level of automaticity, which is the ultimate goal of procedural learning and motor performance. Automaticity is the stage where we perform tasks independently, with minimal attention or cognitive effort. We no longer need to verbalize or consciously think about the task sequence; we just do it. This frees up cognitive resources, allowing individuals to multitask more effectively. Effective social skills programs should address both types of knowledge and aim to help the child reach a level of automaticity.

Social Problem Solving

Social problem solving refers to one's ability to interpret social cues and analyze social situations [19]. Several social skill difficulties exhibited by children and adolescents with autism can be attributed to how they process social information, such as comprising during disagreements, cognitive flexibility, understanding jokes and humor, and being manipulated by peers. Consider this scenario: a parent receives a call from their child's school about an "incident" in the cafeteria during lunch. The assistant principal informs the parent that their son told another student he would "blow him away" if he didn't leave him alone. When the parent collects their son from school, they ask the child "Why did you do that?" The child responds quickly, "I don't know." Though the answer is unsatisfactory, it should be expected. Answering "why did you do that?" requires a level of social problem-solving or social reasoning that children with autism often lack. They may not know why they engage in certain behaviors because they are simply reacting to situations. Asking them to analyze their actions afterward is like asking me to describe how my smartphone works-I have no idea…I just use it! Similarly, the child may have no idea why they did what they did; they just did it.

Many children with autism also struggle with cognitive flexibility, often seeing the world through a narrow lens [2]. This often prevents them from considering multiple viewpoints or alternative solutions to a problem. To them, there may be only one correct solution or answer to a problem. This narrow-mindedness can come across as argumentative and insolent in social interactions, but it's just them defending their reality. They believe their answer or viewpoint is the only correct one, just as I believe the sky is blue. If you told me the sky is a different color, I would also seem argumentative and insolent because in defense of my reality.

Perspective Taking

Theory of mind (ToM) is a significant concept in the field of autism, so it's important to understand the conceptual foundation and etiology of the term. The term was first introduced by Premack and Woodruff [21] in their research with chimpanzees. ToM refers to the ability to understand and explain behavior by inferring the unobservable psychological processes of others, such as feelings, intentions, beliefs, thoughts, perceptions, and desires. This ability helps us make sense of the world, understand social situations, and predict others' behaviors. Understanding others' internal psychological processes and taking their perspectives are crucial for successful interactions. The absence of these abilities typically leads to social interactions that lack reciprocity and shared emotion [21]. Additionally, empathy, defined as the capacity to share in another person's feelings or ideas [22], may be affected by an inability to take another person's perspective.

ToM differs from perspective-taking in that ToM represents static, latent knowledge, while perspective-taking is a dynamic, "on-line process [23]. Our understanding of how the mind works (ToM) remains stable, whereas perspective-taking changes based on contextual information received from our environment and interactional partners (e.g., facial expressions, body language, tone of voice). This distinction is important both conceptually and instructionally. To teach perspective-taking, we must go beyond explaining how the mind works and teach children to use their eyes and ears to read nonverbal and contextual cues in real time.

Self-Awareness

While perspective-taking and theory of mind (ToM) have received significant attention in the field of autism, self-awareness has not. Self-awareness is the ability to monitor, regulate, and evaluate one's own behavior [2]. Questions like "Am I talking too loudly?", "Am I communicating my point clearly?", "Am I talking too much?", "Am I boring my listener?", "Do I have spinach in my teeth?", and "Did I apply deodorant today?" are all examples of self-awareness. Many children with autism seem to operate on "automatic pilot," appearing unaware of what they are doing and why they are doing it [2].

