

Introduction: Paul R. Pintrich's Contributions to Educational Psychology: An Enduring Legacy

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Paul Pintrich's many contributions to educational psychology are discussed. This article describes Paul's academic career at the University of Michigan and discusses Paul's contributions to the understanding of students' achievement goal orientations, self-regulated learning, epistemological beliefs, and conceptual change and Paul's work on developing measures of motivation and self-regulation. These areas are the topics of the articles in this special issue. The authors note several important themes in Paul's work: its integrative nature, conceptual clarity, empirical focus, and emphasis on collaboration with scholars around the world. Overviews for the 6 articles in the special issue are provided.

Paul Robert Pintrich made seminal and lasting contributions to the field of educational psychology through his research and theorizing on topics such as children's and adults' motivation, regulation of achievement behavior, epistemological beliefs, and conceptual change, among other things. He made important theoretical connections among these different areas that have too often been studied separately in the field. Along with his own theoretical and empirical contributions Paul mentored a group of students at Michigan who themselves now are making strong contributions to the educational psychology field. He also interacted and collaborated with scholars across the country and worldwide, and made particularly strong connections to the educational psychology community of scholars in Europe. In these and other ways he clearly was one of the leading scholars of his generation. His legacy will endure because of both the strength of his own contributions and the continuing contributions of his former students and collaborators.

In this special issue we invited authors to discuss Paul's contributions to educational psychology. In this relatively

small collection we cannot hope to capture all of his contributions, and so we focused on the areas of research where we think his most important contributions lie: motivation (particularly achievement goal theory), self-regulation, epistemological beliefs, conceptual change, and development of measures to assess self-regulation and motivation (with a specific focus on the Motivated Strategies for Learning Questionnaire, or MSLQ). We chose authors who themselves are making fundamental contributions to the particular area they wrote about and who also had strong connections to Paul both personally and professionally. In this introductory article we briefly describe Paul's academic career, discuss his contributions to each of the areas listed previously, present some basic themes that guided his work in these different areas, and provide an overview of each of the contributions to the special issue.

THE MAKINGS OF A SCHOLAR

Paul Pintrich received his bachelor's degree in psychology from Clark University in 1975 and always was proud of having attended the only university in America where Sigmund

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Freud lectured. Following his graduation he began his doctoral work in the Combined Program in Education and Psychology at the University of Michigan. After a year of graduate study he returned to the Boston area and worked as an evaluation specialist for the Education Development Center in Newton, Massachusetts, and then as a Research Associate at Harvard University on a project on gender development. The time back in Boston helped him understand more clearly his own career goals and aspirations, and so he returned to Ann Arbor in 1978 to resume his graduate program in preparation for an academic career. He received his PhD in education and psychology from Michigan in 1982 under the direction of Phyllis Blumenfeld in the School of Education at Michigan.

After graduating Paul stayed in Ann Arbor, working first as a Research Associate for the Program for Educational Opportunity and Center for Sex Equity in Schools and also as a Research Associate at the Center for Learning and Teaching at Michigan. This appointment was significant because it began his collaboration with Dr. Bill McKeachie, whom Paul viewed as both a mentor and close colleague. Paul also was an Assistant Research Scientist at the National Center for Research to Improve Postsecondary Teaching and Learning (NCRIPTAL), where he also worked with Bill McKeachie. At NCRIPTAL Paul worked on several studies of college students' learning strategies and developed with his colleagues the Motivated Strategies for Learning Questionnaire (MSLQ), a measure now widely used in studies of motivation and self-regulation.

In 1987 Paul was appointed as Assistant Professor in the School of Education at the University of Michigan and worked primarily with the Combined Program in Education and Psychology. He chaired or cochaired the Combined Program for many of his years at Michigan. Under his leadership the program became one of the world's preeminent doctoral programs in educational psychology. With colleagues Phyllis Blumenfeld, Jacquelynne S. Eccles, Martin Maehr, Carol Midgley, and Scott Paris, the Combined Program became especially renowned for its research and graduate training in the area of student motivation and its influences on learning.

