

# RESEARCH ON MATHEMATICAL CREATIVITY AND GIFTEDNESS

## ARTICLES IN BOOKS AND JOURNALS

**Applebaum, M., Freiman, V. & Leikin R. (2011). Prospective teachers' conceptions about teaching mathematically talented students: comparative examples from Canada and Israel. *Montana Mathematical Enthusiast Journal*, 8, 255-290.**

**Abstract:** In this paper we analyze prospective mathematics teachers' conceptions about teaching mathematically talented students. Forty-two Israeli participants learning at mathematics education courses for getting their teaching certificates, and fifty-four Canadian pre-service (K-8) teachers participating in mathematics didactics course were asked to solve a challenging mathematical task. We performed comparative analysis of problem-solving strategies, solution results and participants' success. Based on the discussion with 25 Israeli participants we composed an attitude questionnaire, in which prospective teachers were asked to express their degree of agreement with statements expressing different beliefs about education of mathematically talented students. The questionnaire was presented to 56 Canadian and 28 Israeli prospective elementary and middle school teachers. We describe similarities and differences between the attitudes of the two populations and suggest their possible explanations. Based on the results of this study we make several suggestions for teacher education programs.

**Babaeva, J. D. (1999). A dynamic approach to giftedness: Theory and practice. *High Ability Studies*, 10 (1), 51-68.**

**Abstract:** The aims of this research were to investigate the possibilities of developing the cognitive and creative abilities of recognised gifted children, and also of raising the development of "ordinary" children up to a level of giftedness. This experimental work, based on Vygotsky's Dynamic Theory of Giftedness, involved special procedures and an experimental curriculum designed to overcome children's psychological barriers to learning. Five school classes were involved: three experimental classes, two of these gifted and one of average-ability children. Two further control classes were taught by conventional methods. Comparative assessments were made for 6 years between all the children, regarding cognitive development, creativity and social giftedness, revealing considerable undeveloped potential of "ordinary" children. Major factor influencing IQ changes included the differences in psychological mechanisms to overcome barriers to learning. Due to the experimental psychological curriculum, not only did all the children's

cognitive abilities increase, but also their creativity. Hence, these new diagnostic and developmental procedures were found to be effective, demonstrating the high practical value of the Dynamic Theory of Giftedness.

**Cahan S. & Linchevski, L. (1996). The cumulative effect of ability grouping on mathematical achievement: A longitudinal perspective. *Studies in Educational Evaluation*, 22 (1), 29-40.**

Abstract: The regression-discontinuity design was used to study the cumulative effect of ability grouping in mathematics in Israeli junior high schools. Results from a final sample of 1,169 seventh graders show that placement in ability groups increases the gap between students at different grade levels.

**Chamberlin, S. A., & Moon, S. (2005). Model-eliciting activities: An introduction to gifted education. *Journal of Secondary Gifted Education*, 17, 37-47.**

Abstract: This article addresses the use of Model-Eliciting Activities (MEAs) as a (curricular) tool to develop mathematical creativity and identify students who are creatively gifted in mathematics. The thesis of this article is that by using MEAs, gifted educators can: (a) provide students with opportunities to develop creative and applied mathematical thinking; and (b) analyze students' mathematical thinking when engaged in creative mathematical tasks, aiding in the identification of those students who are especially talented in domain-specific, mathematical creativity. The authors' conclude that MEAs have potential for both developing and identifying creatively gifted mathematicians in the middle grades.

**Chiu, M-S. (2009). Approaches to the teaching of creative and non-creative mathematical problems. *International Journal of Science and Mathematics Education*, 7 (1), 55-79.**

Abstract: This study investigated the approaches to teaching by three fifth-grade teachers' of creative and non-creative mathematical problems for fractions. The teachers' personal constructs of the two kinds of problems were elicited by interviews through the use of the repertory grid technique. All the teaching was observed and video-recorded. Results revealed that the teachers had slightly distinctive constructs of creative and non-creative problems, and professed a greater preference for creative problems. Based on the teachers' creations of problems in classrooms and related features, the study identified three types of teaching approaches: liberal, reasoning, and skill approaches.

The liberal approach appeared to indicate the most appropriate teaching methods for creative problems.

