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Award Abstract #0745423

Development of Conditional Probability Judgments

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NSF Org:	BCS Division of Behavioral and Cognitive Sciences
Initial Amendment Date:	May 14, 2008
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Program Manager:	Amy L. Sussman BCS Division of Behavioral and Cognitive Sciences SBE Directorate for Social, Behavioral & Economic Sciences
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Investigator(s):	Charles Kalish cwkalish@wisc.edu (Principal Investigator)
Sponsor:	University of Wisconsin-Madison 21 North Park Street MADISON, WI 53715 608/262-3822
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ABSTRACT

Learning from experience is one of the most basic and important cognitive problems, for both adults and, especially, for young children. Much of this learning takes the form of conditional probability judgments: judging what outcomes are likely given some evidence. This project explores the development of such conditional probability judgments. Specifically, how do children use examples they know about to make predictions about unfamiliar cases? The significance of some examples depend on 1) which population one is concerned about (e.g., the conditional one is assessing) and 2) the population sampled from (e.g., how the evidence was generated). Asking how and when children are sensitive to differences in

conditionals and sampling addresses longstanding debates about the role of inferential and similarity-based processes in cognitive development. The results of this work will illustrate ways in which basic similarity models must be elaborated to account for children's conditional judgments. In addition, a developmental perspective is critical for understanding why adults do or do not adequately account for conditionals and sampling in their judgments. Finally, conditional probability judgments are just such a basic feature of cognition that understanding their development is central to a wide range of psychological phenomena and theories.

Understanding how children make conditional probability judgments is important for a number of social and educational concerns. For example, stereotyping often involves a failure or bias in conditional judgment. From evidence that students who commit school shootings are likely to have played violent video games, people often, erroneously, conclude that students who play violent video games are likely to commit school shootings. This project will allow us to better understand the conditions under which children form stereotypes, and provide guidance for efforts to reduce stereotyping. The reasoning abilities explored in this project are also critical in educational contexts, especially for scientific reasoning. The logic of experimental design and hypothesis testing is based on conditional probability, including ideas about sampling and implications of evidence. Conditional probability judgments are involved when interpreting statistical claims in the media and in public policy debates. By understanding how children approach conditional probability judgments we will be able to design more effective instruction to improve scientific literacy.

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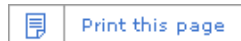
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