CONTRIBUTIONS TO EDUCATIONAL PSYCHOLOGY

Paul authored 120 journal articles and chapters, and many of his journal articles appeared in the best journals in educational and developmental psychology. He served as editor of *Educational Psychologist* from 1995 to 2000, which indeed makes this tribute fitting, but in some ways all the more poignant. He wrote (with Dale Schunk) two editions of an outstanding advanced text on motivation (Pintrich & Schunk, 1996, 2002). He edited a number of seminal volumes, including coediting (with Martin Maehr) the influential *Advances in Motivation and Achievement* series published by JAI

Press, a series that always attracts the best motivation scholars to contribute chapters. He also coedited (with Monique Boekaerts and Moshe Zeidner) the monumental *Handbook of Self-Regulation*, which presented work on this topic from many different fields of psychology (Boekaerts, Pintrich, & Zeidner, 2000). In 2003 he wrote (with Scott VanderStoep) a book called *Learning to Learn: The Skill and Will of College Success* (VanderStoep & Pintrich, 2003), a volume designed to help students develop the study skills and motivation necessary for success in college. This volume reflected his interest in applying findings from the field of educational psychology to help students achieve.

Contributions to Our Understanding of Students' Motivation

Paul's major research interest arguably was the study of students' motivation; that two of his books were devoted to this topic is evidence for this contention. Paul wrote widely about student motivation, but the core of his research program focused on students' goal orientations and their role in the learning process. Much work on achievement motivation over the last 20 years has focused on students' achievement goal orientations, and Paul contributed greatly to this body of work. In light of recent evidence to suggest that a goal focused on outperforming others (e.g., performance-approach) could in certain contexts actually promote achievement (e.g., Harackiewicz, Barron, Carter, Lehto, & Elliot, 1997; Wolters, Yu, & Pintrich, 1996), his latest empirical and theoretical articles argued for reconsideration of the normative mastery-performance dichotomy, which proposes that mastery goals are psychologically healthier than performance goals (Pintrich, 2000a, 2000c). To parallel the now standard practice of examining performance goals according to their approach and avoidance forms, he, simultaneously with Andy Elliot, theorized that the same could be done with mastery goals (Pintrich, 2000a). Ultimately, as one of the architects of the multiple goals perspective, Paul became a major contributor to the debate published in *The Journal of Educational Psychology* regarding whether the normative or this revised perspective of goal theory better captured the relations of goals to different affective and achievement outcomes (Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002).

Contributions to Our Understanding of Self-Regulation

Another of Paul's major areas of research was students' self-regulation and its influence on student learning. As already noted, one major empirical contribution to this area was the development of the MSLQ, which assesses students' motivation, strategy use, and self-regulation. This questionnaire is widely used in studies of these constructs, in students ranging in age from elementary school through college. Paul and his colleagues studied relations of students' regulation of

their achievement behaviors to their motivation and achievement; his article with Elisabeth De Groot (Pintrich & De Groot, 1990) is a classic example of this work. A fundamental finding from this article was that self-regulatory learning strategies mediated the relation between certain motivational constructs such as goals and performance. This finding provided a more sophisticated look at how student characteristics relate to their achievement outcomes. He recently (with Akane Zusho) put forth a model of the development of self-regulation that discussed phases of self-regulation; its relations to cognition, motivation, and behavior; and how it is influenced by different educational contexts (Pintrich & Zusho, 2002).

Contributions to Our Understanding of the Development of Epistemological Beliefs

With his former student Barbara Hofer, Paul made important contributions to the study of learners' epistemological beliefs, or beliefs about the nature of knowledge. Hofer and Pintrich (1997) reviewed extant evidence on epistemological beliefs, which at that point was in a relatively nascent state. They attempted to organize the different perspectives in this area, and provided suggestions for next steps in the research on epistemological beliefs. Issues they considered included the dimensionality of epistemological beliefs, how they develop over time, how they relate to cognition and motivation (another integration!), and how they can be measured. In 2002, Hofer and Pintrich edited a volume on epistemological beliefs (Hofer & Pintrich, 2002). Based in part on conceptualizations presented by Hofer and Pintrich in 1997, the field has progressed substantially over the last few years, as evidenced by the chapters in this edited volume.