**Davidson, J. E. & Sternberg, R. J. (1984). The role of Insight in Intellectual Giftedness. *Gifted child Quarterly*, 28 (2), 58-64.**

Abstract: Proposes a subtheory of intellectual giftedness based upon the centrality of insight skills in giftedness. It is argued that insight involves not 1, but 3 separate but related psychological processes—selective encoding, selective combination, and selective comparison. The products of these operations are referred to as "insights" when the basic clues are encoded, combined, or compared in nonstandard, and even highly novel, ways. The theory was tested with 4th-, 5th-, and 6th-grade normal and gifted Ss. In Exp I, gifted and nongifted Ss were either precued as to what information in each of a set of insight problems was relevant for problem solution, or not so precued in a test of selective encoding. In Exp II, selective combination in insightful problem solving was tested in 74 gifted and nongifted Ss, who received mathematical insight problems presented either in the standard format, or with cuing intended to facilitate selective combination processes. In Exp III, the role of selective comparison in insightful problem solving was assessed, with Ss receiving 2 different example problems prior to receiving the insight problems. Results of all 3 experiments support the subtheory of intellectual giftedness. The development of a training program for 4th-, 5th-, and 6th-graders based upon the tenets of the subtheory is described. The program consisted of direct instruction, group-problem solving, individual problem solving, and games. The results suggest that insight skills are at least somewhat trainable.

**Davis, G. A. & Rimm, S. B. (2004). *Education of the gifted and talented (5th ed.)*. Boston, MA: Pearson Education Press.**

Abstract: This comprehensive text by leaders in the field presents the best practices in gifted education. After a brief overview of current issues in the field, *Education of the Gifted and Talented* discusses the characteristics of gifted students as well as challenges of parenting and the understanding and counseling of gifted children. The authors address crucial topics in the field, including strategies for identifying gifted students, considerations in planning a sound gifted and talented program, contemporary program models, problems of minority, disabled and female students, and the evaluation of gifted programs.

Ervynck, G. (1991). Mathematical Creativity. In D. Tall (Ed.), *Advanced Mathematical Thinking* (pp. 42-53). Dordrecht, Netherlands: Kluwer.

Abstract:

**Feldhusen, J. F. (2002). Creativity: The knowledge base and children. *High Ability Studies*, 13 (2), 179-183.**

Abstract: Creative or divergent thinking is not done in a vacuum. It depends on and uses a knowledge base. There is too much emphasis on trying to understand the process purely from a procedural point of view and not from the point of view of the necessary knowledge base. Close observation of the creative thinking processes of children illustrates clearly the critical role of the knowledge base.

**Gavin, M. K.; Casa, T. M.; Adelson, J. L.; Carroll, S. R.; Sheffield, L. J. (2009). The impact of advanced curriculum on the achievement of mathematically promising elementary students, *Gifted Child Quarterly*, 53 (3), 188-20.**

Abstract: The primary aim of Project M<sup>3</sup>: Mentoring Mathematical Minds was to develop and field test advanced units for mathematically promising elementary students based on exemplary practices in gifted and mathematics education. This article describes the development of the units and reports on mathematics achievement results for students in Grades 3 to 5 from 11 urban and suburban schools after exposure to the curriculum. Data analyses indicate statistically significant differences favoring each of the experimental groups over the comparison group on the ITBS (Iowa Tests of Basic Skills) Concepts and Estimation Test and on Open-Response Assessments at all three grade levels. Furthermore, the effect sizes range from 0.29 to 0.59 on the ITBS Concepts and Estimation Scale and 0.69 to 0.97 on the Open-Response Assessments. These results indicate that these units, designed to address the needs of mathematically promising students, positively affected their achievement.

**Gavin, M. K.; Casa, T. M.; Adelson, J. L.; Carroll, S. R.; Sheffield, L. J.; Spinelli, A. M. (2007). Project M<sup>3</sup>: Mentoring Mathematical Minds: A research-based curriculum for talented elementary students, *Journal of Advanced Academics*, 18(4), 566-585.**

Abstract: To date, there has been very little research-based mathematics curriculum available for talented elementary students. Yet the gifted education and mathematics literature suggest support for curriculum that is both enriched and accelerated with a focus on developing conceptual understanding and mathematical thinking. Project M<sup>3</sup>: Mentoring Mathematical Minds is a 5-year

