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Award Abstract #1047757

The Psychology of Number Processing in Decision Making

NSF Org: [SES](#)
[Division of Social and Economic Sciences](#)

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Program Manager: Jonathan W. Leland
SES Division of Social and Economic Sciences
SBE Directorate for Social, Behavioral & Economic Sciences

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Investigator(s): Ellen Peters peters.498@osu.edu (Principal Investigator)

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ABSTRACT

Numerical information is ubiquitous in decisions, both big and small (how many minutes to drive to the grocery, mortgages, credit-card debt, medical treatments, environmental risks). High quality data (e.g., complex data concerning natural hazards, health treatments, and financial options) are increasingly available to experts and the public. To a degree never before possible, individuals are in a position to understand risks, and, in the process, increase control over their lives. Policy makers and others generally assume that, if provided appropriate numbers, people will understand and use them, but having access to information is only the first

step to making good decisions. Individuals may lack the skills, knowledge, or motivation to access credible sources, process information, and make informed choices. As a result, the same data may not be understood or used in the same way by all users. Previous research, in fact, has shown that individuals low and high in numeracy (abilities with mathematical and probabilistic concepts) rely on different sources of information in decision making, and that those lower in numeracy comprehend less and may make poorer decisions when numbers are involved. Numbers are used (and not used) in some surprising ways in decision making. Using behavioral methods (including reaction time, judgment, and choice) modified from previous literatures, this project involves conduct of experiments to test the relations between numeracy and intuitive representations of numbers and to test their separable influences in a variety of decision contexts.

This research may add substantially to our understanding of the psychological mechanisms underlying decisions that involve numeric information. It will also add to the growing body of knowledge concerning how intuitive and deliberative ways of thinking interact and influence how numeric information is processed in decision making.

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