Interest And Learning: Proceedings Of The Seeon Conference On Interest And Gender

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1 Introduction

1.1 Interest and Gender: Issues of Development and Learning

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These Proceedings consist of papers presented at the Second International Conference on Interest held at Seeon Lake, Germany, in June of 1996. The conference was organized to facilitate discussions about: (1) the development, differentiation, and change of interest(s) with age, (2) gender-specific differences in interest(s) and their impact on development, and (3) the role of interest as a condition and result of formal learning, including both school and vocational training. Researchers were invited to participate in the conference based on the match between their research questions and the goals of the conference. Although they had shared research interests, they were trained in a wide variety of traditions including developmental psychology, cognitive psychology, social psychology, educational psychology, evaluation, and curriculum and instruction. As a result, the conference focused on the way in which interest has been conceptualized and measured, as well as on its relation to gender and its impact on development and learning.

Background and Scientific Goals

The First International Conference on Interest Research took place at the Institute for Science Education (IPN) in Kiel, Germany in 1984 (Lehrke, Hoffmann, & Gardner, 1985). It focused on students' interest in science and technology education. At that time, interest research typically focused on students' attitudes toward school subjects and was discussed as a variable that had a single dimension. Studies of interest were primarily survey studies, and gender-specific differences, while identified, were treated as a subordinate result.

The relation between interest and gender was chosen as the theme of the second conference because several researchers whose interests bridged theory and practice had begun to question how to interpret interactions of interest and gender that were emerging in their experiments. Study of students' interest across differing aspects of
education had revealed gender effects (e.g., Baumert, 1995; Hoffmann & Lehrke, 1986; Hoffmann & Häussler, 1995; Kubli, 1987; Renninger, 1992; Renninger & Leckrone, 1991; Renninger & Stavis, 1995a, 1995b; Todt, 1985; Todt & Händel, 1988); but the explanation of a process for differentiating interest, and/or the conditions that account for this effect, had only begun to surface as issues that needed theoretical and empirical attention.

Thus, questions of concern related to learning included:

- What is the relation between individual interest and learning outcomes for girls and boys across different educational levels (preschool, elementary school, secondary school, college, vocational training)?
- What is the relation between individual interest and prior knowledge?
- To what extent do interest and gender influence access to and processes of learning, and, how can we explain this effect?
- What is the relation between interest, gender, and mediators of learning (the intensity and quality of motivation, emotional experiences, attention, learning strategies, etc.)?

Questions related to development included:

- Do effects of interest and gender differ as a function of educational level (preschool, elementary school, secondary school, college, vocational training)?
- Are there specific factors that contribute to the maintenance of interest for girls and boys?
- What is the role of institutional opportunity and constraint on the development of interest? Does this differ for girls and boys?
- What is the contribution of the family and peer group(s) to the development and tenacity of interest? Does this differ for girls and boys?

As a collection of papers, these Proceedings provide a foundation for thinking seriously about each of these questions. They also provide the background necessary for detailing directions those interested in a specific question might pursue.

These papers vary in the research questions being addressed and in the theoretical and methodological approaches undertaken. As such, they illustrate the need to consider creating a unifying framework for interest research (see Krapp, Renninger, & Hoffmann1).

1 Citations without an indication of year refer to chapters in this volume.
The Concept of Interest

As the present volume attests, interest has been studied as a habitual tendency, a motivational belief, a trait, a component of personality, and in terms of text characteristics. For the purposes of the conference and its papers, a distinction is drawn between studies of individual interest and situational interest. Briefly, individual interest refers to an individual's relatively enduring predisposition to attend to and engage a class of objects, persons, or events (cf. Renninger & Wozniak, 1985). It is characterized by stable evaluations of certain objects and both self-intentionality and positive feelings connected with completed interest-related action. The development and realization of an individual interest is understood to be an ongoing interaction of the person and his or her environment. As such individual interest can be said to be co-dependent upon the conditions of the context, including physical and social factors. These factors determine both single actions (e.g., situation-specific learning activity) and the complex pattern of processes that make up human development (see Figure 1). As such individual interest is understood to vary among individuals in terms of content, although it is universal in the sense that all individuals can—at least theoretically—be identified as having interest(s) (Renninger, 1990; see also Travers (1978) for a discussion of possible pathology involved in individuals for whom interest cannot be identified).

