

What Happens at Home: How Family Discourse Fosters Social Perspective-Taking in Children with Autism Spectrum Disorder and Typically-Developing Children

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Abstract

In this article, we provide a brief review of the pivotal role family discourse plays in the development of social perspective-taking. We begin with an overview of the important role social perspective-taking plays in children's well-being, and the host of benefits that can be gained by fostering perspective-taking skills. Next, we review the scientific literature on the role the family environment plays in the development of social perspective-taking skills, in turn discussing the role of both parents and siblings. In doing so, we include research on children with Autism Spectrum Disorder (ASD) and typically-developing children and identify key areas where further research is needed.

Keywords: Family discourse; Mental states; Autism spectrum disorder; Emotions

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Introduction

Social perspective-taking, sometimes called 'theory of mind', refers to the processes by which an individual makes inferences about another person's mental states, such as his or her goals, intentions, desires, emotions, knowledge and beliefs. Social perspective-taking is critical for making sense of others' actions and is called upon in virtually every aspect of social interaction. Not surprisingly then, individuals who exhibit more accurate social perspective-taking demonstrate a wealth of positive life outcomes (e.g., fewer relationship problems, higher academic achievement, more prosocial behavior, increased social competence, and better quality of life) [1,2].

Despite the importance of social perspective-taking, it remains somewhat error-prone across development. After all, the mental activities of humans are both invisible and complex. The difficulties with social perspective-taking are even more pervasive for individuals with Autism Spectrum Disorder (ASD). ASD is a lifelong neurodevelopmental condition characterized by challenges in communication, social interaction, and rigid and repetitive behaviours, ranging on a spectrum from mild to very severe [3]. The Center for Disease Control and Prevention (2016) currently estimates that 1 in 68 children in the United States are diagnosed with ASD (this includes 1/42 boys and 1/189 girls) [4].

One of the most distinguishing characteristics of ASD is a difficulty in social perspective-taking [5]. For instance, an abundance of research has shown that individuals with ASD tend to incorrectly reason about the knowledge and belief states of others [5-7]. In addition, individuals with ASD often have difficulties identifying and utilizing subtle cues to others intentional and emotional states (e.g., nonverbal cues, facial expressions, eye-gaze and vocal cues) [8]. Indeed, limitations in these areas are believed to contribute to their impairments in language and profoundly affect their ability to interact with others [5,9]. ASD has a strong genetic component, and sometimes the fact that a disorder is genetic can lead people to erroneously conclude that environment does not matter, that the traits or characteristics are fixed and unchangeable [10]. Here, we demonstrate that the environment matters a great deal. Fortunately, there are targeted interventions programs for children with ASD that can be helpful at modifying certain behaviors (we mention one specific approach below). Our primary focus in this article, however, is the vital role that parents and siblings play in fostering social perspective-taking skills.

Considerable research has focused on Applied Behavior Analysis, or ABA, an intervention program that has been shown to improve the overall development of children with ASD (i.e., improving

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both cognition and behavior) [11]. ABA is one of the most well-established and sought-after treatments for children diagnosed with ASD [12,13]. Inclusive ABA treatment programs consist of interventions focused on the behavioural principles of learning, motivation, reinforcement, extinction, stimulus control, and generalization, the consequences of which either increase or decrease a behavior depending on the goal [13]. ABA is used to address a wide-range of cognitions and behaviours such as eye-gaze tracking, peer interactions, receptive and expressive language, dressing and other self-care activities, and even play skills [13,14]. ABA is most effective if begun prior to the age of 5 years and is implemented intensively for up to 40 hours per week, ideally for 2 or more years [13]. Research suggests that children diagnosed with ASD who receive more than 25 hours of intervention per week demonstrate tremendous gains in functioning with some participants achieving functioning within a normal range for their age, compared to children that receive 10 hours or less of intervention per week [15,16]. Typically, these types of interventions are implemented by trained professionals and can sometimes be cost-prohibitive for families, with costs ranging up to \$30,000 per year [17]. If such intervention programs are not an option for parents, it will be reassuring for them to know that many benefits can be gained through *their* interactions with their child. Moreover, even if the parents can take advantage of trained professions, there is still considerable benefit in understanding the role that parents and siblings can play in helping foster social perspective-taking in everyday conversations, outside of structured therapy.

