



Communication Differences in Twins

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Introduction

The purpose of this research project was to find a correlation between concordance rates for communication disorders in monozygotic and dizygotic twins. Both authors are twins which is what prompted interest in this topic. Factors determining concordance rates are genetics and shared and non-shared environments. Twin studies provide a natural experiment because monozygotic twins share 100% of their genetic makeup and dizygotic twins share on average 50% of their genetic material. A vast majority of twin pairs will share many of their environmental experiences when in the process of developing speech and language skills. These factors help to explain the phenomena of the influence of genetics and environmental influences on the speech and language development in twins.

A higher concordance rate in either type of twin pair would reflect a similar type of communication disorder in each twin presenting the disorder. Discordance for communication disorders in twin pairs reflects a difference in communication abilities for each twin. It was expected to find a higher concordance rate among monozygotic twins than dizygotic twins when presenting the same communication disorder.

It was hypothesized that higher concordance rates for communication disorders would appear in monozygotic twins than dizygotic twins.

Methods

A survey was created using Qualtrics and the link was sent out via email to 533 University of Wisconsin-Eau Claire alumni of the Communication Science and Disorders department. These emails were obtained through the Alumni Office on campus. Questions asked pertained to twin clients that the Speech-Language Pathologists have had in the past as well as the type of communication disorder they presented.

Survey

The Qualtrics survey contained 23 items asking responders to report information about their clinical caseload in public school settings.

The following items were most helpful in examining our hypothesis:

- Were the twins on your caseload fraternal or identical?
- If you saw both twins for therapy, were you treating them for the same disorder?
- What disorder did the client display?

Literature Review

A review of current literature revealed possible causes of communication disorders in twins. Previous studies show results of concordance and discordance between twin pairs for varying communication disorders. While conducting research of the current literature, it was found that possible causes of communication disorders in twins could be linked to genetic or environmental influences, or a result of both. The following genetic and environmental influences occurred most frequently in the literature.

Genetic Influences

- Prenatal effects
- Perinatal effects
- Postnatal effects

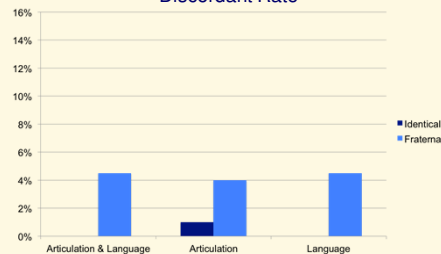
Environmental Influences

- Postnatal effects
- Twin interaction
- Parent interaction
- Idioglossia

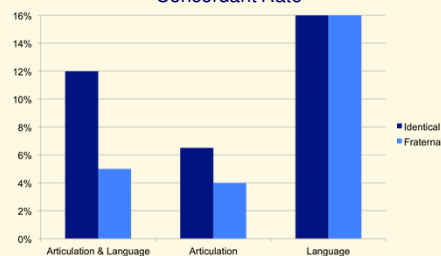
These influences are strongly considered because of the effects they have on the individual twin as well as the twin pair. Since it can be expected that twins will share the vast majority of their environmental experiences and share 50% or 100% of their DNA, it can be assumed that their language abilities will resemble each other.

- Rutter, Michael, Karen Thorpe, Rosemary Greenwood, Kate Northstone, and Jean Golding. "Twins as a natural experiment to study the causes of mild language delay: I: Design; twin-singleton differences in language, and obstetric risks." *Journal of Child Psychology and Psychiatry* 44.3 (2003): 326-341. McIntyre Library. Web. 6 Jan. 2011.
- Lewis, Barbara, and Lee Thompson. "A study of developmental speech and language disorders in twins." *Journal of Speech and Hearing Research* 35.5 (1992): 1086-1094. *American Speech-Language-Hearing Association*. Web. 4 Jan. 2011.

Discordant Rate



Concordant Rate



Results

56 out of the 533 University of Wisconsin-Eau Claire alumni responded to the survey. Of those 56 responses, there was a total of 154 individual twins, 79 identical and 75 fraternal.

The three most commonly reported communication disorders were:

- Articulation and Language
- Language
- Articulation

Other reported communication disorders were:

- Autism Spectrum Disorder
- Fragile X Syndrome
- Phonology
- Fluency
- Apraxia

Conclusion & Further Research

The hypothesis that monozygotic twins will show a higher concordance rate for the same communication disorder than dizygotic twins was confirmed through these survey results. According to the data collected, identical twins do have a higher concordance rate for the same communication disorder. Examination of discordant rates revealed fraternal twins showing a higher percentage of different communication disorders within twin pairs.

Further research should be conducted to gather data on severity of communication disorders within twins as well as treatment implications. This information would aid in strengthening the validity as well as the application of the survey results to the hypothesis.

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