Figure 1: Individual and Situational Interest
**Introduction**

Situational interest, in contrast, refers to the outcome of an interaction between a person and characteristics in the immediate context ("interestingness"; Krapp, Hidi, & Renninger, 1992; Figure 1). Such "situational interests" may be transitory, or they may provide the basis of an emergent individual interest (see Hidi & Anderson, 1992). Both individual and situational interest can be analyzed with respect to the underlying dispositional characteristics of the person, the structural characteristics of the learning environment (including the learning material), or with respect to an ongoing situation-specific process, where interest is experienced as a specific affective-cognitive (psychological) state. In fact, the momentary experience of interest has been characterized as an optimal experiential state that combines positive affective qualities (e.g., a feeling of immediate enjoyment) and positive cognitive qualities (e.g., striving for meaningful goals) (Rathunde; see also Renninger).

Theoretically, individual interest and situational interest can also be discussed from a developmental perspective. In some circumstances, situational interests can give rise to a relatively enduring experiential state, although they are more likely to be evoked only in the moment of an interesting situation. It has been suggested that individual interest emerges from this longer-lasting and/or repeated state of an object-specific situational interest (Hidi & Anderson, 1992; Krapp, 1998). Researchers of situational interest, however, do not typically address the developmental status of the learner or change in interest over time, nor do they chart the emergence of interest. For this reason, the present volume focuses largely on the role of individual interest(s) in learning and development.

**Overview of Papers**

The papers collected in this volume provide a foundation for considering the role of individual interest and gender in learning and development. They also reflect a wide variety of research questions. Some address the description and explanation of interest or related variables (e.g., the development of interest including analyses of structural and dynamic causes of interest, the effects of interest on learning and development, etc.), while others are concerned with the application of interest in practice (e.g., the identification of interindividual differences in interest to improve predictions for vocational training, curriculum that supports the development of interest in school related subjects, etc.).
Section 2, General Topics in the Study of Interest, consists of reviews of research on interest and topics related to interest specifically focused on interest and related fields. Sections 3, 4, and 5 include overviews and reports of empirical studies that are sequenced to reflect the approximate age-group/educational level of the sample of students being studied. Thus, Section 3 focuses on preschool and elementary-school-age students, Section 4 focuses on secondary level 1 or middle school and high school students, and Section 5 focuses on secondary level II or 11th and 12th grade students and post secondary individuals, as well as persons in vocational training. The volume closes with Section 6*, a consideration of issues involved in developing a unifying framework for research on individual interest.

Section 2: General Topics in the Study of Interest

Overviews by Todt and Schreiber, and Gardner, open the section on general topics. Todt and Schreiber review their work on interest development, and Gardner overviews empirical studies of interest and gender specific to science and technology. There follow contributions from Fivush, Hidi and Berndorff, and Schiefele, who address particular aspects of the interest-learning relation. Finally, the section closes with Hannover's description of her work on self-concept and its relation to interest, and both Rheinberg's and Deci's considerations of the relation of interest to motivation.


GARDNER overviews the development of interest in science and technology and differences in this development as a function of gender. He reports on studies of interest content, career aspirations, motivation, and the effects of school and out-of-school influences on interest development.

In her chapter on interest, gender, and personal narrative, FIVUSH suggests that self-understanding, including a sense of self as male or female, may modulate interest development. She notes that while gender is set by biological sex, it is also constructed by the child through everyday interactions. As such, gender can be understood as a
process that influences the content of interest and provides at least a partial explanation of gendered activity. She also urges appreciation of variations within each gender group and the complications introduced by generalizing from findings regarding gender to any particular male or female.

**Hidi and Berndorff's** chapter overviews research on situational interest and learning. The authors detail potential links between situational and individual interest, clarify distinctions between situational interest and curiosity, and describe the relation between situational interest and attention.

**Schiefele's** chapter addresses the role of interest in learning. He describes the effect of interest on deep-level processing and describes the need to identify independent indicators of surface and deep-level processes in learning and effective mediators of the relation between interest and learning. Finally, he calls attention to the importance of interest as a state of being motivated to learn.

**Hannover's** chapter describes interest-driven activity as part of a person's self-concept, and as such relevant to the process of self-definition and identity. She uses results from empirical work to argue that: (a) the development of interest can be promoted by providing students with opportunities to develop self definitions, and (b) that such self-definitions serve to link self-concept to a targeted knowledge domain.

**Rheinberg's** chapter overviews the similarities between the development of interest and the development of achievement motivation. He suggests, however, that the two differ in terms of function. (It should be noted that for Rheinberg, interest is described as in the object, not the person-environment interaction.) He suggests the importance of not presuming what the incentives involved in interests are, and that research needs to focus specifically on why motivation and interest promote learning.

