BOOK REVIEW

Title:	Interest in Mathematics and Science Learning
Editors:	K. Ann Renninger, Martina Nieswandt, Suzanne Hidi
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Emotional response, and more specifically, interest, is recognized as an important component of student motivation. This is particularly important in mathematics and science, because student achievement in these subjects has been shown to be strongly linked to motivation (see, e.g., Fredricks, Blumenfeld, & Paris, 2004). The editors of this book have brought together authors from around the world, including Canada, Australia, Korea, Israel, Turkey, and the United States, blending both theoretical and practical research in the field. A number of these authors are recognized as experts in the study of interest. Indeed, the editors, K. Ann Renninger (Swarthmore College), Martina Nieswandt (University of Massachusetts), and Suzanne Hidi (University of Toronto) are among the world's leading researchers in interest. In addition, there are chapters coauthored by recognized experts such as Johnmarshall Reeve and his colleagues at the University of Korea, Jacqueline Eccles from the University of California, and John and Mary Ainley at universities in Australia. I was struck by the diversity of authors. Indeed, even for papers coauthored in the United States, authorship typically spanned three or even four different universities. Clearly, the academic interest in interest is widespread and indicates its importance as a dimension of motivation.

The four-phase model of interest development (Hidi & Reninger, 2006) is summarized in the Introduction. This model postulates that initial interest is triggered by a situation or topic (Triggered Situational Interest), which may be fleeting, and may be positive or negative. If interest in the situation becomes more sustained (Maintained Situational Interest), this phase is characterized by positive student focus and persistence with the material. If the student develops Emerging Individual Interest, they are likely to independently re-engage with the material or classes and ask curiosity questions, building stored knowledge and stored value about the material. Finally, at the Well-Developed Individual Interest stage, the student willingly re-engages with the content, self-regulating to reframe questions and seek answers. This level is characterized by positive feelings towards the material, perseverance through frustration and challenges, and actively seeking feedback on his or her learning. The four-phase model has abundant research evidence supporting it. All three editors of this book have worked extensively with the model.

The book utilizes the four-phase model of interest development to frame the chapters in the book, which is divided into three parts: interest as a dimension of motivation, interest in subject matter (specifically science and mathematics), and how interest is developed in students

from pre-school through university, with particular attention to instructional strategies that have been shown to support students' development of interest in a particular subject or topic.

Johnmarshall Reeve et al. (Chapter 5) emphasize that interest can be viewed through three different lenses: as a basic emotion, as a vitalized affect (mood), and as an emotional cognitive schema. They provide a graphic (page 82) comparing and contrasting these three lenses. These lenses are explored in other chapters, where various authors discuss research projects linked to the four-phase model and one or more of the lenses.

A particularly interesting dimension of this book is the discussion of links between interest and other dimensions of motivation; interest and self-efficacy; interest and self-regulation; interest and self-concept; interest and engagement; interest as a component of value in expectancy-value theory; interest and student achievement. All of the reported research emphasizes the reciprocal nature of the links. For example, Eccles et al. (Chapter 18) discuss research on students' choices related to STEM (science, technology, engineering, mathematics) linking the four-phase interest model to expectancy-value theory, emphasizing that this is a bidirectional link; a greater level of interest leads to higher valuation of STEM careers, which in turn leads to greater interest in such careers.

Also of importance to educational practitioners are the instructional strategies that have research-supported evidence of their efficacy in increasing student interest (see, e.g., Turner et al. Chapter 14). Pressick-Kilborn (Chapter 20) emphasizes the vital role that teachers play in the development of students' interest and thus the enhancement of students' achievement.

The strengths of this book are the diversity of viewpoints and research, covering pre-school through university, as well as the recognized authority of many of the authors. In addition, the four-phase model of interest development provides a unifying framework for the exposition. The book also features high quality research designs and analysis in all the research studies reported. Of particular importance is the section on emerging issues and themes in current research on interest, which points to areas of future research. The biggest weakness of the book is a rather misleading title. The majority of the chapters relate to science education, with only one mathematics study cited, along with four combined mathematics and science studies and other tangentially related studies (statistics, STEM), compared to 14 chapters devoted solely to interest in science education contexts. In spite of this limitation, this book is a must-read for any academic with an interest in the role of student interest in motivation or achievement.

References

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