Javits research grant project designed to create curriculum units with these essential elements for talented elementary students. These units combine exemplary teaching practices of gifted education with the content and process standards promoted by the National Council of Teachers of Mathematics. The content at each level is at least one to two grade levels above the regular curriculum and includes number and operations, algebra, geometry and measurement, and data analysis and probability. The focus of the pedagogy is encouraging students to act as practicing professionals by emphasizing verbal and written communication. Research was conducted on the implementation of 12 units in 11 different schools, 9 in Connecticut and 2 in Kentucky. The sample consisted of approximately 200 mathematically talented students entering third grade, most of whom remained in the project through fifth grade. More than 40% of students were eligible for meal subsidies, and the sample was composed of students from diverse racial and ethnic groups. Paired t-tests were conducted on the total scores for each unit pre- and posttest. Changes in the total scores for each unit indicate statistically significant gains from pretest mean to posttest mean at the  $p < .01$  level of statistical significance. In addition, the effect sizes were all large and ranged from 1.55 to 3.49. These results indicate significant increases in understanding across all mathematical concepts in each unit from pre- to posttesting. Thus, Project M3 materials may help fill a curriculum void by providing appropriate accelerated and enriched units to meet the needs of talented elementary students.

Gorodetsky, M. & Klavir, R. (2003). What can we learn from how gifted/average pupils describe their process of problem solving? *Learning and instruction*, 13, 305-325.

Abstract: Research on the cognitive sub-processes involved in the excellent problem solving of the gifted, as compared to the problem solving of the average person, has attributed the difference between these two populations to selectivity in their Encoding, Comparison and Combination sub-processes. This paper extends this list by adding two sub-processes that are imported from the literature on experts and novices: namely, Retrieval and Goal Directness. Based on these five sub-processes in conjunction with the concept of selectivity as an ordinal (rather than dichotomous) dimension, we have constructed a model that is being used for the analysis of the solution processes of gifted and average students, as reflected in their post solution protocols. Middle high school students (gifted and average) solved insight problems, without and with analogical learning, and were asked to report on the solution process they undertook. The suggested model was found to be an effective instrument for analyzing the sub-processes employed during problem solving. Though both the gifted and the average were able to arrive at correct solutions, the study shows that they employed different sub-processes in doing so. The model can serve as a fine-grade analysis of solution

processes among various populations (gifted/average and possibly experts/novices) that will be helpful in research and teaching.

**Hong, E. & Aui, Y. (2004). Cognitive and motivational characteristics of adolescents gifted in mathematics: Comparison among students with different types of giftedness. *The Gifted Child Quarterly*, 48 (3), 191-201.**

Abstract: Although numerous studies have compared cognitive and motivational characteristics of gifted and nongifted students, research comparing those characteristics among different types of gifted students has not kept up with the theoretical development that saw a transition from uni-dimensional to multi-dimensional conceptualizations of giftedness. This study compares cognitive and motivational characteristics of high school students who are academically gifted in math, creatively talented in math, and nongifted. Whereas no differences were found among the three groups in their beliefs about ability, most of the other characteristics examined in the study distinguished the three groups. Academically gifted female students reported expending more effort than did academically gifted male students. Creatively talented males put forth more effort than academically gifted males, and the creatively talented in general used more cognitive strategies than the academically gifted. Overall, students who were either academically gifted or creatively talented in mathematics perceived that they were self-efficacious in general, used cognitive strategies, perceived their math ability and math self-efficacy to be high, and valued learning math more so than their nongifted age peers.

**Housman, D. & Porter, M. (2003). Proof schemes and learning strategies of above-average mathematics students. *Educational Studies in Mathematics*, 53 (2), 139-158.**

Abstract: What patterns can be observed among the mathematical arguments above-average students find convincing and the strategies these students use to learn new mathematical concepts? To investigate this question, we gave task-based interviews to eleven female students who had performed well in their college-level mathematics courses, but who differed in the number of proof-oriented courses each had taken. One interview was designed to elicit expressions of what students find convincing. These expressions were categorized according to the proof schemes defined by Harel and Sowder (1998). A second interview was designed to elicit expressions of what strategies students use to learn a mathematical concept from its definition, and these expressions were classified according to the learning strategies described by Dahlberg and Housman (1997). A qualitative analysis of the data uncovered the existence of a variety of phenomena, including the following: All of the students successfully generated examples when asked to do so, but they differed in whether they generated examples without prompting and whether they successfully generated examples when it was necessary to disprove conjectures. All but one of the students exhibited two or more proof schemes, with one student exhibiting four different proof schemes. The students who

were most convinced by external factors were unsuccessful in generating examples, using examples, and reformulating concepts. The only student who found an examples-based argument convincing generated examples far more than the other students. The students who wrote and were convinced by deductive arguments were successful in reformulating concepts and using examples, and they were the same set of students who did not generate examples spontaneously but did successfully generate examples when asked to do so or when it was necessary to disprove a conjecture.

