The Effect of Speech Impediments on Perception

Sarah Helms and Lyndsey Holzinger
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Dr. Alexis Green
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Abstract
Human beings navigate through daily life socially through a series of actions and reactions to others, of which language is a big component. How we perceive another human being effects how we interact with them, and language disruption can have a dramatic impact upon perceptions. This study was designed to measure the reported perceptions of an individual with a speech impediment (disfluency). Approximately 200 participants of both genders were randomly assigned to listen to an audio file with or without the disfluency. Participants were asked to complete an online survey designed to measure their perceptions of the speaker, empathy, and past exposure to a speaker with an impediment. Our expected results were that participants rated the speaker with a disfluency more negatively than the normally speaking control condition, but no significant results were found to support that. Prior exposure is expected to have an effect on the negativity or positivity of perception, as well as possibly altering empathy measures. Current literature discusses how people think they might perceive someone with a disfluency. This study examineed what those perceptions actually are and whether these perceptions are impacted by prior exposure.

**Introduction**

Conversations and verbal language are meant to convey messages, understanding, and function in a society that revolves around communication. Human verbal communication is broadly defined as how a human uses words to share their experience (Tubbs, 2010). According to Tubbs,

> “the person who pauses continually, whose speech is full of vocalizations such as ‘um,’ ‘er,’ and ‘ah,’ may destroy his or her effectiveness as a communicator. Pauses that are frequent, long, and vocalized, and that come in the middle of an idea, are usually unsettling and undermine the sender’s purpose” (2010).
With this idea that pertains to rate and fluency, one may assume that individuals that suffer from speech impediments are seen as ineffective communicators. When a speech disability is introduced, the perception is susceptible to change drastically.

According to Deborah Tannen (2000), people can judge each other simply based on differences in conversational style. The most intrusive speech impairment to a conversation is a disfluency (U.S. National Library of Medicine, 2010). A disfluency, otherwise known as a stutter, are disorders in which a person repeats a sound, word or phrase (U.S. National Library of Medicine, 2010). A child can be diagnosed with a stutter after age four (U.S. National Library of Medicine, 2010). Some characteristics of a stutter are: repetition of sounds, words, or parts of words; putting in (interjecting) extra sounds or words; making words longer; tension in the voice or sounds; frustration with attempts to communicate; etc. (U.S. National Library of Medicine, 2010). The difference in assumptions of the length of a pause or interjection varies among people, and can cause discomfort and imbalance in a conversation (Tannen, 2000).

Perceptions based on language are made at an age as early as preschool (Gertner, Rice, & Hadley, 1994). According to Gertner, Rice, & Hadley,

“The children with language limitations were the least likely to be identified as preferred peer playmates, at least when the verbally demanding activity of dramatic play was used as the context to elicit peer nominations. Furthermore, in this sample of children, language ability was a better predictor of peer status than age or intelligence” (Gertner, Rice, & Hadley, 1994).

Additionally, a study by Langevin, Packman, and Onslow (2009), proposed the effects of negative reactions, such as bullying, to stutters has long-term ramifications.
The upbringing every individual receives as they create their language expectations varies throughout the world. “…the development and use of language are embedded within social and cultural systems, and because of this, the social psychological antecedents and consequences of language are extensive” (Holtgraves 2010). They can even affect hiring decisions and be the cause of harassment in the workplace (Mitchell, McMahon, & McKee, 2005). According to Hurst and Cooper, “85% of employers felt stuttering decreased a person’s employability and opportunities for promotion and share a widely accepted impression that individuals who stutter are nervous, shy quiet, self-conscious, withdrawn, tense, anxious, fearful, reticent, and guarded” (1983).

With the previously mentioned negative descriptors, the following study is designed to identify whether past exposure to persons with speech impairments influences negative perceptions of persons with speech impairments. Previous exposure to a speech impediment is likely to impact perceptions. Language is such an integral part of existence that to participate in interpersonal relationships, a flow in communication is mandatory.

**Method**

Our study was conducted through an online survey. We chose an online survey to reach the high number of participants we wanted to obtain. In addition, we chose online to avoid the Hawthorne effect that occurs when a researcher’s presence affects the results. In the online study, we included our measures in the form of a six point Likert scale and short response section. The Likert scale had numbers 1-6 with 1 being strongly disagree...
Participants began with an informed consent. Upon completing of the informed consent, a set up situation for why they should be evaluating this person was the introduction in the form of an audio file recorded with a female researcher’s voice. The given scenario (Appendix I) included neutral facts about the male voice that would be included in a college application. The participants were asked to take on the role of a college admissions counselor and the pilot testing of audio submission for essay responses for a college in central United States with 10,000-15,000 students in attendance.

