

EUROPEAN MEETINGS ON EDUCATIONAL RESEARCH

Part A:

Reports of Educational Research Symposia, Colloquies, and Workshops
organised under the auspices of the Council of Europe

Part B:

European Conferences of Directors of Educational Research Institutions
organised in cooperation with UNESCO, the UNESCO Institute
for Education in Hamburg, and the Council of Europe

PART A: VOLUME 28

- Part B Volume 23 The effectiveness of In-Service Education and Training of Teachers and School Leaders
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COUNCIL OF EUROPE – STRASBOURG
CENTER FOR THE STUDY OF GIFTEDNESS – NIJMEGEN

Education of the Gifted in Europe: Theoretical and Research Issues

REPORT OF THE EDUCATIONAL RESEARCH WORKSHOP
HELD IN NIJMEGEN (THE NETHERLANDS)
23-26 JULY 1991

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SWETS & ZEITLINGER B.V. AMSTERDAM / LISSE

PUBLISHING SERVICE

Library of Congress Cataloging-in-Publication Data

Education of the gifted in Europe: theoretical and research issues : report of the educational research workshop held in Nijmegen (The Netherlands) 23-26 July 1991 / edited by Franz J. Mönks, Michael W. Katzko & Herman W. van Boxtel.

p. cm. -- (European meetings on educational research ; v. 28. Part A, Reports of educational research symposia, colloquies, and workshops organised under the auspices of the Council of Europe)

At head of title: Council of Europe--Strasbourg, Center for the Study of Giftedness--Nijmegen
Includes bibliographical references.

ISBN 90 265 1262 7

I. Gifted children--Education--Europe--Congresses. I. Mönks, Franz J. 1932- II. Katzko, Michael W. 1949- III. Boxel, Herman W. van, 1951- . IV. Center for the Study of Giftedness (Nijmegen, The Netherlands) V Series: European meetings on educational research ; v. 28.

VI. Series: European meetings on educational research ; Part A, Reports of educational research symposia, colloquies, and workshops organised under the auspices of the Council of Europe

LC3997. A1E38 1992

371.95'094--dc20

92-5639

CIP

CIP-gegevens Koninklijke Bibliotheek, Den Haag

Education

Education of the gifted in Europe: theoretical and research issues : report of the educational research workshop held in Nijmegen (The Netherlands) 23-26 July 1991 / edited by Franz J. Mönks, Michael W. Katzko & Herman W. van Boxel. -- Amsterdam [etc]: Swets & Zeitlinger. (European meetings on educational research ; ISSN 0924-0578) vol. 28. Pt. A)

– Met lit. opg.

ISBN 90-265-1262-7

NUGI 724

Trefw.: onderwijs ; begaafde kinderen ; Europa.

Printed in the Netherlands by Offsetdrukkerij Kanters B.V., Alblasserdam

Cover design: Rob Molthoff

Cover printed in the Netherlands by Casparie IJsselstein

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ISBN 90 265 1262 7

NUGI 724

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Giftedness research and education of the gifted and talented in Germany

Kurt A. Heller

Germany

THE INTERNATIONAL STATE OF GIFTEDNESS RESEARCH

The current situation in the research on giftedness and talent is characterized by two contrasting paradigms: the psychometric paradigm on the one hand, and the cognitive science paradigm on the other. This is especially apparent with respect to basic research. Both paradigms, however, should not be viewed as competing but rather in terms of how they complement each other (cf. Carroll, 1983; Sternberg, 1985).

Waldmann & Weinert (1990) expect the cognitive science paradigm to generate important information, especially about the differential psychology of thinking, relevant to the formation of theories on giftedness and talent. But there is a two-sided danger in the extreme inter- and intra-individual variability in behavioural characteristics of gifted persons: unjustified theoretical generalisations as well as an over-production of models, e.g. for explaining the problem-solving behaviour of gifted persons.

The attempt to isolate task-invariant and area non-specific performance predictors, a task which has long dominated the research tradition, is made more difficult by the enormous number of empirically identified cognitive processes. More recent research results indicate a high degree of flexibility in (more advanced) problem-solving processes, where compensatory processes are often observed to operate

among different cognitive determinants. The operation of invariant ability patterns which are independent of the level of giftedness thus seem to be unlikely. The idea that higher-order cognitive competences are responsible for outstanding performances seems more plausible. Thus, it would be logical to examine specific structural and procedural characteristics of the learning and performance behaviour of talented persons.

