An Investigation of the Learning Probability Distributions Mechanism in Infants Using an Eye-Tracking Technology

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Abstract

Statement of the Problem: Statistical learning is a learning style which mainly causes an individual to unconsciously extract probabilities in the environment, generalize them, and turn them into a subjective rule in order to finally interact with the environment based on them. This learning style emerges in the early hours of birth, and infants use it to make inferences about the frequencies of the environment. Accordingly, they can interact with the environment, parents and other important individuals. The purpose of this study is to investigate this type of learning which has a great impact on the estimation and learning of the environment as well as the mother-infant relationship using the precise eye tracker technology. The amount of visit time per seconds and the fixation time were assessed and the results confirmed the existence of this unconscious learning mechanism among infants. Funding: The findings of ANOVA with repeated measures indicated that there was a significant difference between the total visit duration and total fixation duration in shapes with different frequencies (p<0.05). Conclusion: According to the research findings, it can be concluded that the statistical learning mechanism is active in infants. Moreover, it becomes more complicated with age, and infants make cognitive interactions with the environment based on this mechanism.

Image

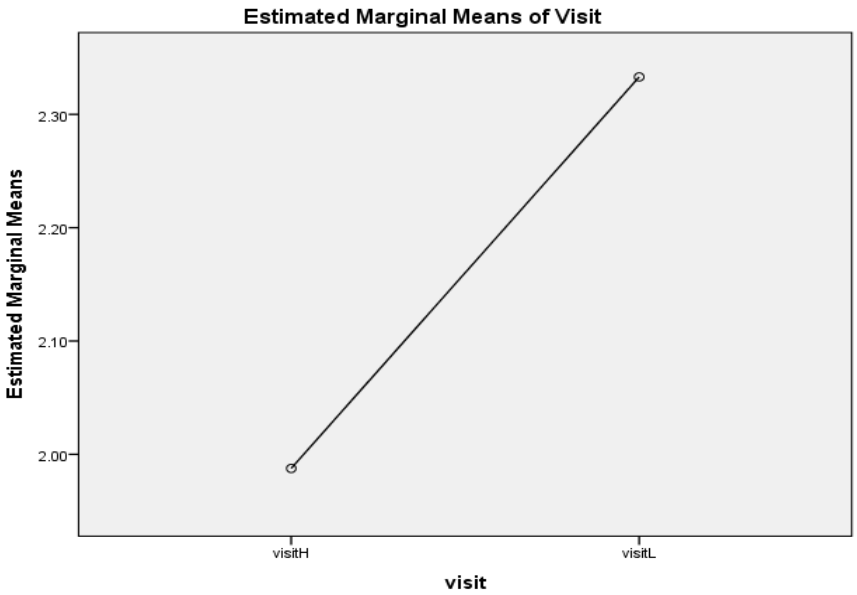


Chart- The visit level for the figure with high frequency is significantly more than the figure with low frequency.

Recent Publications (minimum 5)

1. Abla, D., Okanoya, K., 2009. Visual statistical learning of shape sequences: An ERP study. Neuroscience Research 64, 185–190.
2. Cassidy, J., Jones, J. D., & Shaver, P. R. (2013). Contributions of attachment theory and research: A framework for future research, doi:10.1126/science.274.5294.1926.
3. Fiser, J., & Aslin, R. N. (2002). Statistical learning of higher-order temporal structure from visual shape sequences. *Journal of Experimental Psychology. Learning, Memory, and Cognition*, *28*(3), 458–467. doi:10.1037/0278-7393.28.3.458.
4. Frankenhuis, W. E., Gergely, G., & Watson, J. S. (2013). Infants may use contingency analysis to estimate environmental states: An evolutionary, life-history perspective. *Child Development Perspectives*, *7*(2), 115–120. doi:10.1111/cdep.12024.
5. Johnson, E.K., Tyler, M.D., 2010. Testing the limits of statistical learning for word segmentation. Developmental Science 13, 339–345.



Biography

Mahtab Askari has her expertise in family therapy and child psychology. Her experiences are in object relation theory on infants and children, she works with infants and mothers separately. Working with mothers is about their maternal representations and their feelings about their childhood and with infants, it's a play therapy.

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