Editor's Introduction

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As noted in the last bibliography of “Human problem solving,” compiled by Joachim Funke and reported in the *Journal of Problem Solving* in 2013, problem solving as a concept and as a research issue has been gaining more interest than ever before. Building on similar reports from 2006, 2008, and 2010 that were collected and commented by Zygmunt Pizlo (2007, 2009, 2010), Funke (2013) charted the increase in the number of publications including the term “problem solving” in any field in PsycINFO, and showed it reaching a maximum of around 1,650 in 2012. Now we can see that publications on the topic further increased to around 1,800 a year in both 2013 and 2014.

The papers in this special issue come from two areas of problem solving research, mathematical and creative problem solving, which represent a substantial part of this growth trend. Many of these papers have educational applications, and close to a third of the publications in 2013 and 2014 also include “education” as a keyword. The keyword “development” also appears in about a third of papers. As shown in Figure 1, papers on mathematics and problem solving, many of which would also fall under the education and/or development sub-headings, represent a growing area. Another area undergoing remarkable growth is creative problem solving. Figure 1 also charts the growth in publications in the more specific literature on the topic of insight problem solving that is largely subsumed within the creative problem solving category.

This issue includes two papers on mathematical problem solving. The paper by Hattikudur, Sidney, and Alibali (2016), “Does comparing informal and formal procedures promote mathematics learning? The benefits of bridging depend on attitudes towards mathematics,” discusses how prompting students to make comparisons between formal and informal procedures when solving systems of equations can help to improve the problem solving of those who do not like mathematics. The paper by Mielicki and Wiley (2016), “Alternative representations in algebraic problem solving: When are graphs better than equations?,” investigates students’ ability to use graphs and equations for linear functions, and finds that graphs support more effective problem solving, especially on problems requiring slope comparison. Both papers deal with issues in algebraic thinking that affect problem solving.

The issue also includes three papers on insightful and creative problem solving. The paper by Danek, Wiley, and Öllinger (2016), “Solving classical insight problems without Aha! experience: 9 dot, 8 coins and

matchstick arithmetic problems,” examines differences in solution rates and self-reported Aha! experiences among three problems commonly used in the insight literature. The paper by Kizilirmak, Wiegmann, and Richardson-Klavehn (2016), “Problem solving as an encoding task: A special case of the generation effect,” investigated whether the Aha! experience or positive affect might be responsible for part of the “generation effect,” where generation leads to better long-term memory for solutions. Finally, the paper by Chan and Nokes-Malach (2016), “Situative ceativity: Larger physical spaces facilitate thinking of novel uses for everyday objects,” discusses how problem solving contexts might affect problem solving performance across a variety of tasks, including alternative uses, novel shape invention, remote associates, and series completion.

The first issue of the *Journal of Problem Solving* was published in 2006 with the goal of promoting the scientific study of human problem solving that was initiated by the Gestalt psychologists over 100 years ago (Pizlo, 2006). With this special issue at the beginning of 2016, the journal closes its first decade. We look forward to another decade of growth in research on important questions about the mental mechanisms underlying this cognitive ability.

Figure 1. Number of publications with keywords “problem solving” and “math,” “insight,” or “creativity,” between 2010 and 2014, from PsycINFO database.

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