Similarly, it has been shown in more recent creativity research that divergent as well as convergent thought processes are necessary for creatively solving complex, difficult problems. In other words, the simultaneous use of both components — with sufficient area-specific basic knowledge — increases productivity. In addition to a high level of intelligence and flexible knowledge, spontaneity and quick thinking together with persistence and intrinsic achievement motivation favour creative problem-solving in advanced achievement situations. With the aid of the Chance Configuration Theory by Simonton (1988), this empirical finding can be explained. Through combination or re-combination of available elements of a problem area, cognitive variability is created, resulting in new configurations of those elements. In the experimental diagnosis of intelligence on the basis of item analysis (Klix, 1983) when examining area-specific, complex problem-solving processes or in the construction of new types of exercises of average difficulty (e.g., Sternberg, 1985; Dörner et al., 1983), such new models can be tested and further developed. A systematic combination of general and differential psychological research would be especially promising, according to Waldmann & Weinert (1990).

Within the context of developmental psychology, it is especially interesting to understand how more or less area-specific knowledge can be established apart from relatively general competences of ability. The learning processes involved can cover many years and are also subject to various internal (e.g., motivational) and external (e.g., socialisation and situation context) conditions. For this reason and also because of possible compensatory effects, long-term predictions of performance based on excellent performance in childhood is very difficult. In addition, the relative significance of general intelligence for explaining the performance variance decreases with progressing age, whereas elaborated area-specific basic knowledge for explaining expertise becomes increasingly more powerful. Reliable prediction of individual achievement is thus only possible to a limited degree in childhood and early adolescence (cf. Mönks et al., 1986; Trost, 1986; Heller & Hany, 1986; Heller, 1991).

Apart from a few exceptions (e.g., Tannenbaum, 1983), social factors have so far been neglected in the conceptualisation of giftedness and talent. This theoretical deficit is linked to the psychometric research tradition where test scores (e.g., IQ scores) are regarded as invariant measures over the life span relative to an age-reference group. Even the modern cognitive componental analyses are affected by this false assumption. The culture-comparative research of cognitive psychology, however, indicates that individual personality characteristics are always to be regarded as an interaction between individual and socio-cultural factors.

If a psychological description of this interaction process were attempted, social factors would have to be taken into account in addition to cognitive and noncognitive (motivational) components of the individual. It is these abilities which enable an individual to activate (cf. Mönks, 1985) his potentials in the right social settings (especially of the family, school and the group of friends). On the other hand, these abilities are influenced by the stimulation provided by social authority figures. To develop and empirically examine such system-theoretical models of giftedness would be an additional worthwhile task of the basic research in the field of cognitive abilities.

From a methodological perspective, culture-comparative longitudinal studies are potentially very valuable in the context of giftedness research. Such research would provide important knowledge about social and cultural influences on the development of cognitive abilities as well as about beneficial vs. unfavourable socialisation conditions. Culture-comparative studies are also essential for examining the generalizability of theories. To increase our knowledge about interindividual differences in the field of cognitive abilities, (quasi-) experimental studies would be required, e.g. to shed light on observed sex-specific differences in talent and performance in childhood, adolescence and adulthood.

Applied research differs from basic research primarily in its aims and less in its methods. In the context of giftedness and talent research, applied research, for example, concentrates above all on improving the practical possibilities for identifying and stimulating talented children and adolescents. Applied research is based on knowledge which has been more or less substantiated through basic research; however, such substantiation is often insufficient. As a result, applied research is often subjected to a "pressure to act" on the part of real life. This problem should be an important matter of concern and argues for closer co-operation between basic research scientists and applied researchers.

In the analysis of individual learning and achievement abilities, preference should be given to process diagnostic instead of status diagnostic methods. In particular, multidimensional studies would be required. An improvement in our ability to predict future development and achievement depends on a) sufficiently reliable and valid indicators of giftedness, i.e., of individual cognitive abilities, b) the quality of the measurement of these indicators, and c) the prediction model, which should also take account of moderator variables, critical life events, and random influences on the predictor-criterion relation. Furthermore, it would be necessary to pay attention to nontrivial ability indicators (cf. Berg & Sternberg, 1985; Klix, 1983; Stevenson & Newman, 1986). Such knowledge would be essential for optimizing practical instruction and education measures, the development of ability-related aid programmes and also for interventions in individual cases.

