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# The Effect of Audio Recordings and Photographs of Autistic and Typical Children on Social Judgments

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*In a counterbalanced, 2x2 mixed factorial design, 61 randomly assigned participants rated two audio recordings and two photographs of autistic or typical children. The hypothesis was that participants would judge autistic children most negatively when listening to audio recordings of them, but that they would judge photographs of autistic and typical children similarly. The two-way mixed ANOVA found a statistically significant main effect for the autistic versus typical child, but no statistically significant main effect for type of medium (recording vs. picture) nor interaction effect. This points to autistic children being judged more negatively in comparison to their typical peers, although it is unclear how those judgments are being determined, and has implications for diagnosis and therapeutic success.*

*Keywords: autism, perceptions, physical appearance, social judgments, voice*

First impressions of people derived from photographs and audio recordings tend to correspond very well with people's actual perceptions of themselves (Berry, 1991). When faced with children diagnosed with autism, however, it is difficult to discern what they think of themselves because of communication difficulties. It is nonetheless important to know how others perceive them in order to improve social skills therapies. Social skills therapies could utilize this information in order to improve non-verbal communication deficits children with autism often exhibit. Otherwise, children with autism who exhibit these deficits may be viewed negatively because of their inability to pick up on social norms of nonverbal communication, such as facial expressions. As a result, the purpose of this experiment is to determine whether audio recordings and photographs of children with autism, compared to those of typical children, lead to different perceptions and social judgments of them.

Werner, Dawson, Osterling, and Dinno (2000) have shown that early diagnosis of children with autism is important for their

future well-being. Most children are not being diagnosed until 3 or 4 years of age, however, even though symptoms of the diagnosis can be seen in home videos before they were diagnosed. It is important to focus on what those symptoms are to improve the early diagnosis of autism. At first glance a child with autism appears no different than any other child, but Ozgen, Hellemann, Stellato, and Lahuis (2010) have identified slight morphological features that are apparent. Compared to children with physical disabilities or with visible mental impairments like Down syndrome, children with autism are judged less harshly than them, but that is not the case when compared to typical children (Reinhardt et al., 2011).

The research literature seems to suggest three primary predictors of social judgments of children with autism: vocal unattractiveness, stuttering, and certain vocal cues. Vocal attractiveness (or lack thereof) is a cue that affects how people judge children with autism. Vocal attractiveness is positively correlated with personality. As vocal attractiveness increases, perceptions of similarity also

increase, leading to greater likeability and friendliness perceptions (Miyake & Zuckerman, 1993). Zuckerman and Miyake (1993) found that when rating vocal loudness, resonance, pitch, nasality, impact, and articulation, a male voice is viewed as attractive if it is loud and resonant. Voice nasality also negatively affects stereotypes of others in both sexes, leading to perceptions of childishness or weakness (Bloom, Zajac, & Titus, 1999).

Stuttering also leads people to judge children with autism negatively. Werner et al. (2000) explained that while stuttering does not always occur in autism, speech delays are extremely common and often coexist with stuttering, and both children and adults attribute negative personality traits to people who stutter (Dorsey & Guenther, 2000). Guntupalli, Everhart, Kalinowski, Nanjundeswaran, and Saltuklaroglu (2007) also found that participants tend to have a lower heart rate and higher skin conductance – physiological reactions characteristic of people who are unhappy or annoyed – when listening to stutterers versus non-stutterers.

Certain vocal cues have also been found to affect judgments of autistic children. Chevrie-Muller, Segui, Spira, and Dordain (1985) found that therapists should listen closely to their autistic clients' voice characteristics for indications of passivity and unemotionality that may be helpful in diagnosis and treatment. More specifically, Markel, Meisels, Murray, and Houck (1964) had participants rate recorded voices' physical characteristics and demeanor, and found that certain vocal cues negatively affect perceptions, such as active voices being perceived as a schizophrenic characteristic. Brown, Strong, and Rencher (1973) also found that people who rated computer-altered voices attributed more negative personality traits to atypical voices. Finally, Lass, Ruscello, Stout, and Hoffmann (1991) found that participants rated voice-

disordered children as unhealthy, foolish, boring, and weak.

It behooves researchers to understand the role that tone of voice and facial expression have on social judgments of children with autism, so that they may be addressed in social skills therapies. This experiment tested the effect that audio recordings and photographs of autistic and typical children had on individuals' judgments of them. The hypothesis was that autistic children on audio recordings (vs. photographs) would be judged most negatively, but that autistic and typical children would be judged similarly in photographs.

## Method

### Participants

Participants consisted of a convenience sample of 61 students from a liberal arts college in the mid-Atlantic. Seventy-two percent of them were female and 28% of them were male. The age range was 18 to 60, with a mean and median age of 22 and 19 respectively (75% were under the age of 21). Participants reported that they were 85% Caucasian, 5% African-American, 5% Hispanic or Latino, 2% Asian or Pacific Islander, and 3% Other. Participants were given candy for participating in the experiment.