Successful social interaction requires us to continually monitor, evaluate, and regulate our behaviors, thoughts, and feelings. We must help children on the autism spectrum avoid the automatic pilot feature as much as possible. By doing so, they will be better able to modify their actions and ensure their interactions are enjoyable and successful. Self-awareness is also closely linked to the ability to read nonverbal cues and to perspective- taking. Self-awareness allows us to monitor how our actions or behaviors impact others. Without proper self-awareness, we might engage in one-sided interactions or exhibit seemingly inappropriate or embarrassing behaviors. Many of the social-cognitive principles discussed under perspective-taking apply to self-awareness as well. However, it is important to note that successful self-awareness, like perspective-taking, depends on our ability to read and understand nonverbal and contextual cues.

Self-awareness can be conceptualized as occurring on three levels: 1) self-monitoring, 2) self-regulation, and 3) self-evaluation [2]. Self-monitoring refers to the ability to keep track of or to monitor one's behavior. Self-evaluation refers to the ability to analyze or evaluate one's behavior during and after a social situation. Self-regulation refers to the ability to modify or to regulate one's behavior. Self-monitoring is the foundation of self- awareness. For instance, children will not be able to regulate their behavior unless they can first monitor their behavior. Many behavioral interventions fail, because the children are asked to change a behavior that they are not even aware of doing. In fact, oftentimes children will stop a behavior once they learn to monitor

it. The same is true for self-evaluation. The children will not be able to evaluate a behavior (remember the infamous question: "why did you do that?") that they didn't even realize they were doing. Once children become more adept at self- monitoring, they often become better at self-evaluation.

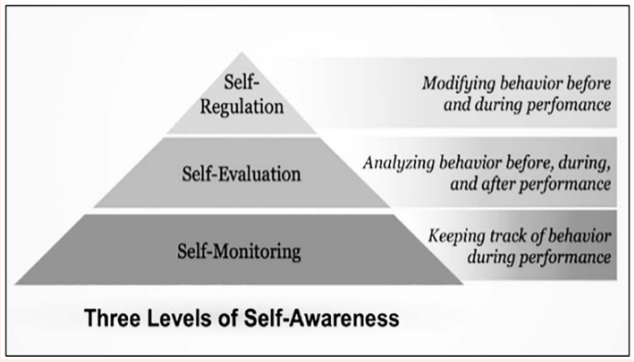

Figure 1: A three-level conceptual framework for self-awareness (Bellini, 2023).

Observational Learning

Youth with autism often struggle with observational learning [24], a crucial mode of learning through which children develop social, communication, cognitive, and emotional regulation skills. Observational learning provides numerous opportunities for children to acquire social interaction skills throughout their development. Most play behaviors, such as symbolic or pretend play, and social interaction skills, like asking others to play a game or maintaining appropriate distance, are learned through observation. Researchers suggest that observational learning in youth on the spectrum may be affected by factors like attentional processing or neurological differences, such as anomalies in the mirror neuron system [25]. Mirror neurons are neurons that activate when we observe others performing a task. Interestingly, these neurons fire in the same way whether we are performing the behavior ourselves or watching someone else do it. This system allows us to model or imitate others' behaviors. However, disruptions in mirror neuron activity have been documented in individuals with autism, making modeling less natural for them.

According to Bandura [26], successful modeling requires three prerequisites: attention, memory, and imitation/behavioral reproduction. Attention is essential because people cannot imitate a behavior if they do not observe it. Even if children attend to the modeled task, they must remember what they have seen. Finally, they must be capable of performing the modeled task. Observational learning is also valuable for helping children navigate new situations. When faced with a novel situation, youth on the autism spectrum typically either get "stuck" (i.e., do nothing) and wait for instructions, or engage in an incompatible behavior that works in a different setting but not the current one. To address this, social skills programs must teach children how and when to observe others' behaviors.

Attention

Attention is a critical component of successful cognitive, communicative, and social development. Without attention, learning cannot occur. If a child is not paying attention to instruction in the classroom, they will not learn, regardless of how well-designed the curriculum is. The same principle applies to learning social skills, social rules, and other aspects of social cognition. If a child does not attend to direct instruction or fails to observe their parents modeling a particular behavior, they will not

learn it. Similarly, if a child does not attend to nonverbal cues or other contextual signals, they will struggle to take another person's perspective or engage in effective social problem-solving. Attention must be considered in every social skill and social-cognitive instructional strategy we implement.