**Deci's** chapter provides the reader with a framework for thinking about motivation as a dynamic relation between the person and his or her environment. He focuses on the relations between the self (person), the object, and the social context of development to describe behavioral outcomes and well-being from the perspective of Self-Determination Theory. He overviews research that has been conducted and identifies the links to and implications of this work for research on interest and gender.
Section 3: Presentations Specific to the Developmental Level of Preschool and Elementary School Children

This section opens with Renninger’s overview of research on interest among young children and students in elementary school. The empirical work that addresses students in this age group includes studies by Fölling-Albers and Hartinger; Goldman, Mayfield-Stewart, Bateman, Pellegrino, and the Cognition and Technology Group at Vanderbilt; Yotive and Fisch; Fay; Hidi, Weiss, Berndorff, and Nolan; and Renninger.

**RENNINGER’S** overview of the literature on preschool and elementary school age students summarizes findings that have emerged across studies of interest and issues that remain open questions. She notes that studies differ in the nature of the questions being addressed and the methods employed to address them, and calls for reporting on both the recency of interest development and the context of experimentation in order to consider seriously what is known about interests among individuals in this age group.

In their paper, **FÖLLING-ALBERS AND HARTINGER** equate interest with liking or preference. They describe topics that are of particular interest to girls and boys, finding that students distinguish between leisure interests and school activity. They also report on the students’ acquisition of interest and the facilitation of interest in school. Interestingly, schooling that promotes autonomy appears also to support school-related interests.

**GOLDMAN, MAYFIELD-STEWART, BATEMAN, PELLEGRINO, AND THE COGNITION AND TECHNOLOGY GROUP AT VANDERBILT** define interest in terms of students’ engagement with and interest for video-disc learning environments. The authors overview findings from several studies of video-disc instruction as contexts for supporting “anchored instruction,” meaningful, in-depth learning that allows for multiple points of access. Results from these studies indicate that anchored instruction influences both boys and girls positively.

**YOTIVE AND FISCH** and **FAY** describe interest as a reported or an observed preference for learning about or engaging in a specific activity, such as a children’s television program. Yotive and Fisch explore the connection between the research on children’s television and aspects of programming that affect the interest and achievement of children who are viewers. Fay elaborates on Yotive and Fisch’s discussion, reporting on a study of children’s interest and comprehension of science and technology as depicted in the TV
program. Findings from this study suggest that programs that pique children’s interest can be used as interventions for populations identified to be “at-risk” for dropping out of a particular content-related activity (e.g., the expectation that girls will not pursue science content).

HIDI, WEISS, BERNDORFF, AND NOLAN describe the impact of a relatively enduring situational interest on students’ learning about science. The authors studied girls’ and boys’ ratings of interest for science topics and methods of formal and informal instruction received in a museum setting. Findings from this study indicated that children’s learning can change when the conditions of instruction are changed, that the cooperative learning task, Jigsaw, is engaging for students, and that the Jigsaw method is particularly beneficial for working with boys to teach science in the science museum.

RENNINGER describes interest in terms of the stored knowledge and value with which students engage classes of objects and events. She reports on findings from the study of girls’ and boys’ interests and noninterests as contexts for reading comprehension and mathematical word problem-solving and as the students’ specific interest and specific noninterest for the domains of reading and/or mathematics. She also evaluates the effects of individual levels of task difficulty on reading comprehension and mathematical word problem-solving, and their relation to both interest and gender.

Section 4: Presentations Specific to the Developmental Level of Secondary Level I (Middle and High School Through Grade 10) Students

At the outset of this section, BAUMERT AND KÖLLER provide an overview of research specific to secondary level 1 (high school) education. The empirical work presented includes studies by Ainley; Eccles; Häussler and Hoffmann; Gräber; Hoffmann and Häussler; Kölle; Baumert, Schnabel, and Lehrke; Pintrich, Ryan, and Patrick.

AINLEY postulates that a student’s general motivational orientation can be viewed as interest in learning, and has much in common with curiosity. In the paper presented here she overviews studies assessing students’ general orientation to learning, their depth-of-interest curiosity, their engagement with school learning, and their perceptions of the context for learning.

ECCLES, BARBER, UPDEGRAFF, AND O’BRIEN study interest as related to a student’s enjoyment or liking of math, physics, or sports. In this paper,
they provide an explanation for the under-representation of women in fields associated with physics, engineering, and applied mathematics in terms of a model of achievement-related choices. The model is derived from a longitudinal study of adolescent development focused on subject-specific expectations of success, task value and interest.

The HAUSSLER AND HOFFMANN and the GRÄBER studies both describe interest as having at least three dimensions. They assume that the interest relation within a domain (physics or chemistry) is determined not only by context but also by contexts associated with it and the kinds of activities in which the individual is involved. HAUSSLER AND HOFFMANN focus specifically on the identification of different types of interest in physics and how these change as a function of gender and age. GRÄBER’S paper addresses the relation between interest in chemistry and certain students’ characteristics, and various characteristics of the environment within and out of school. He identifies general interest for topics in chemistry, interest in chemistry as a school subject, and leisure interest in chemistry stimulated by lessons.