RECENT RESEARCH ON GIFTEDNESS AND TALENT IN GERMANY AND CONSEQUENCES FOR MORE EFFICIENT AID

Since the beginning of the 80s, far more research projects have been planned and carried out in Germany on Giftedness and Talent. The Federal Ministry of Education and Science (BMBW) in Bonn has funded research on topics such as the development of measurement instruments for identifying gifted children and adolescents, the testing of domain-specific vs. non-specific aid concepts inside and outside school, the extension of promoting competitions, advisory services, and also on analysing individual developmental processes and their social conditions of the learning environment and of sex-specific differences in giftedness (especially in mathematics, natural sciences and technology). With the support of the BMBW, national and international conferences and symposia on giftedness and the talented were organized (cf. Cropley et al. 1986; Wagner 1990b; Wiczerkowski & Prado, 1990). Furthermore, the Third European Conference on High Ability (ECHA) will take place in Munich in 1992. In the areas of technical creativity and technology assessment, field studies as well as individual and educational psychological laboratory experiments are presently being funded by the Federal Ministry of Research and Technology (BMFT) and by the Founders' Association for German Science. Other more basic research projects deal with problem-solving strategies and cognitive abilities of the gifted, their metacognitive development, learning and memory strategies, knowledge acquisition, structure of expertise and similar questions of cognitive psychology, and also with the basic neuroscientific and philosophical principles of cognitive abilities. These projects are closely linked with the quasi-experimental intervention studies on changing

unfavourable styles of causal attribution and motivation (e.g. with highly talented girls in the fields of natural sciences and technology), and on the general stimulation of metacognitive abilities, or even with neuroscientific studies, e.g. on "residual abilities" and their substitution in the field of cognitive achievement in the case of brain injuries. These and similar studies are funded mainly by the German Research Society and the VW Foundation. Finally, some cross-cultural studies are being carried out, such as the German/Chinese comparative study on the development of technical creativity (funded by the VW Foundation) and the study on building up technical knowledge as a condition for creative problem solving, involving the participation of scientists from the United States, Canada, Israel, Japan, and China (funded by the BMFT).

This brief review provides a more or less representative picture of current research on giftedness and talent in Germany conducted at university and research institutes (e.g. the Max Planck Institutes). Other projects in the field of applied research aim at developing and testing academic and extracurricular aid programmes, talent-specific counselling concepts, carrying out competitions (e.g. the Olympic Games in mathematics), summercamps or qualification measures for questions concerning talented individuals in the course of an in-service training program. Research projects which meet strict scientific standards are, however, relatively rare, e.g. Birx (1988), Hany & Bittner (1989), Engel (1990), Wiczerkowski & Jansen (1990).

The overall view so far should not hide the fact that despite an obvious increase in research activities over the last ten years, many topics could not be or were insufficiently dealt with scientifically. The following research topics seem important to me with regard to their potential value in supporting the talented in Germany (cf. Heller, 1990b):

- development of instruction concepts of talent didactics;
- curricular development for special academic courses, special classes or even special high schools for certain acceleration groups and for enrichment courses on the extracurricular support of the gifted, including their evaluation (Scriven, 1967; cf. also Scriven, 1980, 1983; Brandtstädter, 1990; Thierau & Wottawa, 1990);
- the construction of process diagnostic identification instruments and the testing of successive decision strategies vs. cluster analytic procedures, multidimensional classification models;

- construction of area-specific counselling tests for talented adolescents;
- longitudinal studies of the gifted including analyses of the living environment over a whole life span;
- study of leisure-time activities of talented adolescents and their influence on personality development;
- career problems of talented girls and women, especially in the fields of mathematics, natural sciences and technology;
- analyses of metacognition, causal attribution (achievement motivation), control of actions, the self-concept of talented adolescents, including sex-specific differences and problems, e.g. regarding situation orientation vs. action orientation (Kuhl 1981, 1987), self-evaluation of heuristic abilities (Dörner et al. 1983);
- quasi-experimental intervention studies for counselling and supporting gifted children and adolescents.

Given appropriate concern for these topics, the main function of research on giftedness and talent should not be forgotten: society's support for the personality development of the gifted individual on the one hand, and the responsibility of the individual to society on the other. Personal responsibility develops from special abilities and abilities to appropriately contribute not only to one's own benefit, but also to the efficiency of the social network and its national economic basis. Differentiation and integration are thus complementary principles. Friction is inevitable when both are not adhered to. The opportunities of a united Germany and its integration into the European and non-European international community will only be successful if the mental resources of our young people can be successfully motivated. This humanistically and economically important aim is gaining world-wide acceptance, which brings us to the next point.