Contributions to Our Understanding of Conceptual Change

Paul made a number of contributions to the literature on conceptual change. Arguably his seminal contribution in this area was his 1993 *Review of Educational Research* article with Marx and Boyle (Pintrich, Marx, & Boyle, 1993). Paul and his colleagues argued forcefully and convincingly that conceptual change and cognitive growth are anything but a cold process, and instead are influenced by motivation, emotion, and other "hot" factors. This article has stimulated extensive research on this topic. A thriving area of research examines intentional conceptual change, exemplified by the recent volume on this topic he edited with Gale Sinatra (Sinatra & Pintrich, 2003). This volume presents a multifaceted portrayal of the conceptual change process, essentially arguing that intentional constructs such as epistemological beliefs, self-regulation, motivation, and affect (notably Paul's main areas of interest) are critical to effective conceptual change.

Contributions to the Measurement of Motivation and Self-Regulation

Paul was a strong empiricist, believing in the importance of measurement of theoretical contexts and conducting rigorously designed studies of these constructs, their interrelations, and relations to different achievement outcomes. During the 1980s he and his colleagues developed the MSLQ, a questionnaire measure of students' motivation and use of cognitive and self-regulatory strategies. The MSLQ measured several motivational constructs, including self-efficacy, intrinsic value of learning, and text anxiety, along with students' cognitive strategy use and self-regulation (see Pintrich & García, 1991). Paul and his colleagues initially developed the MSLQ for use with college students, and have adapted it for use with late elementary through secondary school age students. This measure has become one of the most widely used measures of motivation and self-regulation and has been used in studies around the world.

BROADER THEMES IN PINTRICH'S WORK

We just described some of Paul's specific contributions to different areas of educational psychology. Some important general themes cut across these specific contributions (see also Hofer, 2005, and Maehr, 2005, for their views on themes in Paul's work). First was Paul's ability to integrate different areas of educational psychology, and the psychology field more generally. He often described himself as an integrator rather than an innovator, and although that perhaps underestimates his innovative contributions, it emphasizes one of his most important abilities. Most researchers studying motivation focus solely on motivation and its relations to different outcomes and do not often consider relations of cognition and motivation. Similarly, cognitive researchers focus on cognition and often pay little attention to motivation. One of the fundamental contributions of Paul's work was to bridge these often distinct areas, with theoretical models portraying their relations and studies of how the relations operate in educational contexts (Pintrich, 2003; Pintrich & De Groot, 1990; Pintrich & Schrauben, 1992). As noted previously, the Pintrich, Marx, et al. (1993) *Review of Educational Research* article has been particularly influential because of its discussion of the role of motivation in a major cognitive process, conceptual change. Paul's work in self-regulation also reflects this integrative focus. Two examples are illustrative. As editor of the *Handbook of Self-Regulation*, Paul and his colleagues brought together researchers from many fields of psychology to present their views on the nature of self-regulation. In their concluding chapter they discussed similarities and differences across the different models, setting the stage for future research in this area. Pintrich and Zusho (2002), in their model of the development of self-regulation, tie self-regulation to motivation, af-

fect, cognition, and behavior, and also considered how different learning contexts influence self-regulation.

A second (and related) theme is that Paul emphasized the importance of conceptual clarity in his work, in the many areas in which he worked (see Hofer, 2005, and Sinatra, 2005, for further discussion of this point). Through conversations and debates with different scholars Paul worked to clarify terminology used in different fields and challenged researchers to express clearly what it was they were studying and how that related to similar constructs in the field. This push for clarity is apparent in a number of his review articles and chapters, such as his 2000 article on the proliferation of terms in the goal orientation literature (Pintrich, 2000b).