Our goal here is to provide a brief review of the evidence-based research on fostering perspective-taking in children in a way that is accessible, practical and easily understood even by non-scientific audiences, such as parents and educators. Our hope is that by creating greater access to the evidence-based literature (e.g., via this open access journal publication) it will help to spur new research ideas and promote educational understanding and interventions on the ways to enhance perspective-taking in children, regardless of whether they are typically or atypically developing. Research in this area is of critical importance as educators, researchers, policymakers and child-services agencies have identified social and emotional learning (e.g., self-awareness, self-management, social awareness, relationship skills, and responsible decision making) as being of great importance at the population-level [18-23], but acknowledge there is currently little integration with models of public health (e.g., education) and epidemiology (e.g., research) creating barriers to effective information access [18,19].

We begin by providing a skeletal review of the important role social perspective-taking plays in children's well-being and the myriad of benefits that can be gained by fostering social perspective-taking skills. Next, we review the literature on the role parents and siblings play in the development of social perspective-taking skills. In doing so, we include research on both typically developing children and children with ASD and identify areas where further research is needed.

The Important Role Social Perspective-Taking Plays in Children's Well-Being

Considering the importance of perspective-taking in various domains of social interactions, it is unsurprising this ability is associated with a variety of positive outcomes. One benefit of perspective-taking relates to its importance in social learning. Research on selective social learning reveals that children are not 'passive sponges' that absorb any and all information around them; instead, they are active and selective learners that routinely make inferences about the knowledge states of others and choose to learn from the most knowledgeable sources available. For example, if two people offer a child conflicting information, the child will generally prefer to learn from the person that appears most confident [24-26]. Similarly, given a choice, they tend to prefer to learn from older individuals over younger individuals [27], and prefer to learn from those who have a history of being accurate, over individuals who tended to be inaccurate in the past [28,29]. Reasoning about the mental states of others is also necessary for recognizing when someone is intentionally attempting to deceive them or provide them with misinformation [30,31]. Clearly then, social perspective taking skills are integral for determining what information can be trusted and what should not.

Social perspective-taking also plays a vital role in language acquisition and language comprehension [9]. As one example, children often use a speaker's eye-gaze (i.e., what the speaker is looking at) to infer what that person is intending to label or discuss [32-34]. Consequently, children with ASD tend to make errors in word-learning because they have difficulties following eye-gaze and making inferences about a speaker's intentions [35]. Individuals with ASD often struggle with other aspects of language as well, especially the pragmatic aspects of language that involve using the social context to infer meaning or understand what is appropriate in each situation, rather than taking things literally (e.g., sarcasm, metaphors, rhetorical questions, vocal intonations) [3,36].

The positive outcomes of perspective-taking are further illustrated by how it promotes empathy for others [37,38]. For instance, research by Batson and colleagues [37] found that social perspective-taking, imagining how another individual would feel in a situation, evoked an empathic response in their research participants [37]. Indeed, the ability to 'put oneself in another's shoes' appears to be a critical requirement for effective prosocial behaviour (e.g., helping and comforting) and connected communication between friends [39-41]. For example, when children effectively engage in accurate mental state reasoning, they tend to be well-liked and more highly regarded by peers [42]. Moreover, children who showed higher prosocial behaviour in the first year of primary school were more likely to be accepted by their classmates one year later [43]. Further evidence comes from research by Caputi and colleagues showing that theory of mind skills (i.e., social perspective-taking) mediate the relationship between prosocial behaviour and better peer relations (e.g., peer acceptance) [43,44]. Peer relations are also important in the context of familial relations,

as improved peer relations can also positively impact parent-child connectedness [45]. In turn, these positive relationships can encourage more interactions between parent-child and child-peer dyads, offering even more opportunities to learn about the perspectives of others. Furthermore, individuals who are more prosocial also show better academic adjustment and greater life satisfaction across the lifespan [46,47]. Thus, perspective-taking is a catalyst for behaviors (e.g., increased empathy and prosocial behavior) that cascade into a host of other positive behaviours and outcomes.