**Huckstep, P. and Rowland, T (2000) 'Creative mathematics' - Real or Rhetoric? -- Review of R., Phillips, E. and Higginson, W. (1997). *Creative Mathematics: Exploring Children's Understanding. Educational Studies in Mathematics, 42 (1), 81-100.***

Abstract: The notion of creativity has its natural home in the fine arts, where the artist literally creates something that can be perceived by the senses. The products of mathematical activity are clearly not of this kind, yet some distinguished mathematicians have claimed that mathematics offers considerable scope for creativity. The title of the book under review, and some claims to be found in it, suggest that creativity can indeed be associated with mathematics, and that young children may experience it in the classroom. We suggest that the word 'creative' is being used in rather different senses in these different contexts, yet the meanings associated with the arts, say, are in danger of being applied to mathematical situations for rhetorical purposes.

**Johnson, M. L. (1983). *Identifying and Teaching Mathematically Gifted Elementary School Children. Arithmetic Teacher, 30, 25-26, 55-56.***

Abstract: Alternative identification and instructional procedures are discussed. Instructors are warned against assuming an equivalence between the quantity of mathematical work a child demonstrates and the quality of that child's thinking. A need to integrate qualitative information is seen. Two types of activities for gifted pupils are detailed.

**Kissane, B. V. (1986). *Selection of mathematically talented students. Educational Studies in Mathematics, 17 (3), 221-241.***

Abstract: This paper reports a study concerned with the selection of mathematically talented students at the beginning of secondary school in Australia using a version of the College Board's Scholastic Aptitude Test (SAT). Some young students achieved scores comparable with older mathematically able students and with college-bound students in USA. Teacher nomination of students as talented resulted in the selection of considerably different groups of students

to those selected using the SAT. Marked sex differences, in favour of boys, are noted and discussed. Three different procedures for comparing item responses of younger and older groups are employed, leading to the conclusion that younger and older students respond to SAT items in qualitatively different ways. Comparison procedures based on the Rasch model for measurement are favoured.

**Koichu, B. & Berman, A. (2005). When do gifted high school students use geometry to solve geometry problems? *The Journal of Secondary Gifted Education*, 16(4), 168-179.**

Abstract: This article describes the following phenomenon: Gifted high school students trained in solving Olympiad-style mathematics problems experienced conflict between their conceptions of "effectiveness" and "elegance" (the EEC). This phenomenon was observed while analyzing clinical task-based interviews that were conducted with three members of the Israeli team participating in the International Mathematics Olympiad. We illustrate how the conflict between the students' conceptions of effectiveness and elegance is reflected in their geometrical problem solving, and analyze didactical and epistemological roots of the phenomenon.

**Koichu, B., Berman, A. & Moore, M. (2006). Patterns of middle school students' heuristic behaviors in solving seemingly familiar problems. In J. Novotna, H. Moraova, M. Kratka, and N. Stehlikova (Eds.), *Proceedings of the 30<sup>th</sup> Conference of the International Group for the psychology of Mathematics Education*, 3, 457-464, Prague, Charles University.**

Abstract: The goal of this paper is to present patterns of problem solving behaviors that emerged from three rounds of clinical interviews with middle school students of different mathematical aptitudes. In the interviews the students were given algebra and geometry problems that looked like tasks recently solved in class, but, in fact, were much more challenging. We call such tasks seemingly familiar problems. Building on past research, we argue that heuristics are useful organizational units in modeling problem solving and present an empirical definition of heuristic behavior. That multi-attribute definition enables us to make inferences regarding similarities in some solutions, and, in turn, to distinguish four patterns of the students' heuristic behaviors that cut across algebra and geometry problem solving domains.

**Leikin, R. (2010). Teaching mathematically gifted. *Gifted Education International*, 27, 161-175.**

Abstract: In this paper I describe aspects that seem to be exclusive for teaching mathematically gifted/promising students. First, I discuss the qualities of the mathematically gifted mind and suggest to use the construct of mathematical potential for that of mathematical giftedness with reference to school students. Second, I assume that high quality teaching of mathematics *in any classroom* should be directed at the construction of deep and robust mathematical knowledge, development of conceptual understanding, and the promotion of a positive attitude toward the subject.

I argue that relatively to a regular classroom, teaching mathematically gifted students (a) involves a higher (than regular) level of mathematical challenge, (b) requires from students a higher level of creative and critical thinking, (c) requires minor scaffolding, and (d) requires teacher sensitivity to the special needs of students, as well as greater attentiveness, flexibility, and reflectivity. To support these arguments, I present here the voices of students and describe one mathematics lesson with mathematically promising students.

