



# HOW PUPPETS CAN BE USED IN AUTISM THERAPEUTICS

This article is a review of the following research: Macari, S., Chen, X., Brunissen, L., Yhang, E., Brennan-Wydra, E., Verneti, A., Volkmar, F., Chang, J., & Chawarska, K. (2021). Puppets facilitate attention to social cues in children with ASD. *Autism Research: Official Journal of the International Society for Autism Research*, 14(9), 1975–1985.

It is important for infants in the first year of life to focus and pay attention to faces. A parent's face is often the first thing a newborn is able to focus on. Infants learn from faces and facial expressions, and take in a tremendous amount of information. They learn to follow gaze cues by looking where the caregiver is looking. They identify emotions and learn language. These early communicative skills are important for social success as children grow.<sup>1,2,3</sup>



A decrease in visual attention to faces is known to be an early characteristic of autism spectrum disorder (ASD), and leads to deficits in social communication. Research shows that early interventions can greatly improve these skills. Puppets have often been used in such efforts because they are known to hold the attention of both autistic and neurotypical children. Puppets appear in Sesame Street and The Muppet Show, and are found in many other educational and therapeutic settings. One study showed that when puppets are used in therapy, autistic children have an increase in empathetic response.<sup>4</sup> Another study showed that when animal puppets were used in therapy, autistic children showed an increase in perspective-taking skills.<sup>5</sup>

Researchers are now investigating whether or not puppets can be used in therapeutic settings to improve learning and social skills. If puppets can hold an autistic child's attention, then therapists, professionals and parents could successfully use puppets to increase social engagement and overall social learning. Robots have also been identified as potential supports in therapy for the autistic population.<sup>6</sup> However, puppets are more accessible and cost-effective.

To determine if puppets could successfully be used in a therapeutic setting to improve social learning, researchers from the Yale University School of Medicine examined where autistic children focus their attention when listening to a puppet and a human.



(Photo by Dr. Katarzyna Chawarska; <https://onlinelibrary.wiley.com/doi/10.1002/aur.2552>)

## Study

A total of 64 children participated in the study, 37 of which had ASD while 27 did not. Participants were shown an 86-second video in a dark, soundproof room. In the video, a soft, furry, colourful puppet known as Violet conversed back and forth with a woman named Z. The two also played with a ball together and occasionally looked into the camera. Violet was operated by a professional puppeteer who voiced the puppet and moved its head, hands and mouth.

Researchers used eye-tracking technology to monitor the children's visual attention as they watched the video of Violet and Z. In examining the attention patterns of each participant, they analyzed the amount of time participants spent looking at each of the following six regions: the background; the puppet face; the human face; the puppet body; the human body; and the ball.

## Results

- Both the autistic and the non-ASD children had a strong preference for the speaking puppet versus the listening human.
- When the autistic participants were listening to the puppet, their attention patterns were similar to those of the children without autism.
- When listening to Z, autistic children often looked at Z's body or the ball instead of her face.
- There was no association between the puppet speaker preference and autism severity.

## Conclusion

This study showed that the attention patterns of autistic children were similar to those of children without autism when listening to a puppet. Interestingly, the puppet speaker preference was not related to the severity of autism symptoms, meaning that children with all levels of autism symptoms were as likely to attend to the puppet. This is hopeful information, and indicates that there could be greater learning opportunities when puppets, instead of humans, are used in therapies and at home.

While the researchers showed that autistic children focused on the puppet's face, it is not yet clear if this translates into increased learning, as well as more effective social engagement and communication skills. Autistic children could be looking at the puppet's face for different reasons than their peers. They could be attracted to the colors or the motion of the puppet, while their peers could be focusing on social cues.

This study did show, however, that puppets can hold children's attention and potentially be used in more engaging therapies for those with autism. The advantages of puppets include the fact that

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they are widely available, relatively inexpensive, and can interact with children to deliver simple messages and social cues. Whether programmed or operated by a human, puppets can adjust to a child's mood and level of interest.

The authors of this research study noted that the puppets should be operated with a few key principles in mind. For example, the eyes of puppets should be clearly visible, and puppets should appear to focus on something in front of them. In addition, puppets should have a distinctive voice, movements and playfulness, as well as a sense of humor. Another principle is ensuring that puppets have a clear personality, such as shy or outgoing. The authors also highlighted that while training in puppeteering is helpful, it is not necessary.

As a matter of interest, it is worth noting that Cheryl Henson — the daughter of the famous puppeteer Jim Henson — helped design and implement this study.

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