

V1. 1.22 Evidence of quality contributions to one's specialty through research, publication, or other scholarly productivity: Fall 1999 – Fall 2004

Section Summary

In this section, I will provide an overview of my program of research, publication, and scholarly activities since being hired at Ball State University in 1999. I have included representative exhibits of my quality contributions in the area of research, publication, and scholarly activities. For a complete listing of my research, publication, and scholarly activities please review my comprehensive curriculum vitae.

My research program focuses on developmental aspects of cognition. In particular, how does children's use of memory and problem-solving strategies vary based on age, intelligence, and situational factors. I have investigated children's strategy use with both laboratory-based and educational activities. Specifically, I have examined the role of situational and intellectual factors that influence children's strategic behavior when trying to remember or problem solve. I have extended my research to more applied problems as well, including the project outlined in the next paragraph and the Digital Middletown Project discussed later in this section.

As an extension of my own research program that shows some of my growth as a researcher, I continue to be engaged in investigating developmental changes in children's working memory for Picture Communication Symbols used in alternative and augmentative communication systems, with the goal to better understand typical children's performance and to provide a guideline for teaching children with disabilities to use such systems. This blend of basic and applied research has resulted in a funded research grant, *Children's Memory for Picture Communication Symbols*, through iCommunication with Barry Wagner, a Speech Language Pathologist at Ball State University, and myself as co-principle investigators. Further, we are working with University Computing Services and Teleplex to develop our working memory assessment to incorporate alternative symbol systems and digital media for publication and use in the AAC field.

In my 5 ½ years of employment at Ball State University, I have had 5 research articles directly related to developmental aspects of memory and problem solving in children with and with out mental retardation published in top-tier peer-refereed journals, including *Developmental Psychology*, *Merrill-Palmer Quarterly*, and *American Journal on Mental Retardation*. I also currently have several articles under revision for resubmission to journals and several articles in preparation for submission for publication. I believe these research articles along with my current record of publication shows the ability to continue making quality contributions to my field through research publication.

I will now provide a brief overview of each article included in this section to illustrate my quality contributions to my specialty through research and peer-reviewed publications. First, I along with my colleagues Kathryn Fletcher, Norman Bray, and Lisa Grupe have

had two papers accepted for publication investigating children's strategic behaviors while solving addition problems. Both articles used the microgenetic method in which we followed each child over a 12-week period and scored their strategy use and accuracy on each of the 144 addition problems. The first article will appear in *Merrill-Palmer Quarterly* a first-rate human development journal for 50 years with an acceptance rate of only 24% (based on data from the editor, see Exhibit 28). The exact publication date for this article is still to be determined. In this article we found that the availability of manipulatives, assumed to aid in counting and problem solving, did not influence strategy use or accuracy of young children (6 years of age) solving addition problems. This result is important result because many educators use manipulatives based on the assumption they will aid in thinking and improve children's performance. This does not appear to be a valid assumption in all cases.

The second article with these colleagues appeared in *Education and Training in Developmental Disabilities* (see Exhibit 29) in December 2004. In this study we found that children with and without mild mental retardation (between 7 and 9 years of age) solve addition problems in very similar ways. In particular, children move from less to more sophisticated strategy use, and use a variety of strategies to solve problems. Further, children's underlying number knowledge was a better predictor of performance than IQ scores. This journal, with a broad readership of both researchers and educators in its 40th year, accepts 45% of articles (based on data from the editor). While this journal has a higher acceptance rate than other journals I typically publish in, it was chosen because it is the *Council for Exceptional Children, Division on Developmental Disabilities* journal and would have broad readership. In this case, the finding that children with mental retardation look more similar to typical children than different has major implications for education and disseminating this result widely was most important.

As an extension of the examination of the influence of situational and contextual factors on strategy use Kathryn Fletcher, myself, and Norman Bray had a paper published in the *American Journal on Mental Retardation* (AJMR; see Exhibit 30) investigating strategy use in children with and without mental retardation. AJMR is the research journal of the *American Association on Mental Retardation* read by doctors, psychologists, and educators in many fields, with an acceptance rate of 25% (based on data from Cabell's Directory, 6th Ed. 2002-2003). In this study, we found that when 17-year-old students' with mental retardation are given both verbal and physical prompts the types strategies used were the same as those used by 17-year-old typical students. We believe this is the first example of children with and without mental retardation performing similarly. The difference between the groups was in the types of situational supported need by the students. Interestingly, similar results were not found for younger children (7- and 11-years-old).