A third theme is that Paul's work was strongly empirically focused. He was devoted to promoting educational psychology as a scientifically rigorous field and worked tirelessly to promote the importance of research as the only way to develop a foundation of knowledge for the field and as a way to help solve educational problems. Paul believed strongly in the scientific method of formulating theories, testing them, revising them in light of empirical findings, and continuing the progression of knowledge. Indeed, it was this empirical focus that prompted him to reconsider achievement goal theory. One of his last review articles on motivation was entitled "A Motivational Science Perspective on the Role of Motivation in Learning and Teaching Contexts" (Pintrich, 2003). In this article he argued for why the study of motivation should be scientific and how such a perspective would advance the field. Paul was open to different kinds of methodologies to answer different kinds of research questions, but firmly believed that for the field to advance most quickly, theoretical models and constructs must be tested in what he called "the crucible of empirical research" (Pintrich, 2000d, p. 223).

A fourth theme in Paul's work was its truly collaborative nature. Paul collaborated with a variety of scholars from all over the world. It did not matter if they were beginning their careers or already were very well established; the important thing was the quality of the ideas and the chance to work together to advance the field. A number of his close collaborators are among the authors of this special issue. Collaborating with scholars with different backgrounds and interests expanded Paul's views and likely helped to make him the strong integrator that he was. Collaborations also allowed him to share and discuss ideas at length, a part of scholarship he truly loved. Some of his most frequent collaborators were his students and former students. Paul wrote often with all of his students, both on his own research projects and also to help them to develop their own ideas and launch their own research programs. Indeed, he was adamant that his students not be his clones. He was agreeable to students' ideas about how to extend models and research paradigms to new topics, as long as these topics were conceptually clear, empirically based, and moved the field in new directions. Hofer (2005) captures eloquently what it was like to be mentored by Paul.

Paul Pintrich made fundamental and lasting contributions to our understanding of students' motivation, self-regulation, epistemological beliefs, and conceptual change. His work was integrative in nature across areas that often are not integrated, conceptually clear, empirically based and driven, and collaborative.

ARTICLES IN THIS SPECIAL ISSUE

We asked authors who themselves have done important work in the different areas of Paul's research (achievement goals, self-regulation, epistemological beliefs, conceptual change, measurement) to write articles for this special issue. Each of the authors also collaborated with Paul on projects, articles, or books. We now provide an overview of each of the articles.

Harackiewicz and Linnenbrink: Achievement Goals

Judith Harackiewicz and Elizabeth Linnenbrink discuss Paul's contribution to research on achievement motivation, focusing in particular on his leading role in research on students' achievement goal orientations. They begin their article by discussing Paul's contributions early in his career to the motivation field, noting that these contributions emphasized the importance of integrating work on motivation and cognition if we are truly to understand the learning process in classrooms. They review Paul's early theoretical and empirical work (with De Groot, Schrauben, and others) on how motivational and cognitive variables work together to influence different learning outcomes. In this work Paul discussed different ways that performance and mastery goals can affect learning, a precursor to his idea that there are "multiple pathways" to achievement that became a dominant theme in his later work on achievement goal orientations.

Harackiewicz and Linnenbrink next discuss how in his early work Paul also explored how both performance and mastery goals could operate in the same learning situation, rather than being mutually exclusive. This work began to lead him to the idea that students can have multiple goals in different achievement situations, and he began exploring empirically the consequences of these multiple goals more fully. Along with researchers such as Harackiewicz, Elliot, and others, Paul and his colleagues began questioning the strict normative goal theory perspective that mastery goals are beneficial and performance goals problematic for students. His growing interest in the multiple goals that students have as well as the multiple pathways to achievement led Paul to formulate his "multiple pathways, multiple goals" model, and Harackiewicz and Linnenbrink review his research on this topic. This work played a major role in the proposed revision of goal orientation theory to acknowledge the potential positive contributions of performance goals to different learning outcomes.