The unique attentional processing style of youth with autism is important to consider when addressing social functioning. Individuals with autism are often thought to have weak "central coherence" [27], meaning they focus on details (or "local" information) rather than the "global" aspects of their environment. This can cause them to miss the "big picture" in social situations because they are focused on specific details. While this detail-oriented attentional style is not necessarily a deficit, and can be advantageous in certain contexts (e.g., solving math problems), it can be problematic in social situations where understanding social cues and inferring broader meanings is essential. This overly detail-oriented attentional style can significantly impact the acquisition and performance of social skills.

Many individuals with autism exhibit over-selective attention, focusing on non-essential details of the social environment [28,29]. This may lead them to attend to irrelevant stimuli, such as a teacher's jewelry or a ceiling fan, while missing more relevant cues like the teacher's words, body language, or emotional expressions. Over-selective attention can also impact other facets of social cognition, such as learning social rules, taking another person's perspective, social problem-solving, and self-awareness. For example, if a child is focused on an irrelevant stimulus, they will likely miss the relevant social cues necessary for perspective-taking or analyzing social situations. Inattention is also a primary reason children fail to respond to social initiations from others. For instance, a child with autism might ignore a greeting or question because they are attending to something else.

Dividing and shifting attention are impacted by over-selective attention, and thus, are also challenging for many youth with autism [30]. Divided attention refers to the ability to focus on multiple stimuli simultaneously, while shifting attention refers to the ability to rapidly transfer focus from one stimulus to another. Difficulties with these processes can explain why youth with autism struggle with multitasking [31]. For example, it is not uncommon for an individual with autism to say, "If I have to look at you, then I cannot listen to you" [21]. This difficulty with divided attention impacts social behavior in many ways. For instance, a child may struggle to answer a question or respond to an initiation from another child while engaged in another activity. Most social interactions require a significant amount of dividing and shifting attention. For example, in a conversation we must attend to the nonverbal cues of the other person and the contextual cues in the environment while also monitoring our own social behaviors.

Joint attention is the ability to shift attention between another person and an object or event [32]. By the second year of life, most children develop the ability to both initiate and respond to joint attention. However, youth with autism show marked impairments in this area [33]. Initiating joint attention involves directing another person's attention to an object with a point, eye gaze, or other verbal or nonverbal means. Responding to joint attention involves following another person's point or eye gaze. For example, if we are walking down the street and I look up and say "Wow," you would likely look up to see what I am looking at. Joint attention allows us to engage in a social dance without saying a word, forming the foundation for shared enjoyment and emotional reciprocity in social interactions. Unfortunately, many children on the autism spectrum lack adequate joint attention, which can negatively impact their social development throughout life. Joint attention also affects communication and other facets of social cognition, such as perspective-taking, learning social rules, and social problem-solving.

Feeling: Emotional Regulation

Even after a child has developed sufficient social-cognitive processing to interact successfully with others, their social performance can still be significantly impacted by their emotions. Unfortunately, the emotional domain is often overlooked in social programming, which is a critical mistake. How do emotions impact social functioning? Anyone who has had a bad day at work or school knows the answer. After a tough day, you might prefer to be alone with a good book, watch TV, or simply stare at a blank wall. Alternatively, you might want to talk about your day with a trusted friend or family member. On other days, you might feel like going out and being around people. Our emotions significantly influence both our motivation and ability to interact socially. For example, individuals who are depressed often prefer to be alone, away from social interactions. Mood and motivation are also affected by self-efficacy, or our perceptions of our performance [2]. Those with low self-efficacy regarding social interactions, such as children with autism, often display negative moods and reduced motivation to interact with others. Feelings directly influence our behavior, thoughts, and physiological responses. They determine whether we approach, avoid, or withdraw from social situations. Feelings are closely linked to our thoughts. Negative thoughts, such as self-loathing or excessive worry, lead to feelings of sadness and anxiety, and vice versa. This relationship is reciprocal. Feelings also have a reciprocal relationship with physiological responses. For instance, heightened sympathetic responses, such as increased heart rate and shaking hands, can lead to excessive feelings of anxiety. Conversely, excessive anxiety can lead to heightened

physiological responses. We cannot address behavior, thoughts, and physiological responses without also addressing emotions.

