KNOWLEDGE OF ASTRONOMICAL SCALE: MEASUREMENT AND EVALUATION

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Having an appreciation for astronomical scale is essential for understanding the foundations of astronomy. However, a key obstacle in developing this understanding is the lack of direct ways to acquire this knowledge. Personal experience may even be detrimental, given that our direct experience is of the Earth as something extremely large, whereas stars, for example, appear as tiny pinpricks of light. As a first step to address this issue, it is necessary to assess people's knowledge of astronomical scale to identify common misconceptions and evaluate the effectiveness of educational interventions. Previous instruments have generally only included a few questions about scale—mostly through multiple choice—limiting the number of objects simultaneously probed to three and often not probing all possible rankings. To measure people's knowledge of astronomical scale, we developed an instrument that allows for easy collection, analysis and presentation of data ranking multiple astronomical objects. I will present this instrument and the results from three different samples before and after astronomy instruction: middle school students (N = 922), pre-service science teachers (N = 41) and visitors to a public guided astronomy night viewing tour (N > 500).

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