DEFICITS IN THE IDENTIFICATION AND SUPPORT OF TALENTED CHILDREN AND ADOLESCENTS

Problems in the diagnosis of and support or counselling of the gifted have to be considered together. With the exception of high risk groups, e.g. disabled talented girls or children of minority groups, the difficulties of differentiation in instruction and education requires special attention. Despite a number of useful attempts over past few years to identify and support talented children and adolescents, there is lack of convincing evidence of the validity of many techniques, especially those which experts judge as innovative. Here, the requirement-oriented diagnosis and

support concepts (cf. Heller, 1984) could be useful, especially when they are linked to recent results of applied problem-solving research and knowledge psychology. On the other hand, possibilities of psychometric identification, e.g., in the aptitude testing paradigm, have by no means been exhausted (cf., Trost, 1990). There is often a considerable discrepancy between the theoretical (multidimensional) reference model of giftedness and the practical (one-dimensional) identification and stimulation strategies (see, e.g., Rost, 1991; Hany & Heller, 1991; Mönks, 1991). Independent of such controversies, the following topics for improving identification and support can be regarded as urgent (Heller, 1990b):

- advisory aid for talent-orientated education, especially at pre-school and primary school age;
- advisory concepts for talented students, their parents and teachers;
- early identification and support of the talented disabled;
- identification and support of gifted girls (especially in the fields of mathematics, natural sciences and technology);
- identification and support of gifted underachievers;
- didactic possibilities of differential, i.e. talent-oriented, instruction regarding cognitive instruction/learning contents;
- academic stimulation of creativity, in general and also in specific areas;
- general vs. area-specific thought training programmes;
- work training programmes (e.g. for gifted underachievers).

If support of the gifted is widely seen as aid for individual development, then satisfactory results are to be expected if efforts are interdisciplinary in character. An important guiding role can be played by empirical psychology (e.g., in planning the curriculum and developing instruction concepts) and to psychology (especially developmental and educational psychology as well as differential and diagnostic psychology) without underestimating the value of the contributions of other sciences and humanities.

ORGANISATIONAL MEASURES FOR IMPROVING THE STRUCTURE OF THE SUPPORT FOR THE GIFTED IN GERMANY

It is striking that the need of special steps for supporting the talented has, as a rule, been recognized earlier in countries with established uniform school systems than in countries with traditionally structured secondary schools. This observation

also applies to postwar Germany where certain groups of gifted adolescents (e.g., in mathematics or physics, and also in sports or music) were often more intensively supported in the former German Democratic Republic than in the Federal Republic of Germany. In particular, the Federal States of the Federal Republic governed by the Christian Democratic Union, the Christian Social Union and the Free Democratic Party, have increasingly committed themselves to supporting gifted students in secondary schools since the beginning of the 80s although they clearly favour the tripartite secondary school system. In contrast, the Federal States which are governed by the Social Democrats react rather reservedly as to the question of supporting the gifted in public schools. In this respect, public opinion in Germany regarding support for the gifted is still influenced by the educational policy, i.e., it is often more oriented to party policies than to relevant requirements. This is especially obvious where (with the exception of the need for special education) all students of the same age group attend the same type of school, e.g., the obligatory elementary school or the optional comprehensive school from the fifth grade onwards. Here, opposition is at its strongest, at least against external differentiating measures.

In the old as well as in the new Federal States of Germany, the support efforts based on the enrichment principle are predominant (e.g. the Baden-Württemberg extracurricular study groups for supporting especially gifted and interested secondary school students with now more than 3000 participants annually, the Bavarian plus courses, holiday or summercamps). However, support efforts based on the acceleration principle are much rarer; they can still be found in mathematics (e.g. in Berlin, Rostock, Hamburg, and Ulm), and also occasionally in languages or music and sports. Academic organisational acceleration measures are reflected in the recently re-discovered possibility of shortening the duration of studies at school and university (e.g. the Rhineland-Palatinate model with "fast-train classes", and other variants such as lift courses), the eight-year secondary school with special requirements (for gifted students) in Baden-Württemberg from 1991/92 onwards, as well as the programme for university graduates which has been funded jointly by the Federal and State Governments since 1990. In this case, too, the shortening of the duration of studies at university for especially gifted graduates apart from other special qualification requirements is emphasized. In the academic area, it was the private Christophorus-Schule (secondary school), with a boarding school, in Braunschweig which was the first school to gain nationwide recognition. A more detailed description of the situation of the support

of the gifted in Germany can be found in Weinert & Wagner (1987) and Wagner (1990a, 1990b).