We wanted to make the independent variable of the speaker’s speech controlled. Therefore, giving neutral facts about the speaker we thought would aid in that effort. In this audio file, instructions were given to the participant to judge this person’s character with the background story of the college admission officer. We wanted the participants to feel that they were “allowed” and encouraged to judge the speaker.

The research design is a between-subjects study. Participants were randomly assigned to one of two conditions. We set up a random generator sorted the participants into each variable. Fifty-four of our 103 participants experienced the control condition, while the remaining forty-nine were in the experimental condition. The experimental group listened to an audio file of a male voice with a speech impediment (stutter) reading a neutral story simulating a college entrance essay (Appendix II). The control group listened to the same male voice without a speech impediment (stutter). The reasoning behind choosing a between-subjects design is because we wanted to keep the specific research question blind from our participants. Because the difference between each
variable is so obvious, we wanted to be sure that the participants would not know our research question, thus skewing our results.

We created two surveys that measure perception and empathy. (Appendix III). A six-point Likert scale was used to rate the listener’s responses. The perception survey is broken down further into three sections. The first section involves the listener’s likelihood of being social with the speaker. The second section measures the person’s perception of disabilities or differences in others. The final section of the perception survey has a list of thirty character descriptors with the statement, “This person is…” with the descriptors listed below. We pilot-tested this portion of the perception survey to ensure that there were no extremely neutral words.

Based on our pilot study, we did not change any of the character descriptors. None of the pilot study participants proved to respond neutral on any specific word. The participant then moved on to the empathy scale we adapted from a study by Mark Davis (1980, 1983). We have chosen the statements from the original study that specifically address empathy (Appendix IV). After the participant completed the empathy survey, they entered their demographic information (Appendix V). The participant was then debriefed and thanked for their time.

**Results**

Participant’s perceptions of the speaker were measured in four different sections within the survey. The first section were statements of likelihood of being sociable with speaker and had a reliability of alpha = 0.79. The following section were statements of perception of differences and had a reliability of alpha = 0.69. The last two sections were lists of character descriptors with a reliability of alpha = 0.93 and questions of empathy
with a reliability of alpha = 0.86. These high alphas indicate that within the sections the questions or descriptors are highly related to each other.

Five ANOVA’s were run between past exposure to speech impediments and likelihood of being social with the speaker, past exposure and perception of differences, exposure and character descriptors, exposure and perceived competency, and exposure and empathy. All of the results indicated that there were no significant interactions between exposure and the four measurements of perception as well as empathy. Table 1 below shows the statistical data. The lack of significance means that prior exposure does not affect the overall perception of the speaker on any of the perception measures contained within the survey.

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<thead>
<tr>
<th></th>
<th>F (1,100)</th>
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<tr>
<td>Likelihood of being social by prior exposure</td>
<td>0.739</td>
<td>0.392</td>
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<tr>
<td>Perception of differences by prior exposure</td>
<td>0.080</td>
<td>0.778</td>
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<tr>
<td>Character descriptors by prior exposure</td>
<td>1.043</td>
<td>0.309</td>
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<tr>
<td>Perceived competency by prior exposure</td>
<td>1.146</td>
<td>0.287</td>
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<tr>
<td>Empathy by prior exposure by prior exposure</td>
<td>0.070</td>
<td>0.792</td>
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</tbody>
</table>

*Table 1*: Statistics of interaction.

The results also demonstrate that there were no significant differences between speech impediments and our measures for perceptions, as well as empathy (see Table 2). As can be seen in *Figure 1, Figure 2, Figure 3, Figure 4, and Figure 5*, there were very little differences in the means of the controlled groups versus the experimental groups. Thus, our hypothesis is unsupported by these results. These results indicated that speech impediments do not affect other’s perceptions of one exhibiting an impediment and also does not affect the amount of empathy others have toward someone with a speech impediment.