Anxiety

Anxiety is particularly important to address when teaching social skills to children with autism. Children with high levels of anxiety may exhibits or express fear or anxiety regarding social interactions, experience negative peer interactions, actively avoid social situations, exhibit or express fear of public performances, prefer one-on-one interactions with peers to group interactions, or engage in solitary interests and hobbies. Research has shown high levels of anxiety in individuals with autism [34-36]. They exhibit a range of anxious symptoms, including physiological arousal, social anxiety, panic, and separation anxiety. Many children lack effective coping strategies to regulate their heightened physiological arousal and stress [37]. Children who struggle to regulate their physiological arousal are more vulnerable to stressful social encounters and more likely to be negatively conditioned by adverse social interactions [38].

Children with lower thresholds for arousal often experience heightened sympathetic responses, such as increased heart rate, in response to mild stressors and novel situations [39]. For example, if a child with high physiological arousal is bitten by a dog, they are more likely to develop a fear of dogs than a child with low physiological arousal. The same applies to social fears. A child with high physiological arousal is more likely to develop a fear of social interactions following a negative peer experience. Trepagnier [40] suggests that a maladaptive arousal regulation system in infants on the autism spectrum makes them more vulnerable to overstimulation by social interactions with caregivers, leading to gaze aversion and social withdrawal.

The developmental pathways model below [4] illustrates how social skill difficulties and social anxiety develop in individuals on the autism spectrum. Social withdrawal may result from an early fearful or insecure temperament that draws the child away from social interaction, impeding the development of social skills by limiting opportunities to interact with others. This prevents the child from acquiring effective interpersonal skills. The presence of social skill difficulties increases the likelihood of negative peer interactions, resulting in increased social anxiety, which leads to further social withdrawal and avoidance, perpetuating the cycle.

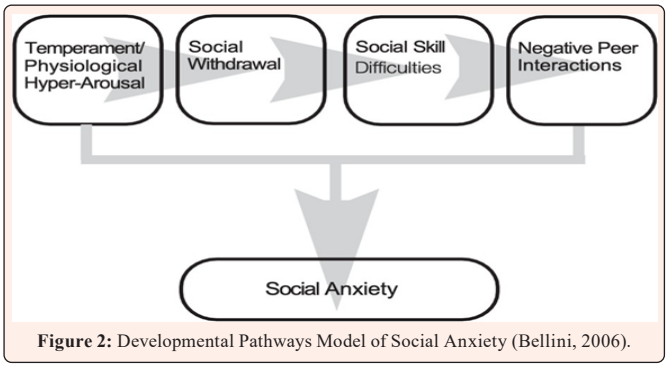

Figure 2: Developmental Pathways Model of Social Anxiety (Bellini, 2006).

Social anxiety disorder is characterized by an intense fear of social or performance situations where embarrassment might occur. It is estimated to affect about 10% of the general population [1], but research suggests the rate may be much higher among individuals on the autism spectrum [41]. Within the diagnosis of social anxiety, two distinct subtypes have emerged: those who suffer exclusively from performance fears (e.g., public speaking) and those with a broader range of fears related to both performance and social interactions. The latter subtype is common in children on the autism spectrum, who often experience performance fears, fear of negative evaluation, fear of humiliation, and general distress related to social interactions.