In another research study, published in the premiere journal *Developmental Psychology* (the division journal for Developmental Psychology of the *American Psychological Association*) with an acceptance rate of only 30% (based on annual APA statistics), children between the ages of 7 and 17 with and without mental retardation completed a

memory task in which strategic behaviors were observed (see Exhibit 31). Following each trial, children provided self-reports regarding their strategy use. The ability to reflect on knowledge is an important cognitive ability. This study was interested in when and under what circumstances self-reports of children would be accurate? Also, are there any situations in which providing self-reports may change one's cognitive processes. Children between the ages of 7 and 17 years were tested over two days in a memory task involving memory for locations of objects. The most important finding of the present study was that across a wide range of developmental and intellectual differences, children's self-report of strategy use corresponded closely with the strategies observed. Results indicated that accuracy and completeness of report was greater when the strategy reported was related to recall. This is consistent with the goal sketch mechanism. A goal sketch is described as schematic knowledge concerning activities that may be related to obtaining the solution of a problem. Activities not in the goal sketch are rejected as irrelevant to the goal of the task. This type of schematic knowledge enables a child to judge the effectiveness of a procedure.

My work investigating cognitive development and children's memory has also included a published article this year with colleagues David McIntosh and Jason Holland (see Exhibit 32), which resulted from my work on Jason Holland's school psychology doctoral committee. This study focused on components of memory that may impact children's reading ability. Using structural equation modeling, various components of memory thought to impact reading were investigated with several different models. The results from this study have direct implications for school psychologist dealing with children who have reading difficulties. The *Journal of Psychoeducational Assessment* accepts only 30% of articles submitted (based on data from Cabell's Directory, 6th Ed. 2002-2003) and focuses on issues of assessment facing practicing psychologists.

I have also included one article that is currently under revision for *Merrill-Palmer Quarterly* (see Exhibit 33) to show my continued potential for publication. In this series of studies I examined the relationship between social rules and goal sketches in memory strategy use and development in children between the ages of 7 and 11 years. The results of these studies found that children were less likely to use strategies, especially overt strategies, when they perceived the memory situation as being a test even when these were the most effective strategies. However, when the children viewed the memory situation as a story or a game they were more likely to use highly effective overt strategies. Furthermore, when these same children viewed other children using a variety of strategies, they rated overt effective strategies as "very helpful" but "against the rules." However, when children rated covert strategies (e.g., rehearsal) these strategies were rated as not against the rules.

My research and published articles are all theoretically based, and are making contributions to research in cognitive development. This is reflected in my request to review other researchers work in the areas of memory and problem solving for top-tier journals, including the *Journal of Experimental Child Psychology*. When Robert Siegler was preparing his chapter for the *Handbook on Child Psychology* I was asked to review this work (see Exhibit 34). Further, my work has also been cited by major figures in the

field of developmental psychology, including Robert Siegler in an article for in *Cognitive Psychology* and Jack Naglieri in an article in *Child Development*. I generally publish for the purposes for quality rather than quantity. However, when a finding has important applications for education I chose journals based on how widely they will be read.

In addition to the publications listed above, you will find examples of my conference presentations for the last year. While I have presented scholarly work at 16 international, national, regional, and local meetings since my employment at Ball State University, I have only included samples that I think best illustrate where my research interests are now and my interest in teaching/pedagogical issues. The two presentations included from the *Conference on Human Development* are related to my program of research on cognitive development (see Exhibit 35 & 36). These presentations show my continued evolution in differing aspects of cognitive development and education. Less than 25% of submissions were accepted for presentation at this bi-annual meeting. My presentation at the *European Council for High Ability* merged together my work with technology in the classroom and teacher preparation with colleagues at Ball State and Bowling Green State Universities who work in gifted and talented education (see Exhibit 37). My presentation at *Midwest Teachers of Educational Psychology* (see Exhibit 38) also related to my interest in technology with my background child development. My most rewarding work has come when my research interests are combined with applied educational issues. I have been encouraged by the response to my research and scholarly activities and plan to continue building my research program.