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<thead>
<tr>
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<tr>
<td>Likelihood of being social</td>
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<tr>
<td>Perception of differences</td>
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<tr>
<td>Character descriptors</td>
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<td>0.756</td>
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</tbody>
</table>
Perceived competency \[ F (1, 99) = 0.243, p = 0.623 \]
Empathy \[ F (1, 100) = 0.161, p = 0.689 \]

Table 2: Statistics of main effect.

**Figure 1.** Effects of stutter on likelihood of being social.

**Figure 2.** Effects of stutter on perception of differences

**Figure 3.** Effects of stutter on perception using character descriptors.

**Figure 4.** Effects of stutter on perceived level of competency.

**Figure 5.** Effects of stutter on empathy rating.

**Discussion**

Our hypothesis stated that participants would report being less likely to be social with a person with a speech impediment. The survey that dealt with likelihood of being social produced results found to be not significant. We also expected that they would perceive that type of person as incompetent and we hypothesized that people who have prior exposure to a person with a speech impediment in life or through media, would
perceive that person overall more positively than those who have had no exposure. This hypothesis was not supported by the results we obtained from our data. This indicates that people do not necessarily perceive people with a speech impediment as more negatively.

Limitations

The online study format could have been less-accessible for older adults with less experience of survey-taking online. Also, the medium of the internet does not reach all of the eldest of the population as some have not embraced the advances of technology. Our informed consent said it would take no longer than 50 minutes. Some of the feedback by our pilot testers emphasized that it could scare some people off, when it really only took about 20 minutes to complete.

In addition, by looking specifically at disfluency, we did not examine the full spectrum of speech impediments. Disfluency is the most common of the speech impediments, but could be a limiting factor on the generalization of perceptions of speech impediments. Using an audio recording could have limited a main factor of the perception of a speaker with a speech impediment, as there are visual aspects, such as grimacing and straining of the facial features that our study left out using audio only.

Future Directions

Changing the design of the current study could yield different results. For example, if the participants were not acting as a college admittance counselor, they could be directed to simply judge the recording based on their own perception. The decision to give the participant a reason to judge the person might have influenced the results. Therefore, allowing the participants to straightforwardly assess the speaker might make
an impact on the true perception of the speaker. Another change that could be considered would be to change this study to a within-subjects design. Perhaps if the subjects were lead to believe they were supposed to judge the speaker for the way they talk and were made to listen to the speaker with various different speaking styles (i.e. accents, etc.) could yield different results.

As a note on the measures, even with a strong Chronbach’s alpha the statements could impact the results as not significant. The statements might not have been measuring what we hoped they would measure, but they were measuring the same thing from the significant Chronbach’s alpha. However, without any significant results, we cannot directly define what measures we could take to change the statements to measure exactly the points defined in our hypothesis. Looking at studies that have yielded significant results, as well as using those surveys found to measure exactly those points in our hypothesis could change the levels of significance in our results.

Although, in a study by Walshe et al., results concluded that, “the speech of people with dysarthria (are) more difficult to understand, giving them lower intelligibility ratings” (2008). Dysarthria here refers to the speech that is difficult to understand. It makes interesting implications about the differences in any speech impediment and intelligibility. A measure addressing this implication inserted into the current study could yield significant results.

Studies that have looked at children’s perceptions of others with speech impediments have yielded significant results. We would like to see the differences between children’s perceptions and older adult’s perceptions. This would need to be done administering the survey to children in schools, and potentially changing the speaker’s
voice to sound younger, or use a younger person with and without a speech impediment
to help the children relate to the speaker. Assessing a speaker as a peer could possibly
influence the responses.

Furthermore, realizing that higher socioeconomic individuals have more access to
speech therapy, we would like to look at the differences in class and socioeconomic status
on perceptions. Presumably, low SES (socioeconomic status) participants would have
more encounters with others with speech impediments.

Additionally, using a video file to measure perception because of the importance
of the physical strain shown in those with speech impediments. According to Speech
Pathologist, Meredith Heitz people would perceive a speech impediment as worse if it
was visualized, since dysfluencies are typically accompanied by facial grimaces, tension
in the upper body, blink, ticks, etc. This could influence the subject’s comfort level and
therefore, perception of a person with a speech impediment may be viewed as more
negatively.
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References


Appendix I

Female Researcher’s Introduction

The person you are about to listen to is applying to a university in the central United States with 10,000-15,000 students in attendance. He is coming from an average-sized high school in a nearby state. On his application, he has stated that his high school G.P.A. is a 2.8 on a 4.0 scale. He is on second string of the Varsity basketball team, and an active member of 4-H. During the summers he volunteers for the basketball camp for 8-12 year olds. He hopes to major in Physical Therapy during his time in college.