Individuals on the autism spectrum often avoid social situations, which can lead to the development of social skill difficulties. Some children may prefer one-on-one social interactions over group settings. They typically feel more comfortable in activities structured by adults rather than unstructured ones like recess. When a child consistently avoids social encounters, they miss out on opportunities to develop social interaction skills. For some, these difficulties lead to negative peer interactions and peer failure. For others, avoiding social encounters results in a pattern of solitary activities and hobbies that can be hard to break.

Doing: Behavioral Execution

Children naturally move their bodies during social interactions. If social skills lessons keep children seated the entire time, they might not be learning these skills effectively. Social interactions require planning and executing behavioral decisions, often referred to as "executive functioning" [2]. For example, after deciding when and how to start a conversation with a peer, the child must actually do it. This "doing" aspect is often overlooked in social skills programs. It involves more than just moving a pencil or reciting an answer; it requires coordinating gross and fine motor movements with language production and integrating these actions with thoughts and emotions.

Body movements such as balance, coordination, and motor fluency are part of an interconnected neurological system responsible for our thoughts, memories, feelings, motivation, and sensory processing [42]. All these processes are controlled by the central nervous system (CNS). A problem in any one area, such as motor coordination, anxiety, sensory processing, or limited declarative or procedural knowledge, can significantly disrupt social interactions. For instance, a child might be willing to initiate an interaction but struggle with moving into the correct position, starting too soon or too late. CNS dysfunction can prevent successful task completion even after a sufficient level of mastery or automaticity has been reached. For example, a professional juggler with a spinal cord injury may no longer be able to juggle despite having the procedural knowledge. Similarly, a gymnast with an ear infection might struggle with balance despite mastering the routine. To perform a task successfully, we need sufficient declarative knowledge (knowing what to do), procedural knowledge (knowing how to do it), and CNS functioning to execute the movement.

For most of us, the movements associated with social interactions are automatic, the result of years of repetition and muscle memory. If we had to consciously think about every movement during social interactions, it would significantly diminish our performance. Motor impairments in individuals with autism often prevent this muscle memory. Research has documented impairments in coordination and gross motor movements, including poor motor imitation and dynamic body movement [43].

Coordinating and positioning the body is integral to successful social interactions, which are like a series of social dances. Motor clumsiness can result in awkward body positions, poor timing, violations of personal space, or standing too far from the person they are speaking to. Individuals with autism often struggle with proprioception, or awareness of their body in space, which affects gross motor skills and coordination. This can lead to social isolation, as many social activities for children involve some form of movement.

Social programming should include plenty of movement-based activities that allow children to practice the skills they are learning. Just like learning to dance, play sports, or a musical instrument, social skills require practice. We wouldn't expect someone to learn to hit a baseball or perform a cheerleading routine just by listening to a description or playing a board game. Similarly, children with autism need opportunities to perform social skills. Most movement-based skill difficulties can be addressed through effective skill instruction, environmental modifications and supports, and lots of practice.

The Need for Social Skills Programming that Addresses Thinking, Feeling, and Doing

The Building Social Relationships (BSR) program offers a systematic approach to teaching social interaction skills to youth with autism [2,8,44-48]. It was developed based on the conceptual framework covered in this article that integrates social cognitive processing, emotional regulation, and the execution of social behaviors. To enhance social performance, the BSR program employs various strategies that address social cognitive processing, emotional regulation, and behavioral execution.

The BSR program incorporates evidence-based strategies and best practices in social skills programming, with a focus on planning for generalization. It integrates 13 evidence-based social skill strategies identified by the National Professional Development Center for Autism [49] and the National Standards Report published by the National Autism Center [50]. These strategies include video modeling, modeling, social narratives, naturalistic interventions, visual supports, peer-mediated instruction, parent-implemented interventions, self-management, prompting, time-delay prompt fading, structured play groups, cognitive behavioral intervention, positive reinforcement, and social skills groups. The manualized BSR program (BSR-M) is implemented once-a-week for 9 weeks, and each session is split into two

instructional parts, based on the conceptual framework of the BSR program: Part 1: Strategies to address social cognitive processing and emotional regulation, and Part 2: Strategies to teach and enhance the performance of social interaction skills.