Educational program evaluation research has also become one of my activities during the last few years and allows me to apply my knowledge of research design and statistics more directly to applied problems. The project I am currently working on is *Project ASPIRE: Creating Opportunities for Rural, Low-Income Students* (funded for approximately \$862,386 by the US Department of Education through an Advanced Placement Incentive Program). This project has been investigating the role of teachers, school counselors, and principals in identifying high-ability, rural, low-income middle and high schools students. The goal is to move high-ability students into advanced and advanced placement (AP) courses. The project has provided these schools with professional development training on differentiation and tiering of lessons in regular classrooms to help identify the high-ability students. It has also provided each of the 15 participating schools with Internet access, computers, and projectors so that Indiana Academy AP distance education courses may be made available once high-ability students have been identified. My role has been to create measures to better understand how students are identified along with student and family perceptions of the role of advanced and AP courses in education. I have also evaluated the effectiveness of professional development sessions and changes in classroom teacher behaviors (see Exhibits 39 and 40). Thus far, we have found that many parents and students are not aware of advanced and AP courses at their school or of the potential value of these courses. One goal for this year of *Project ASPIRE* is to better understand the decision-pathway necessary to put high-ability students on track for AP courses. I find this research to very rewarding and valuable especially in light of recent political movement towards accountability and high stakes testing.

This year I have become involved in a new research project *Digital Middletown Project* (DMP) investigating the use of digital technology and media in the classroom. My role as a grant-school liaison involves working with BSU faculty and staff from UCS, Teachers College, and Information Technology along with faculty and staff from Mitchell and Cowan Elementary Schools. Funded by the US Department of Education, DMP has provided a high-speed, very-broadband wireless connection to two local schools, along with computers, projectors, plasma displays, and videoconferencing hardware. The goal is to learn how the availability of high quality hardware and digital media impacts learning in the classroom. This project has brought together, in one project, my focus on developmental aspects of cognition and memory with the use of technology as a factor that changes the context of learning and memory. Through DMP I am able to use what I have learned in my own research about how children think and remember, what I have used in my own classes, and what we know from previous research projects to provide in-service and professional development to our project teachers. I believe it is important for academia to give back and transmit what we have learned from research to others in our community. Already this project has resulted in a presentation at a *Meeting of Delaware County Principals* and in a number of newspaper articles, including one in which I am quoted discussing the project (see Exhibit 41). My major activity has been working with teachers at Mitchell Elementary and Cowan Elementary on the use of technology and digital media in their classrooms. I am currently developing professional development activities for both schools that will focus on a variety of technologies and teaching strategies that have been shown to change teaching practices and student learning. I believe this project will enhance my research and teaching by providing me with an updated knowledge base of what is happening in schools. Letters detailing my contribution to this project are included for your review (Exhibits 42 and 43).

Not only have I been involved in research, but also in other scholarly activities important to my role as a university professor. I have found through my teaching of developmental psychology that using real-life examples from research, current events, observations of research, video clips, and providing students with outside readings during lectures quickly increases student understanding and involvement in class, and further adds a richness to class discussions. This has lead directly to my work with textbook publishers, creating a set of CD-ROM of activities where students observe children, recreate famous experiments, and assess their knowledge for Kathleen Stassen Berger's, *The Developing Person Through Childhood And Adolescence* (see Exhibit 44) and complementary use with Siegler, DeLoache, and Eisenberg's *Exploring Child Development*. I have also created an instructor's manual, test bank, and CD-ROM (with PowerPoint slides, video clips, activities, projects, additional video suggestions, and discussion points) for Cavanaugh and Blanchard-Fields' *Adult Development and Aging 4th ed.* I have included the multimedia manager for Cavanaugh and Blanchard-Fields' *Adult Development and Aging 4th ed.* that includes the PowerPoint slides and video clips for your review (see Exhibit 45).

This year, I have a revised version of my published instructor's manual and test bank for Cavanaugh and Blanchard-Fields' *Adult Development and Aging 5th ed.* in press. Currently this text is one of the most popular Adult Development and Aging texts, with 176 colleges and universities using the text (these numbers are for domestic schools only and do not include a breakdown by number of instructors adopting the text at each school). The text is also used internationally, however numbers of schools adopting the text were not available. Included in this revision are two new content chapters and a completely new section for each chapter called "info-track" in which students are referred to 5 additional articles for each chapter. For each article there are activities and questions for students to complete that extend the chapter content. I have included a sample chapter and a letter from the editor regarding my work (see Exhibits 46 and 47).

