Judging Magnitude: Is there a Common Cognitive System for Different Types of Magnitude Judgments?

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Abstract: It has been suggested that a common cognitive system is employed in magnitude judgments across multiple modalities (Walsh, 2003). To test this theory, we examined whether performance on magnitude judgments of number, surface area, duration, and loudness correlated with each other in both magnitude comparison (e.g., determine which is more), and magnitude estimation (e.g., if magnitude 1 value = 100, estimate the value of magnitude 2) tasks. For magnitude comparison, significant correlations were observed between number, surface area, and loudness (but not duration) tasks (percent correct measured). Similar results were observed for magnitude estimation (mean absolute percent deviation of value estimates from correct measured). These results are indicative of a common cognitive system for at least some magnitude judgment modalities, and suggest that such a system may play a role not only in more-than/less-than magnitude judgments, but also in the process of assigning numerical values to magnitudes.