Additionally, the BSR program addresses the critical component of matching strategies to the type of skills deficit [8,51]. It uses strategies to facilitate the acquisition of new skills and enhance the performance of existing skills. The program also explicitly plans for the generalization of skills across different settings and individuals. This is achieved through well-established generalization strategies, such as training with multiple people and in various settings, ensuring natural reinforcers are present, prompt fading, providing multiple examples of social rules and concepts, varying instruction, and prompts, and teaching self-monitoring strategies.

Summary

Successful social interactions require the integration of three key components: Thinking, Feeling, and Doing. Thinking, or social cognitive processing, involves understanding social rules, norms, and customs, reading contextual cues, and interpreting nonverbal signals. Social-cognitive processing helps individuals consider others' perspectives while monitoring and regulating their own thoughts, feelings, and behaviors. The Feeling domain pertains to emotional regulation, which influences thoughts and behaviors in both positive and negative ways. Positive emotions can enhance social engagement and bring pleasure, while negative emotions may cause stress, self-defeating thoughts, and behavioral avoidance. Effective emotional regulation is essential for maintaining successful social interactions. The third component, Doing, refers to the behavioral execution of social skills. This involves making numerous behavioral decisions during interactions and coordinating motor movements and language production to stay in sync with others. Social interactions are dynamic performances requiring smooth and effective execution of these decisions. The present article emphasized the importance of these components for youth with autism, who often face challenges in building and maintaining social relationships due to difficulties with social cognition, emotional regulation, and behavioral execution. Overall, the article provides a comprehensive overview of the interconnected components of thinking, feeling, and doing in the context of social interactions, particularly for youth with autism. It underscores the importance of addressing these components through targeted strategies and intervention.