**Leikin, R. (2011). The education of mathematically gifted students: On some complexities and questions. *Montana Mathematical Enthusiast Journal*, 8, 167-188.**

Abstract: In this paper I analyze some complexities in the education of mathematically gifted students. The list of issues presented in this paper is not inclusive; however, all of them seem to be typical on the international scope. Among these issues are: (1) the gap between research in mathematics education and the research in gifted education; (2) the role of creativity in the education of the gifted and the theoretical perspective on the relationship between creativity and giftedness, and (3) teaching the gifted and the teachers of gifted, including relationships between the equity principle in mathematics education and views on the education of gifted. In the paper I outline some actual research questions in the field of education of mathematically gifted.

**Liljedahl, P. & Sriraman, B. (2006). Musings on mathematical creativity. *For The Learning of Mathematics*, 26(1), 20-23.**

Comment from the editor: This conversation began when I introduced the two authors in a hotel lobby in Cap Roig (Spain) after the close of CERME4 [I]. The conversation continued by e-mail well after the evening had ended. (ed.)

**Lithner, J. (2008). A research framework for creative and imitative reasoning. *Educational Studies in Mathematics*, 67 (3), 255-276.**

Abstract: This conceptual research framework addresses the problem of rote learning by characterizing key aspects of the dominating imitative reasoning and the lack of creative mathematical reasoning found in empirical data. By relating reasoning to thinking processes, student competencies, and the learning milieu it explains origins and consequences of different reasoning types.

**Livne, N. L, Livne, O. E. & Milgram, R. M. (1999). Assessing academic and creative abilities in mathematics at four levels of understanding. *Journal of Mathematical Education in Science and Technology*, 30(2), 227-242.**

Abstract: A mapping sentence is developed and used to construct test items measuring academic and creative abilities in mathematics at four levels. The three stages of the process of developing the mapping sentence are described and examples of test items representing each ability/level combination are presented. The mapping sentence technique can be used to produce a psychometric tool designed to contribute to identifying and fostering a wide range of types and levels of mathematical abilities in students.

**Mann, E.L., (2006). Creativity: The essence of mathematics. *Journal for the Education of the Gifted*, 30 (2), 236-262.**

Abstract: For the gifted mathematics student, early mastery of concepts and skills in the mathematics curriculum usually results in getting more of the same work and/or moving through the curriculum at a faster pace. Testing, grades, and pacing overshadow the essential role of creativity involved in doing mathematics. Talent development requires creative applications in the exploration of mathematics problems. Traditional teaching methods involving demonstration and practice using closed problems with predetermined answers insufficiently prepare students in mathematics. Students leave school with adequate computational skills but lack the ability to apply these skills in meaningful ways. Teaching mathematics without providing for creativity denies all students, especially gifted and talented students, the opportunity to appreciate the beauty of mathematics and fails to provide the gifted student an opportunity to fully develop his or her talents. In this article, a review of literature defines mathematical creativity, develops an understanding of the creative student of mathematics, and discusses the issues and implications for the teaching of mathematics.

**Presmeg, N. (2003). Creativity, mathematizing, and didactizing: Leen Streefland's work continues. *Educational Studies in Mathematics*, 54 (1), 127-137.**

Abstract: This reaction to the papers in this PME Special Issue of *Educational Studies in Mathematics* draws a wider perspective on the issues addressed and some of

the constructs used in research in Realistic Mathematics Education (RME). In particular, it tries to show that while the problems addressed existed within the world-wide arena of mathematics education and were not unique to the Dutch educational system, the methods used at the Freudenthal Institute to address them were uniquely adapted to that system yet foreshadowed developments in the wider field of mathematics education. The predictive aspects of mathematizing, didactizing, and guided reinvention, in which *models-of* become *models-for* on various levels, resonate with trends in mathematics education in recent years, including those promoted by the National Council of Teachers of Mathematics in the USA. Research methodologies, too, have broadened to include more humanistic qualitative methods. Developmental research as epitomized in the RME tradition makes the distinction between quantitative and qualitative research obsolete, because there is no restriction on research methods that may be useful in investigating how to improve the teaching and learning of mathematics, and in the designing of mathematics curricula. Thus some aspects of this research resonate with what have come to be known as multitiered teaching experiments. However, in RME there is also a special content-oriented didactical approach that harmonizes with an emphasis on *didactics* (rather than pedagogy) in several other European countries. Some implications are drawn for future research directions.