They next discuss Paul's role in the debate published in the *Journal of Educational Psychology* between normative goal orientation theorists, such as Carol Midgley, Avi Kaplan, and Mike Middleton, who questioned whether performance goals indeed relate in positive ways to some learning outcomes, and Harackiewicz, Pintrich, Elliot, and others, who made the case for the need to revise goal orientation theory. They present the issues raised in this debate and note its beneficial effects on the field, although they also acknowledge that the debate has not yet been resolved fully. They conclude this section by noting that Paul proposed that the debate could be resolved by researchers doing further studies to test the propositions put forward by each group. Paul's solutions to problems and issues in the field always emphasized tackling them empirically!

Harackiewicz and Linnenbrink conclude their article by discussing future directions for work on students' goal orientations, directions that Paul proposed and was beginning to work on at the time of his death. These include the 2×2 achievement goal orientation framework, which proposes that there may be approach and avoidance components of mastery goals as well as performance goals; the need for stronger research designs and new measurement techniques to capture the dynamic nature of achievement goals and their effects; and the need for exploration of cultural influences on achievement goal orientations and the role and impact of classroom context on students' achievement goal orientations.

Schunk: Self-Regulation

Dale Schunk begins his article on Paul's contributions to our understanding of self-regulated learning by noting the increasing interest in this construct in the educational psychology field. He organizes his article around six major contributions he believes Paul's work made to the self-regulation field. The first is the conceptual framework he proposed to describe self-regulation (Pintrich, 2000a; Pintrich & Zusho, 2002). In this framework Paul described four phases of self-regulation (forethought, monitoring, control, reflection), and related them to learners' cognition, motivation, and affect, as well as the learning contexts in which students find themselves. The second contribution is Paul's focus on the role of motivation in self-regulation; this contribution again reflects Paul's ability to integrate across different areas of research. In his discussion of motivation and self-regulation, Paul focused in particular on self-efficacy and self-regulation, and achievement goals and self-regulation. The third contribution extends the second to include actual learning outcomes. Self-regulation and motivation relate to each other, but also to significant learning outcomes.

Schunk posits that a fourth major contribution was a focus on the role of different classroom contexts on student self-regulation and motivation. Regulatory and motivational processes do not happen in isolation, but instead are influenced by the complexities of classroom contexts. A fifth con-

tribution was Paul's specific focus on the development of self-regulation, or how learners' regulatory skills change over time (e.g., Pintrich & Zusho, 2002). Schunk tied this work on the development of self-regulation to Paul's efforts to develop effective intervention programs to foster college students' motivation and achievement. The sixth contribution is the development of measures to assess self-regulated learning, with the MSLQ the prime example. Schunk concludes with interesting suggestions for future research that stem from Paul's contributions. These include studying self-regulation in diverse populations, examining how students regulate their achievement efforts in different school content areas, and studying further the developmental processes underlying the growth of self-regulation.

Hofer: Epistemological Beliefs

Barbara K. Hofer is one of Paul's former students at the University of Michigan and with him published two major works on epistemological beliefs, or students' beliefs and conceptions about the nature of knowledge and knowing: a review article published in *Review of Education Research* (Hofer & Pintrich, 1997) that provided an overview and framework for the emerging study of learners' epistemological beliefs and an edited volume (Hofer & Pintrich, 2002) reviewing the research in this area. The 2002 book shows how much progress was made in this field since the publication of the Hofer and Pintrich (1997) article.

Hofer begins her article for the special issue by discussing five major themes in Paul's work that tie to the epistemological beliefs area and also to his work more generally. These themes overlap to some degree with the ones we discussed previously. The first is Paul's focus on conceptual clarity in defining terms and constructs and discussing research in ways accessible to broad audiences. Second was his concern for developing and refining measures. The MSLQ is the prime example, but he also helped develop measures in other areas such as measures of epistemological beliefs. A third theme was Paul's belief that the field of education should not separate K-12 education from higher education to the extent it currently does; Hofer argues that this theme is particularly germane to work on epistemological beliefs because it allows for integration of this work across different age groups. The fourth theme is Paul's attention to domain specificity and context specificity of learning and motivation, and the need to measure constructs at the domain-specific level. Fifth was Paul's focus on connecting constructs across areas that often are left unconnected in research even though they operate together to affect student learning. The prime example here is connections across cognitive and motivational constructs.