### Materials and Procedure

Upon receiving approval from the college's IRB committee, we recruited participants from campus dorms and psychology classes. After signing and returning an informed consent form, we randomly assigned participants to one of four groups in a counterbalanced, 2 (autistic vs. typical) x 2 (audio vs. visual) mixed factorial design, where the between-subject variable was whether the audio recordings and photographs were of autistic children or typical children, and the within-subject variable was the audio recordings and photographs

themselves. The counterbalancing we employed to control for order effects resulted in four possible groups: participants who 1) first received two audio recordings and then two photographs of autistic children, 2) first received two photographs and then two audio recordings of autistic children, 3) first received two audio recordings and then two photographs of typical children, and 4) first received two photographs and then two audio recordings of typical children. A confederate labeled all materials to create a double-blind design.

There was one 4x6 color photograph, from the chest up, of each of the four children with neutral facial expressions (see Appendices A and B). Two of them were of a six-year old, blue-eyed, blond-haired autistic boy, and an eight-year old, brown-eyed, brown-haired autistic boy, and the other two were of a six-year old, blue-eyed, blond-haired typical boy, and an eight-year old, brown-eyed, brown-haired typical boy.

There were also four (one for each child) 13-second audio recordings played on a computer with ear buds of the same children in the photographs, saying the same five short sentences: the cat sat on the rug, the dog ran after the ball, the cow ate the grass, the pig played in the mud, and the duck swam in the lake. After looking at the photographs and listening to the recordings (or vice versa), participants answered demographic questions and three 7-point semantic differential questions (i.e., friendly/hostile, incompetent/intelligent, and warm/cold) about the perceived personality traits of the children (borrowed from Lass et al. (1991)'s study about children's perceptions of voice-disordered children). We instructed participants to rate the children following each photograph or audio recording in order to minimize contrast effects.

After the participants completed the survey and returned it to the corresponding envelope,

we gave them a debriefing form, asked them not to discuss the study with others, and offered to answer any questions.

## Results

We calculated an overall judgment score based on the three trait ratings (friendliness, competence, and warmth) for both photographs and both recordings. Competence and warmth were reverse coded in order to obtain the overall score. The possible range of overall scores was 6-42, with a high score representing a positive perception of the child. Table 1 displays mean ratings and standard deviations for all four groups. Both typical children were averaged together and both autistic children were averaged together.

We examined the effects of the type of child (typical vs autistic) and the type of medium (audio vs visual) on average perceptions of the children with a 2 x 2 mixed-design ANOVA, and found a statistically significant main effect for type of child ( $F(1, 59) = 4.940, p = 0.030$ ). The average rating for autistic children was 26.28 ( $SD=5.77$ ), and 28.72 ( $SD=4.37$ ) for typical children, indicating a significantly more negative perception of autistic children. There was no statistically significant main effect for type of medium ( $F(1,59) = 1.396, p = .242$ ), with audio recordings' average rating being 27.93 ( $SD=5.58$ ) and photographs' average rating being 27.07 ( $SD=4.56$ ). There was also no statistically significant interaction effect ( $F(1,59) = 1.290, p = 0.260$ ). In summary, autistic children were viewed significantly more negatively than typical children, but this perception was not influenced by whether they were seen or heard.

## Discussion

The purpose of this study was to determine whether autistic vs. typical children are viewed differently based on audio recordings or

photographs. As autistic children do not have any visible impairments, we hypothesized that autistic and typical children would be judged similarly in photographs, and this hypothesis was supported by the data.

We also hypothesized, given that auditory cues such as tone, pitch, and nasality of voice are the ones found to elicit negative perceptions (Argyle, Alkema, & Gilmour, 2006; Bloom et al., 1999; Dorsey & Guenther, 2000), that autistic children on audio recordings (vs. photographs) would be judged most negatively. While this was the case, the negative ratings were not statistically significantly different from those of the typical children.

The significant main effect for type of child that we found was consistent with previous studies (Brown et al., 1973; Lass et al., 1991), wherein autistic children were judged more negatively than typical children, even though there are no visible, physical differences among the children. This significant finding is puzzling; given that the type of medium was not statistically significant – there were no significant differences between judgments resulting from photographs and from audio recordings – it is unclear what participants were relying on to generate such judgments.

There were a couple of limitations in the experiment that may partially explain our findings. One possible explanation for the lack of significantly different judgments between the audio recordings and the photographs is that there were only two of each. If more photographs and recordings had been used, across which multiple ratings could have been collapsed, we could have had a stronger manipulation. In addition, approximately one-third of the participants were disturbed that they had to judge whether a child was competent or incompetent (and therefore may have just circled the middle number to avoid judging him negatively).