Another aspect of my scholarly activity and service has been completing book and textbook reviews for trade books along with a variety of popular child development textbooks (details regarding these activities can be on my curriculum vitae). I believe that my being called on regularly to give reviews of trade books and developmental texts is a further indicator of my contribution to my field.

In summary, I believe my research and publication record continues to show my growth as a researcher in the area of cognitive development. Further, my scholarly activities that combine research with teaching/pedagogy illustrate my commitment to making research and developmental psychology accessible to students.

Section Exhibits

28. Huffman, L. F., Fletcher, K. L., Grupe, L. A., & Bray, N. W. (in press). Do Little Bears Help Kindergartners Solve Addition Problems: The Effects of Manipulatives on Strategy Use and Accuracy. *Merrill-Palmer Quarterly*.
29. Huffman, L. F., Fletcher, K. L., Grupe, L. A., & Bray, N. W. (2004). Similarities and differences in addition strategies of children with and without mental retardation. *Education and Training in Developmental Disabilities, 39*, 317-325.
30. Fletcher, K. L., Huffman, L. F., & Bray, N. W. (2003). The effects of verbal and physical prompts on external strategy use in children with and without mental retardation. *American Journal on Mental Retardation, 108*, 245-256.
31. Bray, N. W., Huffman, L. F., & Fletcher, K. L. (1999). Developmental and intellectual differences in relations between self-report and strategy use. *Developmental Psychology, 35*, 1223-1236.
32. Holland, J., McIntosh, D., & Huffman, L. (2004). The role of phonological awareness, rapid automatization, and orthographic processing in reading. *Journal of Psychoeducational Assessment, 22*, 233-260.
33. Huffman, L. F., Bray, N. W., and Fletcher, K. L. (under revision). The relationship between children's goal sketches, understanding of social rules, and their influence on strategy development. *Merrill-Palmer Quarterly*.
34. Email from Robert Siegler requesting my review of his chapter for the Handbook on Child Psychology.
35. Huffman, L. F., Fletcher, K. L., & Wagner, B. T. (2004, April). *Are Differences In Working Memory Related To Variability In Language Scores In Typical Children?* Poster presented at the Conference on Human Development, Washington, DC.
36. Fletcher, K. L., & Huffman, L. F. (2004, April). *Picture-book Reading Experiences and Toddlers' Behaviors with Photographs and Books*. Poster presented at the Conference on Human Development, Washington, DC.
37. Rizza, M. G., Huffman, L. F., Fletcher, K. L., & Speirs-Neumeister, K. L. (2004, September). *Using technology in the preparation of teachers of the gifted*. Poster presented at the European Council for High Ability, Pamplona, Spain.

38. Huffman, L. F. (2004, October). *Online and Digital Activities to Better Understand Human Development*. Paper presented at the 33rd Annual Meeting of The Midwest Association of Teachers of Educational Psychology, Oxford, OH.
39. Project ASPIRE Yearly Report for Javits Schools
40. Letter describing my efforts in observing Project ASPIRE instructional activities from David Allen, Project Aspire Coordinator
41. Huffman, L. F. (November, 23, 2004). Huffman, L. F. (November 26, 2004). *Mitchell, Cowan schools help BSU test effect of digital media*. The Muncie Star Press.
42. Letter of describing my activities in the Digital Middletown Project from Dr. Bizhan Nasseh
43. Letter describing my activities in the Digital Middletown Project from Michael Garringer, Cowan Elementary Principal
44. Huffman, L. (2003). *Exploring child development: A tool kit for understanding development* [CD-rom of activities for Kathleen Stassen Berger's *The developing person through childhood and adolescence*]. New York: Worth.
45. Huffman, L. (2002). Multimedia manager for developmental psychology 2002:A Microsoft (R) PowerPoint (R) LINK tool for Cavanaugh & Blanchard-Fields adult development and aging (4th Ed.). Belmont, CA: Wadsworth.
46. Sample chapter from Huffman, L. (in press). *Instructor's manual and test bank for Cavanaugh & Blanchard Fields adult development and aging* (5th Ed.). Belmont, CA: Wadsworth.
47. Letter from Jennifer Keever, Assistant Editor Psychology, with Wadsworth Group describing my authorship of the *Instructor's manual and test bank for Cavanaugh & Blanchard Fields adult development and aging* (5th Ed.).