Over the past few years, re-discovered topics in support for the gifted have also included sex-specific differences of giftedness and performance, especially in the fields of mathematics, natural sciences and technology (Wieczerkowski & Prado, 1990; Beerman, Heller & Menacher, 1991). Co-education has again become a current topic, including proposals for quota rules to increase female interest in science and research. I am very sceptical that this and similar planning measures will succeed. From the perspective of cognitive psychology, this must be questioned as long as talented girls and women, when compared to comparatively talented males, more often show deficits in achievement motivation, control of actions and in other self-concept variables which are responsible for activating an individual's talent potentials. In other words: organisational measures for the structural improvement in a study and vocational situation, must accompany individual commitment and personal willingness to change unfavourable patterns of motivation and causal attribution. Otherwise there is the risk that such 'outside' aid, by not supporting self-esteem, involves more danger than benefit by provoking helplessness reactions detrimental to self-esteem. An efficiency control of the measures of supporting the gifted, including an evaluation of undesired side effects, thus seems to be just as important as the creative development of concepts and structure-improving measures are for increasing competence which benefits the personality development personality.

In contrast to external measures of talent differentiation, intra-academic and instructional measures of differentiation were rarely criticized in Germany. Despite this consensus of acceptance, the difficulty in realizing a differentiation concept appropriate for all levels of talent in a mixed (heterogeneous) abilities class should not be underestimated. Recent empirical studies seem to support the conclusion that the more capable students are supported to a lesser degree in heterogeneous groups than homogeneous groups (Treiber & Weinert, 1985; Helmke, 1988; Weinert et al., 1989, 1990). In general, the analysis of the learning environment of gifted children and adolescents is an important research task. For this reason, a study (Rost, 1989) has been funded for elementary schools by the Federal Minister of Education and Science since 1988. Important information has also been gained in the Munich longitudinal study on the development of giftedness (Heller, 1990a, 1991) as well as in the evaluation study - running since 1986 and

intended until the year 2000 - on the Baden-Württemberg support of gifted students from secondary schools (cf. Hany & Bittner, 1989).

Finally, there is the task of psychological counselling of gifted children and adolescents as well as their parents and teachers. So far, the Federal Ministry of Education and Science has funded two model projects: An advisory centre in Hamburg, with an emphasis on diagnosis of individual giftedness and individual counselling, and an advisory centre in Munich which offers individual counselling as well as programmes for special courses especially for technically creative students. Moreover, corresponding advisory services are offered to parents seeking advice for their gifted children on the basis of private initiative (e.g., at the University of Tübingen) or by individual regional associations of the German Association for the Gifted Child (now for the whole of Germany); the work is done mostly on an informal basis and without sufficient institutional support. In contrast to the model projects in Hamburg and Munich, the latter initiatives are rarely set up, supervised or evaluated scientifically. It is thus extremely difficult to make an objective assessment of these advisory activities, especially as there are hardly any publications which describe them.

PERSPECTIVES OF AN ALL-GERMAN RESPONSIBILITY FOR THE FUTURE SUPPORT OF THE GIFTED

The conference "Research of Giftedness and Talent and Support of the Gifted in Germany 1980-1990-2000" (Wagner, 1990b), organized by the Society of Education and Giftedness in Bonn, attempted not only to give an overall view of the 80s but, for the first time, also made it possible for a larger number of colleagues from East Germany to exchange information with their colleagues from the West and to discuss future tasks in the united Germany. There was agreement that there should be closer co-operation in the future, in research as well as in the practical field of supporting the gifted. In both cases, however, considerable difficulties emerged and it will still take some time to overcome them.