In the future, studies should look at reasons why these differences occurred (e.g., characteristics such as tone – nasality, loudness – and facial expressions) and ways to change these perceptions. Although not statistically significant, the interaction effect seemed to suggest that with greater statistical power it may be possible to use photographs or audio recordings to discriminate between both types of children. Furthermore, it would be interesting to determine what the necessary threshold (i.e., number of photographs or length of recording) would be for people to be able to distinguish between not only these two types of children, but also among other types of children who are visibly undistinguishable as well (e.g., learning disabled, gifted). In addition, would participants judge autistic children differently if they were face-to-face with them, as opposed to seeing them in photographs? Given the results of this study, new approaches to social interventions may need to be altered: researchers may need to investigate how to isolate nonverbal cues (e.g., blank vs. smiling face) in order to minimize negative social judgments from others. More research into how people perceive children with autism is necessary, as it can greatly influence their social, educational, and therapeutic progress by leading to earlier recognition of symptoms and diagnosis.

## References

- Argyle, M., Alkema, F., & Gilmour, R. (1971). The communication of friendly and hostile attitudes by verbal and non-verbal signals. *Journal of Social Psychology*, 1(3), 385–402. doi: 10.1002/ejsp.2420010307
- Berry, D.S. (1991). Accuracy in social perception: Contributions of facial and vocal information. *Journal of Personality and Social Psychology*, 61(2), 298–307. doi: 10.1037/0022-3514.61.2.298
- Bloom, K., Zajac, D.J., & Titus, J. (1999). The influence of nasality of voice on sex-stereotyped perceptions. *Journal of Nonverbal Behavior*, 23(4), 271–281. doi: 10.1023/A:1021650809431
- Brown, B.L., Strong, W.J., & Rencher, A.C. (1973). Perceptions of personality from speech: Effects of manipulations of acoustical parameters. *The Journal of the*

*Acoustical Society of America*, 54(1), 29-35. doi: 10.1121/1.1913571

Chevrie-Muller, C., Segquier, N., Spira, A., & Dordain, M. (1985). Recognition of psychiatric disorders from voice quality. *Language and Speech* 28(1), 87- 111.

Dorsey, M., & Guenther, R.K. (2000). Attitudes of professors and students toward college students who stutter. *Journal of Fluency Disorders*, 25, 77-83. doi: 10.1016/S0094- 730X(99)00026-1

Guntupalli, V.K., Everhart, D.E., Kalinowski, J., Nanjundeswaran, C., & Saltuklaroglu, T. (2007). Emotional and physiological responses of fluent listeners while watching the speech of adults who stutter. *International Journal of Language and Communication Disorders*, 42(2), 113-129. doi: 10.1080/10610270600850036

Lass, N.J., Ruscello, D.M., Stout, L.L., & Hoffmann, F.M. (1991). Peer perceptions of normal and voice-disordered children. *Folia Phoniatica et Logopaedica*, 43, 29-35. doi: 10.1159/000266098

Markel, N.N., Meisels, Murray, & Houck, J.E. (1964). Judging personality from voice quality. *Journal of Abnormal and Social Psychology*, 69(4), 458-463. doi: 10.1037/h0041774

Miyake, K., & Zuckerman, M. (1993). Beyond personality impressions: Effects of physical and vocal attractiveness of false consensus, social comparison, affiliation, and assumed and perceived similarity. *Journal of Personality*, 61(3), 411-437. doi: 10.1111/j.1467- 6494.1993.tb00287.x

Ozgen, H., Helleman, G., Stellato, R., Lahuis, B., Daalen, E., Staal, W., ...Engeland, H. (2010). Morphological Features in Children with Autism Spectrum Disorders: A Matched Case- Control Study. *Journal of Autism and Developmental Disorders*, 41(1), 23-31. doi: 10.1007/s10803-010-1018-7

Reinhardt, J.D., et al. (2011). Visual perceptions and appraisal of persons with impairments: A randomized controlled field experiment using photo elicitation. *Disability and Rehabilitation*, 33(5), 441-452. doi: 10.3109/09638288.2010.500344

Werner, E., Dawson, G., Osterling, J., Dinno, N. (2000). Brief Report: Recognition of Autism Spectrum Disorder Before One Year of Age: A Retrospective Study Based on Home Videotapes. *Journal of Autism and Developmental Disorders*, 30(2), 157-162. doi: 10.1023/A:1005463707029

Zuckerman, M., & Miyake, K. (1993). The attractive voice: What makes it so? *Journal of Nonverbal Behavior*, 17(2), 119-135. doi: 10.1007/BF01001960

## Appendix

Table 1  
*Mean Social Judgments and Standard Deviations for Type of Child and Type of Medium*

Type of Media	Typical Children			Autistic Children			Total		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Audio	30	29.57	4.77	31	26.29	6.39	61	27.93	5.58
Visual	30	27.87	3.97	31	26.26	5.14	61	27.07	4.56
Total	30	28.72	4.37	31	26.28	5.77	61	27.50	5.07