

IMAGINATIVE ELABORATION IN AGENESIS OF THE CORPUS CALLOSUM: TOPIC MODELING AND PERPLEXITY

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Introduction

In previous a previous study, Turk et al. (2009) found that individuals with Agenesis of the Corpus Callosum (AgCC) produce narratives “deficient in words denoting emotions, social interactions, and the mental states of characters” in response to prompting from the Thematic Apperception Test (p. 49). Renteria-Vazquez, et al. (2021) looked at response from the Animations Test (Abell, Happe, & Frith, 2000; Castelli, Frith, Happe, & Frith, 2002) to compare social inferences of those with AgCC and a neurotypical control group using topic modeling, finding that persons with AgCC were more conventional in their responses and showed less elaborative imagination.

Hypothesis

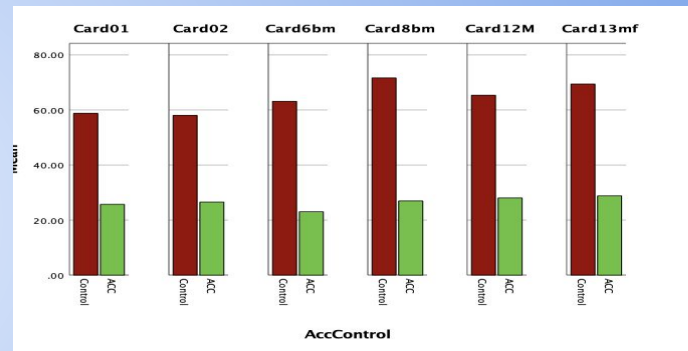
In this study, it was predicted that individuals with AgCC would display a lower capacity for elaborative imagination in the formulation of a narrative in free response to pictures from the Thematic Apperception Test.

Methods

Six cards from the Thematic Apperception Test were administered to 27 individuals with AgCC and 30 in a control group of neurotypical individuals. All responses to each card from control and AgCC participants were put into topic models to provide a core model of the participants' responses to the TAT. Perplexity was used to measure the relationship between the topic models of the core text and the responses of each participant. Higher perplexity indicates greater divergence between the topics. A 2-group MANOVA, with the cards as dependent variables, was run to compare the mean perplexity values between the AgCC group and the controls.

Results

Higher perplexity scores mean participants' responses deviated from the core model, while a lower perplexity score will indicate similarity. Those with AgCC had a lower perplexity and this indicated they were less imaginative. Individuals with AgCC were less able to infer emotional and social functioning of others that were implied by each TAT card.



Conclusion

These results indicate that those with AgCC were less able to use social imagination to elaborate beyond the core text of each card.

References

- Renteria-Vazquez, T., Brown W.S., Kang, C., Graves, M., Castelli, F., & Paul, L.K. (under review) “Social Inferences from Animations in Agenesis of the Corpus Callosum and Autism: Semantic Analysis and Topic Modeling” *Journal of Autism and Developmental Disorders*.
- Turk, A., Brown, W. S., Symington, M., & Paul, L. K. (2010). Social narratives in agenesis of the corpus callosum: Linguistic analysis of the Thematic Apperception Test. *Neuropsychologia*. 48(1), 43–50. doi:10.1016/j.neuropsychologia.2009.08.009