The study on metacognition, which has been jointly conducted by psychologists of the University of Leipzig and the University of Munich (and funded by the VW Foundation) since 1990, could be an example of other German-German co-operation projects. This project examines the developmental conditions of metacognition and metamemory as well as the corresponding influences of the social learning environment. Regularly conducted workshops of both project teams

have proved worthwhile. They do not only serve to co-ordinate the work in the project. An open exchange of information and experience makes it easier to solve the technical research problems which exist in the new Federal States. These problems concern financing the research, applicational procedures regarding financial support from third parties, which are of concern to everyone. In addition to structural improvement measures, new research projects should be planned and defended before experts from the German Research Society and other sponsors, e.g. the VW Foundation, the Federal Minister of Science and Technology, and the Federal Minister of Education and Science.

In view of the fact that, in the field of research of giftedness and talent, independent basic research was rarely possible and freely applied research was not at all possible in the former German Democratic Republic, especially the younger colleagues from East Germany are confronted with the need to be integrated into the international standards and research strategies as quickly as possible. This seems to be specifically a German task, and of course not only in the context of research on giftedness. The postgraduate project for the qualification of especially gifted scientists of the newer generation (graduate students studying for a doctorate and postgraduates), recently brought to life by the Federal and the 16 State Governments, can take over an important function also regarding all-German responsibility.

Similar possibilities for the research of the gifted should be explored in secondary schools. Apart from existing aid projects (especially for the financial support of the gifted) and different programmes (e.g. competitions organized by the State and Federal Governments in different disciplines, summer academies or summercamps) the main focus of attention for future tasks should lie in the development of talent-specific curricula and a broad educational and psychological advisory service. Finally, the primary structural development requirements include advanced training of teachers, counselling teachers, school psychologists, course and vocational advisors for questions concerning giftedness, and above all the recognition and individual support of gifted children and adolescents. Uniquely German problems arise in view of the necessary new orientation of the school system in the five new Federal States. For coping with these and other tasks, close and trusting co-operation of all those in the reunited Germany is required. Many problems, however, cannot be solved only on a national level. Especially with respect to research of the gifted, European and broader international cooperation

is essential, both in theoretical development as well as the more practical considerations regarding utility.

References

- Beerman, L., Heller, K. A. & Menacher, P. (1991). *Mathe - nichts für Mädchen? Begabung und Geschlecht am Beispiel von Mathematik, Naturwissenschaft und Technik*. Bern: Huber.
- Berg, C. A. & Sternberg, R.J. (1985). Response to novelty: Continuity versus discontinuity in the developmental course of intelligence. In H.W. Recse (Ed.), *Advances in child development instruction* (pp. 381-414). Hillsdale, NJ: Erlbaum.
- Birx, E. (1988). *Mathematik und Begabung*. Hamburg: Krämer.
- Brandstädter, J. (1990). Evaluationsforschung: Probleme der wissenschaftlichen Bewertung von Interventions- und Reformprojekten. *Zeitschrift für Pädagogische Psychologie*, 4, 215-227.
- Carroll, J.B. (1983). Studying individual differences in cognitive abilities: Through and beyond factors analysis. In R.F. Dillon & R.R. Schmeck (Eds.), *Individual differences in cognition*, Vol. 1 (pp. 1-34). New York: Academic Press.
- Cropley, A.J., Urban, K.K., Wagner, H. & Wiczerkowski, W. (Eds.). (1986). *Giftedness: A continuing worldwide challenge*. New York: Trillium Press.
- Dörner, D., Kreuzig, H.W., Reither, F. & Stäudel, T. (1983). *Lohhausen. Vom Umgang mit Unbestimmtheit und Komplexität*. Bern: Huber.
- Engel, W. (1990). Förderung mathematisch begabter Schüler außerhalb des Unterrichts und durch Spezialschulen in der DDR bis 1990. Wie geht es weiter? In H. Wagner (Ed.), *Begabungsforschung und Begabtenförderung in Deutschland 1980-1990-2000* (pp. 211-226). Bad Honnef: Bock.
- Hany, E.A. & Bittner, R. (1989). Ergebnisse der wissenschaftlichen Begleitung zum Modellversuch "Arbeitsgemeinschaften für besonders befähigte Schüler" in Baden-Württemberg. Vierter Zwischenbericht. München: Universität, Fak. Psychologie.
- Hany, E.A. & Heller, K.A. (1991). Gegenwärtiger Stand der Hochbegabungsforschung. *Zeitschrift für Entwicklungspsychologie und Pädagogische Psychologie*, 13, 241-249.
- Heller, K.A. (Ed.). (1984). *Leistungsdiagnostik in der Schule*. 4. Aufl. Bern: Huber.
- Heller, K.A. (1990a). Die Münchner Längsschnittstudie zur Hochbegabung und einige Folgeprojekte. In H. Wagner (Ed.), *Begabungsforschung und Begabtenförderung in Deutschland 1980-1990-2000* (pp. 34-45). Bad Honnef: Bock.
- Heller, K.A. (1990b). Zukunftsperspektiven der Hochbegabungsforschung. In H. Wagner (Ed.), *Begabungsforschung und Begabungsförderung in Deutschland 1980-1990-2000* (pp. 276-284). Bad Honnef: Bock.