With respect to epistemological beliefs, Hofer describes how their 1997 article helped bring together a field of research that until that point had been rather disparate and also pointed to issues the field needed to address. She uses these

issues to organize her discussion of Paul's contributions to this field of research. The first issue is clearly defining the epistemological beliefs construct so that its boundaries and dimensions are specified more clearly. There are different paradigms within the field, so definitional issues have been a major concern. Clearly defining the construct also allows researchers to operationalize the construct in better ways. The second issue is to examine the development of learners' epistemological beliefs and link them to cognitive development. Most of the early work on the construct was done with college students, and Hofer and Pintrich argued for a need for work on younger learners to understand the ontogeny of the construct. Researchers had suggested a developmental progression from believing knowledge is absolute to a strong relativistic stance to a more evaluative stance, which retains some aspects of relativism but has clear standards for evaluating different claims. Hofer and Pintrich (1997) argued that research with younger learners was needed to assess this proposed developmental sequence fully. A third issue, and one related to the developmental issue, was what methodological approaches to take in measuring the construct. Various interview protocols and surveys exist, but Paul noted in 2002 that much more information about the psychometric properties of these instruments is needed (Pintrich, 2002).

A fourth issue in this field is the domain generality or specificity of epistemological beliefs. Early on, most researchers treated these beliefs generally, but increasingly researchers posit differences across different kinds of knowledge domains with respect to epistemological beliefs (Hofer & Pintrich, 1997). For instance, students see knowledge in the natural sciences as more certain than knowledge in psychology. Hofer suggests that there may be three kinds of epistemological beliefs: general ones, domain-specific beliefs, and discipline-specific beliefs within domains. Paul was working on this later topic in one of his last research projects (Conley, Pintrich, Vekiri, & Harrison, 2004). The final issue is how epistemological beliefs relate to learners' motivation, cognition, and learning. Hofer closes her article with some issues for future research in this area, including how teachers view knowledge, how epistemological beliefs vary across culture, and the affective aspects of epistemological beliefs, an area in which Paul was particularly interested.

Sinatra: Conceptual Change

Gale Sinatra is a leading researcher in the area of conceptual change and coedited with Paul the volume *Intentional Conceptual Change*. Her contribution highlights the indelible mark Paul's work, particularly Pintrich, Marx, and Boyle (1993), has left on the field of conceptual change.

She begins by charting the history of research on conceptual change prior to the publication of Pintrich, Marx, et al. (1993). She argues that research in this area at that time focused more on identifying cognitive and developmental factors that were believed to affect the restructuring of knowledge

representations. There was a corresponding focus on how best to design instruction to promote conceptual change. Some of these emphases are still evident in research in this area. Nevertheless, with Pintrich et al., Sinatra maintains that the field of conceptual change experienced a noticeable warming trend. Theoretical models of conceptual change proposed after 1993, for example, recognize the role of motivational and affective constructs in the knowledge change process. Sinatra concentrates her analysis on two such theoretical models, namely, the Cognitive Reconstruction of Knowledge Model (CRKM) (e.g., Dole & Sinatra, 1998) and the Cognitive-Affective Model of Conceptual Change (CAMCC) (e.g., Gregoire, 2003) to support her claims. Sinatra suggests that these models represent an attempt to address some of the concerns Paul and his colleagues laid out in their groundbreaking article. In keeping with their recommendations, both of these models acknowledge the role of "hot" as well as "cold" constructs in the knowledge change process. The CRKM implicates motivational factors such as interest and self-efficacy; the CAMCC expands its focus to include goals and affect. Particular to goals, Gregoire's model distinguishes between a promotion (approach) focus and a prevention (avoidance) focus, which, interestingly enough, parallel some of the recent developments within achievement goal theory.