**Silver, E. A. (1997). Fostering creativity through instruction rich in mathematical problem solving and problem posing. *ZDM*, 3, 75-80.**

Abstract: Although creativity is often viewed as being associated with the notions of “genius” or exceptional ability, it can be productive for mathematics educators to view creativity instead as an orientation or disposition toward mathematical activity that can be fostered broadly in the general school population. In this article, it is argued that inquiry-oriented mathematics instruction which includes problem-solving and problem-posing tasks and activities can assist students to develop more creative approaches to mathematics. Through the use of such tasks and activities, teachers can increase their students’ capacity with respect to the core dimensions of creativity, namely, fluency, flexibility, and novelty. Because the instructional techniques discussed in this article have been used successfully with students all over the world, there is little reason to believe that creativity-enriched mathematics instruction cannot be used with a broad range of students in order to increase their representational and strategic fluency and flexibility, and their appreciation for novel problems, solution methods, or solutions.

**Sriraman, B (2003). Mathematical giftedness, problem solving, and the ability to formulate generalizations . In Sriraman, A. (ed.), *Creativity, Giftedness, and***

***Talent Development in Mathematics (pp. 33-60). Missoula, MT: University of Montana.***

Abstract: Nine freshmen in a ninth-grade accelerated algebra class were asked to solve five non-routine combinatorial problems. The four mathematically gifted students were successful in discovering and verbalizing the generality that characterized the solutions to the five problems, whereas the five non-gifted students were unable to discover the hidden generality.

**Sriraman, B. (2005). Are giftedness & creativity synonyms in mathematics? An analysis of constructs within the professional and school realms. *The Journal of Secondary Gifted Education, 17, 20-36.***

Abstract: At the K-12 level one assumes that mathematically gifted students identified by out-of-level testing are also creative in their work. In professional mathematics, "creative" mathematicians constitute a very small subset within the field. At this level, mathematical giftedness does not necessarily imply mathematical creativity but the converse is certainly true. In the domain of mathematics, are the words creativity and giftedness synonyms? In this article, the constructs of mathematical creativity and mathematical giftedness are developed via a synthesis and analysis of the general literature on creativity and giftedness. The notions of creativity and giftedness at the K-12 and professional levels are compared and contrasted to develop principles and models that theoretically "maximize" the compatibility of these constructs. The relevance of these models is discussed with practical considerations for the classroom. The paper also significantly extends ideas presented by Usiskin (2000).

**Wagner, H. & Zimmermann, B. (1986). Identification and fostering of mathematically gifted students. *Educational Studies in Mathematics, 17 (3), 243-259.***

Abstract: In a three year research project, annual mathematics talent searches for highly able and motivated twelve year old students were conducted. Of these, 150 took part in a long term Saturday enrichment program to train their mathematical abilities in problem finding and problem solving. The article first discusses the educational and organizational constraints of programs for gifted children. Mathematical giftedness is defined by high achievement in two tests: The Scholastic Aptitude Test (SAT-M) and the HTMB, a set of seven problems specially devised for the talent search. The philosophy of the teaching program is explained and illustrated by examples. Preliminary results indicate the considerable success of the program. Possible consequences for normal classroom teaching are indicated.

**Ziegler, A. & Raul Th. (2000). Myth and reality: A review of empirical studies on giftedness. *High Ability Studies*, 11 (2), 113-136.**

Abstract: In this review all empirically based articles published in the years 1997 and 1998 in five acclaimed journals in the field of research of high ability and talent are compared. For this purpose several questions are taken into consideration, including the problems of the identification procedures used, the predominating research questions and the quality of the methodological standards. The results show that it is difficult to compare the studies due to the various procedures used to identify giftedness. In contrast, regarding the thematic orientation of the research studies themselves, the existence of a virulent problem in gifted research could be confirmed. The methodological standards adhered to in the studies give rise to troubling thoughts, possibly the most worrisome outcome being that the integration of a control group occurred in less than one-quarter of the studies. A definitive result of the study is the confirmation that gifted research is conducted within the framework of a fragmented research community where studies are performed under various methodological viewpoints, which are often unsatisfactory. The appearance of approximately one new publication per day is accompanied by the dangers of a metamorphosis of quality into pure quantity and the loss of any sort of conceptual overview. The aim of this article is, therefore, to determine whether these suspicions can be substantiated specifically regarding theoretical and methodological aspects of empirical studies in giftedness research.