References

1. American Psychiatric Association (2013) Diagnostic and statistical manual of mental disorders (5th ed.). Arlington, VA: Author.
2. Bellini S (2023) Building Social Relationships 3: A Systematic Approach to Teaching Social Interaction Skills to Children and Adolescents with Autism and other Social Challenges. Bloomington, IN: PDSA Publishing.
3. Bellini S (2006) The development of social anxiety in high functioning adolescents with autism spectrum disorders. Focus on Autism and Other Developmental Disabilities 2(3): 138-145.
4. Cook CR, Williams KR, Guerra NG, Kim TE, Sadek S (2010) Predictors of bullying and victimization in childhood and adolescence: A meta-analytic investigation. School Psychology Quarterly 25(2): 65-83.
5. Durlak J, Weissberg R, Dymnicki A, Taylor R, Schellinger K (2011) The impact of enhancing students' social and emotional learning: a meta-analysis of school-based universal interventions. Child Development 82(1): 405-432.
6. Tantam D (2000) Psychological disorder in adolescents and adults with Asperger syndrome. Autism 4(1): 47-62.
7. Jones DE, 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: 2283-2290.
8. Bellini S, Heck O (2019) The ingredients of effective social skills programming for children and adolescents on the autism spectrum. Journal of Autism 6: 1-7.
9. Babb S, Raulston TJ, McNaughton D, Lee JY, Weintraub R (2021) The Effects of Social Skill Interventions for Adolescents with Autism: A Meta-Analysis. Remedial and Special Education 42(5): 343-357.
10. Bellini S, Peters J, Benner L, Hopf A (2007) A meta-analysis of school-based social skill interventions for children with autism spectrum disorders. Remedial and Special Education 28(3): 153-162.
11. Dean M, Chang YC (2021) A systematic review of school-based social skills interventions and observed social outcomes for students with autism spectrum disorder in inclusive settings. Autism 25(7): 1828-1843.
12. Gresham FM, Sugai G, Horner RH (2001) Interpreting outcomes of social skills training for students with high-incidence disabilities. Teaching Exceptional Children 67(3): 331-344.
13. Quinn MM, Kavale KA, Mathur SR, Rutherford RB, Forness SR (1999) A meta-analysis of social skills interventions for students with emotional and behavioral disorders. Journal of Emotional and Behavioral Disorders 7(1): 54-64.
14. Reichow B, Steiner AM, Volkmar F (2012) Cochrane review: social skills groups for people aged 6 to 21 with autism spectrum disorders (ASD). Evidence-based child health: a Cochrane review journal 82: 266-315.
15. Wang SY, Parrilla R, Cui Y (2012) Meta-analysis of social skills interventions of single-case re- search for individuals with autism spectrum disorders: Results from three level HLM. Journal of Autism and Developmental Disorders, p. 1-16.
16. Resnick LB, Levine JM, Teasley SD (1991) Perspectives on socially shared cognition. Washington, DC: American Psychological Association.
17. Wyer RS (2022) The activation and use of declarative and procedural knowledge. In: Kahle LR, Lowrey TM, Huber J (Eds.), APA handbook of consumer psychology, pp. 47-78.
18. Neves DM, Anderson JR (1981) Knowledge compilation: Mechanisms for the automatization of cognitive skills. In J. R. Anderson (Ed.), Cognitive skills and their acquisition, Hillsdale, NJ: Erlbaum, pp. 57-84.
19. McNair ML, Mondejar V, Libsack EJ, Mordekai NH, McKown C, et al. (2024) Examining the process and impact of social problem solving in autistic children. Journal of Autism and Developmental Disorders. Advance online publication.
20. Premack D, Woodruff G (1978) Does the chimpanzee have a theory of mind? Behavioral and Brain Sciences 1: 515-526.
21. Attwood T (2008) The complete guide to Asperger's Syndrome. Philadelphia, PA: Jessica Kingsley Publishing "empathy." In: Merriam-Webster.com.
22. Crick NR, Dodge KA (1999) Superiority is in the eye of the beholder: A comment on Sutton, Smith, and Swettenham. Social Development 8: 128-131
23. Taylor BA, DeQuinzio JA (2012) Observational learning and children with autism. Behavior Modification 36: 341-360.
24. Ramachandran VS, Oberman LM (2006) Broken mirrors: A theory of autism. Scientific American 17: 20-29.
25. Bandura A (2001) Social Cognitive Theory: An Agentic Perspective. Annual Review of Psychology 52(Volume 52, 2001): 1-26.
26. Happe F, Frith U (2006) The weak coherence account: detail-focused cognitive style in autism spectrum disorders. Journal of Autism and Developmental Disorders 36: 5-25.
27. Happe FG (1991) The autobiographical writings of three Asperger syndrome adults: Problems of interpretation and implications for theory. In: Frith U (Ed.), Autism and Asperger syndrome. Cambridge, UK: Cambridge University Press, pp. 207-242.
28. Wang Q, Chang J, Chawarska K (2020) Atypical Value-Driven Selective Attention in Young Children with Autism Spectrum Disorder. JAMA Netw Open 3(5): e204928.
29. Rinehart NJ, Bradshaw JL, Moss SA, Brereton AV, Tonge BJ (2001) A Deficit in Shifting Attention Present in High-Functioning Autism but not Asperger's Disorder. Autism 5(1): 67-80.
30. Mackinlay R, Charman T, Karmiloff-Smith A (2006) High-functioning children with autism spectrum disorder: a novel test of multitasking. Brain and Cognition 61(1): 14-24.
31. Wong C, Kasari C (2012) Play and joint attention of children with autism in the preschool special education classroom. Journal of Autism & Developmental Disorders 42(10): 2152-2161.
32. Bruinsma Y, Koegel RL, Koegel LK (2004) Joint attention and children with autism: A review of the literature. Mental Retardation and Developmental Disabilities Research Reviews 10(3): 169-175.