Generally speaking, individuals with ASD engage in less prosocial behavior and are less likely to have quality friendships compared with typically developing children [48-50]. Fostering social perspective-taking skills in these individuals could go a long way toward increasing their prosocial behavior and improving friendship quality. Indeed, work by Bauminger and colleagues (2008) suggests that under the right circumstances friendships can, in turn, enhance social skills for children with ASD [51]. The researchers suggest friendships offer one-on-one social experiences with familiar peers, over extended periods of time, which provide children with ASD more opportunities to develop and practice their social skills such as sharing and cooperation [52]. Although there is a substantial amount of research on the links between perspective-taking, prosocial behavior, and peer relationships in typically developing children, more research is needed examining these relationships in children with ASD to better understand how to foster friendship development in these populations [49,53].

The role of parents in the development of social perspective-taking skills

The studies we review next provide strong evidence that parental discourse (i.e., what and how parents communicate with their child) can promote significant gains in their child's social perspective-taking skills. In a landmark study by Dunn and colleagues (1991), the effects of the family environment on children's theory of mind development were examined [54]. The researchers found that certain types of interactions (e.g., discussing feelings and using causal state language) were associated with children's success in theory of mind tasks. Since then, a burgeoning of related research has converged on a similar conclusion: parental discourse on, and references to, mental states can foster perspective-taking and social-emotional understanding in childhood [55-63]. For example, during unstructured play sessions mother's tendency to comment on emotions and desires (e.g., happy, sad, hate, love, hurt, sorry) that were appropriate to the situation predicted children's theory of mind [64]. Comparable results were found between a child's theory of mind and their parent's tendency to talk about mental states (e.g., intentions, beliefs) when reading with their child [65,66,61]. Similarly, parent-guided reminiscing about past events allowed children to construct relations between both the past and present, as well as the self and other, which is critical to the development of theory of mind [67]. One reason for this is that these interactions require a non-shared referent (i.e., the memory) that exists only in the minds of the parent and child rather than typical interactions that often contain a present,

physical referent. Through holding these representations and engaging in conversations with their parents, the child may begin to better understand the concept of 'minds' and how these minds can hold different memories, as well as different interpretations of events.

More recently, research in this area has been extended to atypically developing populations, demonstrating that theory of mind can also be improved in children with ASD through certain types of parental interactions. For example, Slaughter and colleagues (2007) examined the effects of maternal discourse on mental state reasoning in typically developing children and children with ASD [62]. In their study, they found that different types of discourse had different effects depending on whether the group was typically or atypically developing. For typically developing children, the greatest improvement in reasoning about the beliefs of others occurred when the mother engaged in cognition clarification (i.e., using phrases or sentences that explicitly identified mental states, gave explanations for sources of knowledge, or noted discrepancies between mental states and physical reality). For example, in cognitive clarification, the mom might say "she didn't see them playing so she will not know who has messed up her dressing table" to explicitly alert the child that there is discrepancy between what the character knows (i.e., their mental state) and what has occurred (i.e., the physical reality). On the other hand, children with ASD's improvements in false belief reasoning were associated primarily with affective clarification (i.e., using phrases that identify emotional states; for example, "she's so happy to get into the party"); however, it was not entirely clear whether cognitive clarifications were as helpful. Thus, children with ASD may benefit most from conversations that focus on explicit elaborations of an individual's mental states, especially emotional states.

Other studies have also helped clarify the specific types of interactions and contexts that are most effective in fostering theory of mind. For example, Ruffman and colleagues [60] examined the effects of mothers who responded to a child's transgressions by asking the child to reflect on the victim's feelings: for instance, by asking "how would you feel if they did that to you?" [60]. These 'how would you feel' responses were associated with more advanced belief understanding in children. Furthermore, work by Ontai and Thompson [59] found that elaborative discourse styles, which are marked by open-ended questions and expansion of information that moves the conversation to a new aspect of the event or adds more information about specific aspects of the event, significantly predicted children's performance in theory of mind tasks, whereas simply referencing mental states did not [59]. This is especially relevant to children with ASD who may better grasp the concept of invisible mental states through explicit elaborations [68,69].

