



Unlocking the mystery of social deficits in autism: Theory of Mind as Key

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What is Theory of Mind and Why Should You Care?

Simply put, theory of mind, or ToM, is key to the development of one's social skills. Without ToM, children (or adults) cannot understand or infer the thoughts, feelings, or intentions of others. A lack of ToM skills is considered by some to be a core deficit in autism. Interest in this concept has been popularized by Simon Baron-Cohen, a researcher at the University of Cambridge, U.K., and Helen Tager-Flusberg, a researcher at Boston University. This type of disability, or of deficit, may go a long way to explain some of the difficulties that children with autism have in play, social communication, and other forms of perspective-taking.

Many parents of individuals with autism can recount humorous, and sometimes embarrassing, stories that revolved around their son's or daughter's lack of social skills. One mother recalled when her 12-year-old son asked an overweight neighbor when her baby was due. He didn't recognize the neighbor's mortification at the question nor did he consider how hurtful his words were. Another described how she "tenses up" when her son spots a passer-by wearing a large watch. He would typically charge ahead, grab the person's wrist, and adeptly recite the time. He didn't realize how uncomfortable this made the stranger feel. Often, children lacking ToM skills don't understand when something is humorous or when they are being teased.

How does Theory of Mind impact individuals with autism?

ToM affects all interpersonal interactions as well as academics, daily living, following directions, and understanding socially-based information. For children with autism spectrum disorder (ASD), problems such as emotion recognition and sharing, understanding knowledge, deception, humor, teasing, and describing one's mental state or feelings are related to ToM impairment. Oftentimes, individuals with ToM deficits are unable to form successful relationships with others, with resulting loneliness or, worse yet, symptoms of depression. This is more common in children and adolescents with high functioning autism or Asperger syndrome.

ToM skills are continually required throughout the day to help navigate the social world. Kids who are not socially aware of group dynamics among peers (this is called "social referencing") may walk through the middle of a basketball game at recess or interrupt an ongoing conversation among friends. A student who has difficulty inferring the intentions of others may wrongly accuse classmates of bumping into him on purpose, instead of recognizing that the hallway at school is particularly crowded. Without skills in understanding non-verbal behavior and perspective-taking, a student with autism might talk continuously about trains to his peers, ignoring their bored stares. Parents of children with ASD can readily provide

other examples of social problems that occur because of their child's lack of social perspective-taking.

Can Theory of Mind be taught?

Although there are few interventions targeting ToM skills, there is some research evidence that these skills can be taught, at least to a limited extent. Hadwin, Baron-Cohen, Howlin, and Hill taught nine-year-old students with autism how to identify and understand emotions, perspective-taking activities, and pretend play skills. At the end of this short, eight-day study, the children had improved their ability to pass emotion and perspective taking tasks, although their social communication skills in a naturalistic setting remained unchanged. This may indicate that while the children were better at completing the tasks, the short intervention was not sufficient to improve their ToM skills so that there was an observable social impact.

Ozonoff and Miller implemented a longer intervention on ToM skills for adolescent boys with autism. The children met one time a week for four and a half months to receive conversational skills training (i.e. interpreting non-verbal gestures, listening, giving compliments, choosing mutually interesting conversation topics) and perspective-taking skills (i.e. what you see is what you know as people have different perspectives). Here, too, the students showed improvements when completing the theory of mind tasks, but significant

changes in social relationships "in the real world" were not seen.

Promising results were obtained in a recent study by Caroline Gevers and colleagues from The Netherlands, whose research was published in the *Journal of Autism and Developmental Disorders* (2006). This research presented social cognitive training tasks to 18 school-aged children with pervasive developmental disorder who had average verbal intelligence. Training took place for one hour every week for 21 weeks and targeted the development of ToM by teaching skills such as making acquaintances with others. Parents, too, participated in monthly training, that included including suggestions for how to improve ToM by promoting story telling and game playing with their children. ToM tests administered to the children showed positive results and generalized to parent-completed socialization measures, tapping children's behaviors in their daily environment. These parents, as is necessarily the case in most outcome studies, were not blind to the intervention and thus could have biased their reports in a favorable direction. Nonetheless, the outcomes are encouraging.