33. Edelson SM, Johnson J (2021) Understanding and Treating Anxiety in Autism : A Multi- Disciplinary Approach / Edited by Stephen M. Edelson, Jane Botsford Johnson; Foreward by Dr. David G. Amaral. Jessica Kingsley Publishers.

34. Green J, Gilchrist A, Burton D, Cox A (2000) Social and psychiatric functioning in adolescents with Asperger syndrome compared with conduct disorder. Journal of Autism and Developmental Disorders 30(4): 279-293.

35. Thiele-Swift HN, Dorstyn DS (2024) Anxiety Prevalence in Youth with Autism: A Systematic Review and Meta-analysis of Methodological and Sample Moderators. Review Journal of Autism and Developmental Disorders.

36. Groden, J, Cautela J, Prince S, Berryman J (1994) The impact of stress and anxiety on individuals with autism and developmental disabilities. In: Schopler E, Mesibov GB (Eds.), Behavioral issues in autism, New York: Plenum, pp. 177-194.

37. Biederman J, Rosenbaum JF, Chaloff J, Kagan J (1995) Behavioral inhibition as a risk factor for anxiety disorders. In: March JS (Ed.), Anxiety in children and adolescents. New York: Guilford Press, pp. 61-81.

38. Kagan J, Reznick JS, Snidman N (1987) The physiology and psychology of behavioral inhibition in children. Child Development 58: 1459-1473.

39. Trepagnier C (1996) A possible origin for the social and communicative deficits of autism. Focus on Autism and Other Developmental Disabilities 11: 170-182.

40. Bellini S (2004) Social skill deficits and anxiety in high functioning adolescents with autism spectrum disorders. Focus on Autism and Other Developmental Disabilities 19(2): 78-86.

41. Donnellan AM, Hill DA, Leary MR (2013) Rethinking autism: implications of sensory and movement differences for understanding and support. Frontiers in Integrative Neuroscience, p. 6.

42. Fournier KA, Hass CJ, Naik SK, Lodha N, Cauraugh JH (2010) Motor Coordination in Autism Spectrum Disorders: A Synthesis and Meta-Analysis. Journal Autism and Developmental Disorders 40(10): 1227-1240.

43. Bellini S (2006) Building social relationships: A Systematic Approach to Teaching Social Interaction Skills to Children and Adolescents with Autism Spectrum Disorders and other Social Difficulties. Shawnee Mission, KS: Autism Asperger Publishing.

44. Bellini S (2016) Building Social Relationships 2: A Systematic Approach to Teaching Social Interaction Skills to Children and Adolescents with Autism Spectrum Disorders and other Social Difficulties. Shawnee Mission, KS: Autism Asperger Publishing.

45. Bellini S (2022) A Preliminary Analysis of the Manualized Version of the Building Social Relationships Program (BSR-M). Global Journal of Intellectual & Developmental Disabilities 11(1): 1-8.

46. Bellini S, Benner L, Peters-Myszak J (2009) A systematic approach to teaching social skills to children with autism spectrum disorders: A guide for practitioners. Beyond Behavior 19: 26- 39.

47. Lowery K, Bellini S (2020) Teaching social skills to students on the autism spectrum in a school setting: A guide for teachers and other school practitioners. Global Journal of Intellectual & Developmental Disabilities 7(1): 4-12.

48. Wong C, Odom SL, Hume KA, Cox AW, Fettig A, et al. (2015) Evidence-Based Practices for Children, Youth, and Young Adults with Autism Spectrum Disorder: A Comprehensive Review. Journal of Autism and Developmental Disorders 45: 1951-1966.

49. National Autism Center. (2019) National standards report, phase 2.

50. Gresham FM (2002) Best practices in social skills training. In A. Thomas & J. Grimes (Eds.), Best practices in school psychology 4th edn., Bethesda, MD: National Association of School Psychologists, pp. 1029-1040.