It is your job to play the role of an admissions counselor. This university is pilot testing an audio submission essay response system. While listening to his short sample-writing essay, please assess this potential student candidate in the following survey. His essay prompt is:

In 400 words or less, tell us what experiences have led you to select your professional field and objective?

Once your hear his audio submission, you will not be able to hear it again, so please pay due attention.

Appendix II

Male Voice with and without Stutter Script:

Two summers ago, my friends and I were playing a pick up game of football and one of my buddies tackled me hard to the ground. I knew something was wrong right away because my arm couldn’t hold my own weight to get up off the ground. My parents took me straight to the emergency room where I found out that I had torn my rotator cuff. The doctors asked me if I played sports. I told her I was on my high school basketball team. The surgeon had an opening for later that week to repair the tear, and she offered that spot to me. In order to be ready for basketball season, I went ahead and took the spot for that Thursday.

After surgery, recovery was a long process. I ended up having to see a physical therapist for three months. They made me do different stretches and exercises to build back up the strength in my shoulder so I could be in game day shape. We did several strange exercises that didn’t work my shoulder, but my neck and hand flexibility. My physical therapist explained each exercise and how it connected to strengthening my rotator cuff.

It was so interesting to learn about the different things I needed to do to make sure I was ready for basketball training. I am taking a biology class and in it, we learn about human anatomy. That part of the class was my favorite and I really learned a lot. I enjoyed talking about the muscular system and how the different tendons and ligaments really connect our entire body.

I think I would be a good physical therapist. I know how much training and effort athletes put into their sports. I think I would really enjoy and appreciate my work with future athletes so that they can go through therapy after an injury and be able to get back in the game.
Appendix III

Please respond to the following statements based on the following scale:
1-Strongly Disagree
2-Disagree
3-Somewhat Disagree
4-Somewhat Agree
5-Agree
6-Strongly Agree

Someone like this person will do well in college.
Someone like this person will have lots of friends.
I would be a friend to someone like this
I would not talk to someone like this
Someone like this will be able to find a good job.
Someone like this will not get good grades
Someone like this will have lots of romantic relationships
Someone like this will have few romantic relationships
Someone like this will get married if he or she wants
I often seek out new friends
I enjoy seeing the differences in people outside of myself
People that are different make me uncomfortable
People that have disabilities don’t bother me
If my friend were to get hurt, I would contact them often to find out how they are doing

This person is…

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<th>3</th>
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Appendix IV

Adapted From:

The following statements inquire about your thoughts and feelings in a variety of situations. For each item, indicate how well it describes you by choosing the appropriate letter on the scale at the top of the page: 1, 2, 3, 4, or 5. When you have decided on your answer, fill in the number on the answer sheet next to the item number. READ EACH ITEM CAREFULLY BEFORE RESPONDING. Answer as honestly as you can. Thank you.

**ANSWER SCALE:**

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<tbody>
<tr>
<td>DOES NOT DESCRIBE ME</td>
<td>DESCRIBES ME VERY WELL</td>
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1. I often have tender, concerned feelings for people less fortunate than me.
2. Sometimes I don't feel very sorry for other people when they are having problems. (-)
3. When I see someone being taken advantage of, I feel kind of protective towards them.
4. Other people's misfortunes do not usually disturb me a great deal. (-)
5. When I see someone being treated unfairly, I sometimes don't feel very much pity for them. (-)
6. I am often quite touched by things that I see happen.
7. I would describe myself as a pretty soft-hearted person.
Age:
Gender: Male  Female  Prefer Not To Answer
Ethnicity:
  Hispanic
  African-American
  Asian
  Pacific Islander
  White Non-Hispanic
  Other:
Years of education completed:
Please Choose the State you are from: (Drop down menu of states)
If not a U.S. Citizen, please click here. []
Are you fluent in English? [Yes/No]
Do you have any personal experience with someone with a speech impediment? [Yes/No]
If yes, what was your relationship with this person?
[Comment Box]
If yes, how do you feel the experience influence your responses in any way? [Comment Box w/ option “Prefer not to respond”]

Have you seen “The King’s Speech”? [Yes/No]
If yes, do you think it influenced your responses in any way?
[Comment Box w/ option “Prefer not to respond”]