



Music and the Spectrum: Emotions Resonate

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Emotion recognition is a skill that seems to vary for people on the spectrum, as indicated in the scientific literature. Studies examining emotional recognition in people on the spectrum have mostly included tasks requiring participants to identify emotions within social contexts where emotion is represented by face or voice. In these studies, we find differences in the emotional recognition skills of people on the spectrum compared to those considered typically developing (TD). Also, these studies often ask participants to respond categorically, i.e., to indicate which emotion is perceived from among choices predetermined by the researchers, which does not allow us to appreciate all the nuances of the emotions perceived by the participant. In other words, a categorical representation of emotions is not sufficient since it only captures a small part of the emotional experience, and reducing emotion recognition to this method can potentially put people on the spectrum at a disadvantage. A more nuanced and wide-ranging method, such as the dimensional method (indicating whether the emotion is positive or negative, and whether the intensity is high or low,

combined with the categorical method), allows a greater understanding of perceived emotions and is more inclusive when considering people with varied language skills. What seems major in this case is that recognizing people's emotions on the spectrum through highly social information such as faces, voice, or body language causes this difference in ability with TD people, but this difference diminishes when using other methods for studying emotion recognition, such as music.

How is Music Different for People on the Spectrum?

Music is an inherent source of emotion. From an early age, children can identify the emotions of joy and sadness within a soundtrack. Recently, researchers have found that music is a powerhouse for people on the spectrum. Not only has it proven to be a source of entertainment, but people on the spectrum demonstrate better musical memory, better pitch and melody recognition, greater verbal production when music is included in a language development

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program and, not least, greater social effort. Notably, there's more attention to task, a better quality of interaction requiring shared speech, and in general, better conversations reported by parents and/or music teachers. Regarding emotions, people on the spectrum recognize the emotions of joy, fear, and sadness within a soundtrack as well as their TD peers when cognitive skills are considered in scientific analyses. Thus, music seems to offer people on the spectrum a more accessible and easy-to-understand emotional context.

Basic Emotion Recognition in Autistic Children is Enhanced by Music and is Typical for Faces and Voices: A Study in Brief

Researchers banded together to examine how people on the spectrum and TD people identify emotions in different modalities. 25 children on the spectrum and 23 TD children aged 6 to 13 years old completed three different tasks: recognition of the emotions of joy, sadness, and fear through faces (photos), voice (sounds of crying, laughing, and screaming), and music (violin). The young people were asked to give their answers in three parts: dimensionally, which included evaluating the intensity of the emotion (either very intense or not very intense) and its valence (positive or negative), and categorically (identifying the word corresponding to the emotion represented). The image below shows what the participants saw when they were asked to give their answers.

What Results Were Obtained?

Categorical	Dimensional - Valence	Dimensional - Arousal
Which emotion?	How positive or negative is the music?	How energetic is the music?
Happy Sad Scary	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>

Original article:

Sivathanas S, Dahary H, Burack JA, Quintin E-M (2023) Basic emotion recognition of children on the autism spectrum is enhanced in music and typical for faces and voices. PLoS ONE 18(1): e0279002. <https://doi.org/10.1371/journal.pone.0279002>

Statistical analyses revealed better recognition of emotions within music in children on the spectrum compared to their TD peers. However, both groups showed similar performance for categorical emotion recognition from faces and voices. Specifically, both groups identified emotions by voice more easily and comparably. In addition, children on the spectrum identified emotions within music and faces in a similar way. As for the TD children, they identified emotions from faces more easily than from music. This indicates

that the TD group showed more variability in their responses than the group on the spectrum.

Regarding emotion ratings (dimensional and categorical), both groups rated emotions similarly in terms of valence (positive-negative) and intensity. On the other hand, children on the spectrum showed more variability in their assessment of the valence of joy.

Key Takeaways:

- Children on the spectrum show similar emotion recognition for faces and voices but demonstrate strength in emotion identification within music compared to the TD group.
- Both groups in general identify emotions more readily in the voice modality.
- The TD group identified emotions more easily in faces than in music.
- In general, dimensional responses are similar between groups, which runs opposite to the literature using categorical responses.
- Combining dimensional and categorical methods provides a better understanding of participants' perception of emotions, offering richer, more nuanced responses, but also being more accessible and inclusive for participants who are part of the neurodivergent community (with varying levels of language ability).

Why is this Study Important to the Community?

This study underscores the importance of leveraging music, a perceptual force, which seems to offer alternative avenues for emotional and social development programs for children on the spectrum. Music is also readily accessible as it is already part of the academic curriculum. So, since music is proving to be a personal strength of people on the spectrum, socio-emotional programs can be implemented in schools in a way that is effective and accessible to all with the aim of fostering and sustaining this strength in children on the spectrum. 🌸