HOFFMANN AND HAUSSLER report on an intervention project aimed at increasing girls’ interest in physics and supporting them in the development of a positive physics-related self-concept. The authors assume that interest in physics as a school subject can be understood as a synthesis of individual interest in physics, the situational context, the interestingness of physics instruction, and the social climate.

Papers by KÖLLER and BAUMERT, SCHNABEL, AND LEHRKE describe interest in mathematics in terms of importance and popularity. KÖLLER considers the relation between achievement and interest, investigating whether interest and learning goal orientation affect scholastic achievement in mathematics.

BAUMERT ET AL. describe the importance of competence feedback processes on the relation between achievement and interest in mathematics across different school systems (Japan, the United States, Germany).

PINTRICH, RYAN, AND PATRICK link interest to the motivational construct of task value. They report on the roles of task value and mastery goal orientation in males’ and females’ self-regulated learning (defined in terms of self-efficacy, use of cognitive strategies, use of self-regulatory strategies, and actual performance) in English, math, and social studies courses.
Section 5: Presentations Specific to the Developmental Level of Secondary Level II (11th and 12th Grade and Post Secondary) Individuals

Prenzel provides an overview of interest-related research specific to adult learning. The empirical work presented includes studies by Rathunde; Kreitler and Nussbaum; Gisbert; Fink; Athanasou; Nenniger; Prenzel, Kramer, and Drechsel; and Wild, Krapp, Schreyer, and Lewalter.

In his overview, Prenzel observes that the study of the role of interest in adult learning is in its infancy. In general, research at this level focuses on interest as either a motivator for learning or an outcome of experience in educational and/or vocational settings. The research questions address the stability of interest, its structure, and the extent to which existing interest(s) influence the choice of majors.

Rathunde focuses his chapter on what he calls undivided or “genuine” interest, the cognitive and affective experience related to interest-based actions. This involves an optimal experiential mode that accompanies meaningful and important engagement. He describes studies which demonstrate that for males and females, undivided interest is associated with both adolescent talent development and adult creativity.

Kreitler and Nussbaum describe interest as a particular person-environment relation that involves positive affect and is motivating. In their study of Israeli high school students, two sets of motivational determinants of achievement are analyzed: interest, and cognitive orientation. Results from this study suggest that interest and cognitive orientation assess largely different but complementary aspects of motivation.

Gisbert describes interest as a basic component of self-concept, involving an individual’s attitude, value and knowledge systems. In her chapter, she uses case studies combined with quantitative measures from a large-scale longitudinal study to explore the development of women mathematicians’ individual interest in mathematics.

Fink describes interest as stemming from the individual’s knowledge and value for particular topics; however, she emphasizes the role of value in discussing the impact of intense individual interest on the reading of dyslexic men and women who have demonstrated extraordinary achievements as adults. Their retrospective interviews suggest that reading about their interest between 10 and 12 years-of-age provided the critical scaffold to the area in which they became successful as adults.

Athanasou uses interest to refer to a person’s patterns of likes and dislikes. He operationalizes this in terms of a judgment about which
object is a person’s favorite. He reports on the development of interest from initial preference to its repeated selection among Australian adult students in vocational training.

**Nenniger’s** research focuses on self-directed learning. In his “Two-Shells Model” he describes both individual interest (or what he terms “contentual interest”) and the capabilities, skills, and preferences the individual has for learning, which he terms “procedural interest.”

**Prenzel, Kramer, and Drechsel’s** study blends a focus on a particular person-object relation with self-determination theory in order to study the specific types of motivated learning (e.g., interest-based learning) that occur in such educational settings as school and company. They also study variation in this learning over time and among individuals.

**Wild, Krapp, Schreyer, and Lewalter’s** study of interest focuses on interest as a relatively enduring relation between a person and an interest-related learning object. They presume that in learning, cognitive and emotional experiences influence interest development. In this chapter they describe a longitudinal study focused on the emergence and development of job-related interest, and the changes of a person’s intrinsic and extrinsic “motivational orientations” during vocational training. They also address the role of gender in this network of developmental conditions and effects.

**Section 6: Future Directions**

A concluding chapter in which the multiple concepts of individual interest and related topics are discussed by **Krapp, Renninger, and Hoffmann**, who describe potential complications involved in developing a unifying framework for the study of interest. They also suggest the necessity of such a framework for further clarification of the role of interest and gender in learning and development.

**References**


Lore Hoffmann, Andreas Krapp, K. Ann Renninger, and Jürgen Baumert (Eds.)

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