In understanding the role parental discourse plays in fostering social perspective-taking it is important to recognize the bidirectional relationship between the child and the parent. Conversations involve two people; therefore, characteristics of the child and the way in which he or she responds to the parent will heavily influence the discourse. Consider for instance, research that has demonstrated that caregivers appear to intuitively

modify their internal state talk based on their child's current level of development [70]. This modification process tends to be beneficial because it increases the odds that the conversation will be age-appropriate and understood by the child. Nevertheless, there is a risk, especially in the case of children with ASD, that parents' automatic assessments and resulting modifications may be detrimental to the development of perspective-taking. For example, mothers of children with ASD were less inclined to produce clarifying comments when describing affective and cognitive states of characters in a story, compared to mothers of typically developing children [62]. Yet, simultaneously, the same study found that it is these elaborations that promoted perspective-taking in children with ASD. One reason why the mothers of children with ASD may have provided fewer mental state elaborations is because of the paucity of mental state referencing on the part of their child. Educating parents on the bidirectional influences in parent-child dyads may prove valuable. For instance, parents may benefit from being aware of their tendency to reduce their mental state discussions in the presence of their children with ASD and attempting to be more deliberate and persistent in engaging their children in these conversations. Important avenues for future research will be a) to evaluate how well parents can modify their day-to-day discourse upon learning the benefits of mental state discussions, and b) to evaluate the effects such discourse will have; not only on the child's social perspective-taking abilities but also, for instance, on their peer relations and social emotional well-being.

The studies we reviewed provide compelling indications that family discourse can foster significant gains in children's social perspective-taking skills. Nonetheless, there are limitations in the research that must be addressed. First, a lot of the research is correlational, rendering it difficult to conclude with certainty that parents' mental state discourse *causes* the differences observed in children's mental state reasoning. Relatedly, most studies are not longitudinal (i.e., they do not track the same children over time) and the few longitudinal studies that do exist involve intervals ranging from 1 to 36 months [71]. As theory of mind is comprised of a suite of cognitive mechanisms that develops throughout the course of life, these relatively short intervals may not properly assess the efficacy of parental discourse at enhancing their children's perspective-taking. In addition, the research on parent-child interactions has been primarily focused on mothers; less effort has been made to examine paternal influences on children's perspective-taking. Work by LaBounty et al. [57] has begun to examine the effects of fathers' use of internal state talk on children. In their study, they found that mothers appear to be particularly influential in the development of emotional understanding, whereas fathers may be more important for theory of mind development and the understanding of cognitive states, such as knowledge and beliefs. Future research should examine both mother- and father-child interactions in tandem to provide a holistic understanding of parental influences on the development of perspective-taking.

The role of siblings in the development of social perspective-taking skills

When considering the role discourse plays in promoting social

perspective-taking one should not neglect the critical role played by others in the family, such as grandparents, extended family members, and siblings. Although considerable research has examined the role of parental discourse, less attention has been devoted to the role of other family members. The little work that does exist has focused on siblings [72]. Siblings are a vital component of the family system and play a valuable role in children's social, emotional and moral development [72,73]. Of particular interest here is research that suggests siblings are a major contributor to children's understanding of mental states, such as others' thoughts, intentions, emotions and beliefs [74-78]. On average, children who have no siblings display lower performance on theory of mind measures compared to children who have one or more siblings [78-80]. In other words, the size of the family is one factor in predicting theory of mind development and understanding [77].

Siblings increase mental state understanding through a variety of avenues, including engaging in pretend play, teasing and deception, conflict resolution, direct teaching, and through other day-to-day conversations [74-76,81,82]. Sibling interactions also foster theory of mind development by allowing children to understand that people may hold different beliefs about the world at any given time [83-85]. For example, from young children's perspectives parents may seem to know just about everything. Who better then to teach them about mental states, such as ignorance and false beliefs than another child? Although, it is not simply the mere presence of siblings, but rather the quality of the relationships that ultimately influences social perspective-taking performance [76,86].

