



Apr 6th, 6:30 PM - 8:00 PM

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A DEVELOPMENTAL TEST OF THE EBBINGHAUS ILLUSTION AND ITS APPLICATIONS TO A TWO PROCESS THEORY

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The Ebbinghaus Illusion was used to test developmental trends and determine if children's length judgments were affected by the same spatial context factors as adults. The data were also examined within the framework of a two process theory of comparative judgment. Fourteen college students and eleven 11-year-olds (fifth graders) scaled stimuli then judged Ebbinghaus figures. First each subject used a response wheel to scale triangles to match small, medium, and large circles. Results showed no significant difference in how the two groups match size. Second, subjects viewed Ebbinghaus type figures and used a response wheel to indicate perceived size of a focal circle when context items were present. These items were varied in a 3x2x2 factorial design of size, quantity, and similarity to the focal circle. In keeping with previous studies, results showed a regular effect of size: Focal stimuli were judged smallest with large context items and largest with small context items. Context number also had a small effect on size perception. Adults misperceived focal size more when context and focal items had similar shapes than when they were dissimilar. Shape similarity did not have the same effect on eleven year-olds.

The results indicate developmental differences in the fundamental patterns of size perception. The effect of shape similarity between context and focal stimuli is not the same on the two age groups. Interpretation of these results within a two process theory suggests that only one process may operate quite differently in adults and children. Failure to account for both processes could be the source of many discrepancies in the developmental research on visual illusions.