From her analysis of the CRKM and the CAMCC, Sinatra turns her attention to some of Paul's more recent views on motivational influences on conceptual change. Here, she outlines five propositions Paul made in a recent chapter (Pintrich, 1999). First is the contention that mastery-oriented students would be more likely to engage in deeper processing of material and as a result undergo lasting conceptual change. The second claim stresses the role of epistemological beliefs in knowledge change. The third proposition relates to person by context interactions on conceptual change. The fourth claim focuses specifically on self-efficacy. The fifth assertion relates to control beliefs and their role in facilitating or constraining conceptual change. Sinatra believes that this last assertion, in particular, presaged the construct of intentional conceptual change.

Sinatra concludes with a discussion of future directions for research in the area of conceptual change. In doing so, she focuses mainly on some of the arguments Paul himself made in recent commentaries on the state of the field (Pintrich & Sinatra, 2003).

Duncan and McKeachie: Measuring Self-Regulation and Motivation

Both Wilbert (Bill) McKeachie and Teresa García Duncan have the worthy distinction of being coauthors of the *Motivated Strategies for Learning Questionnaire* (MSLQ) with Paul (Pintrich, Smith, García, & McKeachie, 1993). In this article, they trace the development of the MSLQ and offer interesting insights into its history. They explain why there was a need at the time to develop a new instrument to measure

motivation and learning strategies together, and discuss the social cognitive theoretical framework that guided the MSLQ's formal empirical development. They also provide descriptions of the data collection efforts through the National Center for Research to Improve Postsecondary Teaching and Learning (NCRIPAL).

The authors also discuss the general components of the MSLQ along with its psychometric properties. The MSLQ contains two basic sections: a section on motivation, which include constructs related to expectancies, values, and affect, and a section on learning strategies, which includes scales related to the use of cognitive, metacognitive, and resource management strategies. It is assumed that this basic structure has facilitated research on the interplay between motivation and cognition. McKeachie and Duncan also point to other features of the MSLQ that have contributed to its continued success and popularity, such as its ease of use and its flexibility to suit the assorted purposes of researchers, instructors, and students.

Their analysis includes a brief review of some of the recent empirical work that has relied on the MSLQ either in its entirety or piecemeal to address issues of motivation and learning. Using this review, the authors effectively demonstrate the many and profound ways in which the MSLQ has refined our understanding of key theoretical issues in educational psychology. These issues include how motivation and cognition vary across content areas and across different populations of students, as well as the effects of pedagogy on students' motivational and cognitive outcomes. Finally, the authors close by raising a number of issues for future research, such as improving the reliability and validity of self-report measures in general.

Maehr: Synthesis

Martin Maehr, one of Paul's closest collaborators and coeditor of the *Advances in Motivation and Achievement* series, provides the concluding piece of this special issue. He offers his own unique commentary on Paul's lasting contributions to the field of educational psychology and the themes that cut across Paul's program of research. Through his summary of the articles in this volume, he effectively shows how Paul's research has advanced our understanding of the nature as well as nurture of achievement. He also provides insight into some of Paul's more recent work and identifies topics that Paul likely would have pursued had he been given the chance.

CONCLUSION

The process of compiling the work for this special issue has influenced our cognition, motivation, and affect, as Paul truly would have understood. Cognitively, the depth and breadth of his contributions became even clearer to us as we read and reflected on his work in the different areas discussed by the

authors, and we hope this is apparent to readers of this special issue as well. Motivationally, we all are inspired to continue Paul's legacy by doing research on one or more of the topics and issues on which Paul focused, because he laid out rich and varied new directions for work on motivation, cognition, and their interface. Affectively, we are very happy to have had the honor of working with the authors to compile the many contributions Paul has made to our field. Yet we continue to feel a deep sadness that he no longer is with us to continue his groundbreaking work and that we no longer have opportunities to converse with him about where the field of educational psychology is going.

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