As noted above, the conversations siblings have during pretend play activities may be another avenue to foster social perspective-taking skills. According to some researchers, pretend play (i.e., make-believe activities where children create new symbolic relations such as pretending a broom is a horse) provides key building blocks for the flexible thinking required for the development of theory of mind [87-91]. Importantly, however, it is the most advanced form of pretend play, referred to as socio-dramatic play (i.e., role-playing where you pretend to be another character such as a teacher, doctor, or superhero) that may have the most benefits [92,93]. Those with siblings who frequently engage in advanced pretend play have been shown to display a greater understanding of others' emotions and thinking [73,94-96]. Research suggests that the amount and sophistication of pretend play abilities is related to experiences that children have with family members, such as siblings [84]. However, Taylor and Carlson [90] raise the concern that although there is a relationship between theory of mind development and pretend play, the correlational nature of the data makes it impossible to make causal claims [90,97]. For example, although it is possible that pretend play facilitates an understanding of mental state talk, it is also possible that children with a well-defined understanding of the mind are more captivated by pretend play, or that some other variables are at play [90]. Nonetheless, given that mental state discourse appears to enhance social perspective-taking, pretend play provides one more opportunity to engage in such discourse. Moreover, it makes intuitive sense that children's

social perspective-taking skills would benefit from pretend play activities that involve adopting different roles or perspectives. Children with ASD generally display impairments in generating pretend play, consistent with impairments in theory of mind development; however, siblings provide a unique opportunity for children, both typically and atypically developing, to appreciate the ideas of pretend play and the perspectives of another influential person [91].

It is also important to consider the pivotal role birth order can play in mental state understanding [72]. Research by Farhadian and colleagues revealed that birth order predicted false-belief understanding in typically developing children [98]. Indeed, a significant amount of research suggests that most of the benefits come from older as opposed to younger siblings [53,99,100]. Language is a medium through which children come to learn about the unobservable mental states of other individuals [76]. For that reason, older siblings encourage opportunities for linguistic interchange allowing for further language development and conversational competence, which are critical components to the acquisition of perspective-taking abilities [55,56,78,99,101]. By learning from older siblings, young children can learn from more experienced individuals [102]. In children diagnosed with ASD some research suggests that the presence of at least one older sibling is positively related to theory of mind development [53,103]. However, the benefits of older siblings on children with ASD may not be so clearly defined. Conflicting research by O'Brien and colleagues found that having an older sibling is a negative predictor for children with ASD [104]. The researchers suggest that older siblings may over-compensate for limitations in their siblings' theory of mind and limit opportunities for social-cognitive growth. The idea here is that because individuals diagnosed with ASD demonstrate issues with flexibility and spontaneous perspective-taking [91,105], older siblings may feel the need to compensate to maintain a bidirectional conversation and typical pattern of play. Given these conflicting results further research is needed to understand the influence older siblings have on social perspective-taking in children with ASD. In addition, many studies that involve sibling interactions rely on naturalistic observations and only examine families with two children [72]; other studies confound the effects of birth order and age [106]. Therefore, further research is needed to clarify how siblings influence perspective-taking abilities in both typically and atypically developing children.

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Conclusion

In summary, the research to date illustrates the multitude of benefits of having good social perspective-taking skills, and provides an important beginning for understanding the role of family discourse in fostering those skills. In doing so, these researchers have also identified key research questions such as: 1) What are the specific ingredients in mental state discourse that are integral to fostering perspective-taking?; 2) How does the efficacy of specific interventions differ depending on whether the population being examined is typically developing or atypically developing?; and 3) What are the bidirectional influences in dyadic interactions that impact the quality and quantity of family discourse on mental states?

Given the importance of this work, and the aforementioned limitations, these research questions should continue to be addressed with increasingly stronger empirical designs (e.g., more and longer longitudinal studies, more experimental research, and include broader populations of children with ASD). Such work will elevate both our basic and applied understanding of the development of social perspective-taking skills in children (with and without ASD). From a practical perspective, the results provided by this research agenda will ideally be used to inform parental practices, and help develop educational programs that are backed by scientific research.

It is also important to note, however, that ASD often presents concurrently with other forms of psychopathology, with 70% having at least one comorbid disorder [107]. In particular, intellectual disability co-occurs with ASD in a majority of cases [108,109]. The presence of more general cognitive difficulties may limit the benefits of interventions aimed at increasing mental state discourse in the home, therefore future research will be necessary to examine the efficacy of these interventions for children with ASD who are low functioning or exhibit comorbid disorders.

In short, theory of mind is an essential ability employed in nearly all facets of human interaction, and is therefore crucial to the social success of an individual. The studies we have reviewed provide evidence that parent and sibling discourse on mental states can act as catalysts that promote significant gains in perspective-taking skills and social competence in both typically and atypically developing children.

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