Due to the complexities of the social world and theory of mind development, it has been difficult to produce observable social change through short-term intervention. Yet as more is learned about theory of mind and the range of social skills influenced by it, we can expect the development of more successful, evidence-based interventions.

Are there any practical implications from research on Theory of Mind?

One clinician who understands the rigorous and in-depth task of fostering perspective-taking is Michelle Winner, a speech and language pathologist in San Jose, California. Winner operates a clinic that teaches "social thinking skills" primarily to individuals with high functioning autism, Asperger syndrome, and attention deficit hyperactivity disorder (ADHD). Social thinking therapy is provided to students on a one-to-one basis and in small group lessons, depending on the individual's needs and skill level.

Students at the clinic are encouraged to become social thinkers and learn strategies

to help them decode the social world. Rather than teaching social skills in a scripted format, Winner teaches participants strategies so that they can generate their own social understanding in a variety of contexts. For example, students participate in a "detective agency" where they observe others in order to determine the motives and intentions of people around them. Observation skills can then be used in novel settings where one must determine an appropriate way to act or whom to talk to.

In addition, concepts such as "whole body listening" show children that listening involves more than ears. In fact, good listeners use their eyes to look at the other person, their body to face the person, their brains to think about what the person is saying. "Social behavior mapping" is another strategy that requires students to discuss how their behaviors impact the thoughts and feelings of those around them. Through social behavior mapping, the logical consequences of behaviors and what others think of those behaviors are analyzed. Alternate plans are generated for unsuccessful behaviors. To visually demonstrate the impact our words and actions have on people's thoughts, Winner uses visuals such as blue sticks (good thoughts) and red sticks (weird thoughts). When a student contributes an odd or negative behavior to a group session, a red stick will be placed in that student's cup. However, cool actions earn a blue stick, representing the good thoughts everyone in the group is having about him or her. This strategy allows students to "see" how their behaviors change the thoughts of those around them.

Furthermore, group behavior is emphasized so that children with ASD learn to monitor and modify their behavior according to what the group is doing. If peers are talking about yesterday's math test, interrupting to discuss vacuums is not a good idea. A large emphasis is placed on perspective-taking knowledge. Students watch movies to learn how gestures and facial cues communicate feelings. Films such as *Wallace and Grommit* and *Chicken Run* provide exaggerated expressions helpful in interpreting the thoughts and feelings of the characters. Another lesson involves describing the "social fake." The social fake is the ability

to engage and maintain conversation even when not interested in the topic or the person. All neuro-typical people use the social fake more than they would like! However, it is an important skill, and Winner teaches it by encouraging students to use their bodies and words to "out-clever" someone by making him or her think you are interested, even when you are not.

Another key concept targeted is social language so that children can learn to initiate and maintain conversation in order to build relationships. The structure of conversation is explicitly discussed so students learn how to comment, make supporting statements, ask questions, and initiate. Conversation topics on index cards equip kids with initiation ideas. In addition, the children combine their conversation strategies with perspective-taking practices in order to determine what to talk about and when to talk.

Although few of the specific strategies that Winner developed have been validated by research, they do have face value and some intuitive appeal. (Information on Michelle Winner's social thinking strategies can be found at www.social-thinking.com.) Investigators continue to identify skills that comprise theory of mind. Regardless of whether professionals, parents, or siblings do the teaching, the important point is that individuals with ASD benefit from social thinking instruction. Children should not only be taught social skills, but they also should be equipped with social thinking strategies so that they can "think about other's thoughts" and understand the consequences of their own behavior. "Social thinking" is but one of several behaviors associated with having a well-developed theory of mind, but taken together, such skills are key to future social interactions. •

References cited in this Research Reflections column can be obtained by writing to jhollingsworth@eparent.com.

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