- Heller, K.A. (1992) (Ed.). *Hochbegabung im Kindes- und Jugendalter*. Göttingen: Hogrefe.
- Heller, K.A. (1991). The Nature and Development of Giftedness. *European Journal for High Ability*, 2, 174-188.
- Heller, K.A. & Hany, E.A. (1986). Identification, Development and Achievement Analysis of Talented and Gifted Children in West Germany. In K.A. Heller & J.F. Feldhusen (Eds.), *Identifying and Nurturing the Gifted*. An International Perspective (pp. 67-82). Toronto, Lewiston/N.Y., Bern: Huber.
- Helmke, A. (1988). Leistungssteigerung und Ausgleich von Leistungsunterschieden in Schulklassen: unvereinbare Ziele? *Zeitschrift für Entwicklungspsychologie und Pädagogische Psychologie*, 10, 45-76.
- Klix, F. (1983). Begabungsforschung - ein neuer Weg in der kognitiven Intelligenzdiagnostik? *Zeitschrift für Psychologie*, 191, 360-387.
- Kuhl, J. (1981). Motivational and functional helplessness: The moderating effect of state versus action orientation. *Journal of Personality and Social Psychology*, 40, 155-177.
- Kuhl, J. (1987). Action control: The maintenance of motivational states. In F. Halisch & J. Kuhl (Eds.), *Motivation, intention, and volition* (p. 279-292). Berlin: Springer.
- Mönks, F.J. (1985). Hoogbegaafden: een situatieschets. In F.J. Mönks & P. Span (Eds.), *Hoogbegaafden in de samenleving*. Nijmegen: Dekker & van de Vegt.
- Mönks, F.J. (1991). Kann wissenschaftliche Argumentation auf Aktualität verzichten? *Zeitschrift für Entwicklungspsychologie und Pädagogische Psychologie*, 13, 232-240.
- Mönks, F.J., van Boxtel, H.W., Roelofs, J.J.W. & Sanders, M.P.M. (1986). The Identification of Gifted Children in Secondary Education and a Description of Their Situation in Holland. In K.A. Heller & J.F. Feldhusen (Eds.), *Identifying and Nurturing the Gifted*. An International Perspective (pp. 39-65). Toronto, Lewiston/N.Y., Bern: Huber.
- Rost, D.H. (Ed.). (1989). Lebensumweltanalyse besonders begabter Grundschul Kinder. Forschungsbericht Nr. 2, Band I. Marburg: Universität, Fak. Psychologie.
- Rost, D. (1991). Identifizierung von "Hochbegabung". *Zeitschrift für Entwicklungspsychologie und Pädagogische Psychologie*, 13, 197-231.
- Scriven, M. (1967). The methodology of evaluation. In R.E. Stake (Ed.), *AERA monograph series on curriculum evaluation*, 1, 39-83. Chicago: Rand McNally.
- Scriven, M.S. (1980). *The logic of evaluation*. Inverness, CA: Edgepress.
- Scriven, M.S. (1983). Evaluation ideologies. In G.F. Madaus, M. Scriven & D.L. Stufflebeam (Eds.), *Evaluation models: Viewpoints on educational and human services evaluation* (p. 229-260). Boston, MA: Kluwer-Nijhoff.

- Simonton, D.K. (1988a). Age and outstanding achievement: What do we know after a century of research. *Psychological Bulletin*, 104, 251-267.
- Simonton, D.K. (1988b). *Scientific genius. A psychology of science*. Cambridge: Cambridge University Press.
- Sternberg, R.J. (1985). *Beyond IQ: A triarchic theory of human intelligence*. Cambridge: Cambridge University Press.
- Stevenson, H.W. & Newman, R.S. (1986). Long-term prediction of achievement and attitudes in mathematics and reading. *Child Development*, 57, 646-659.
- Tannenbaum, A.J. (1983). *Gifted Children: Psychological and Educational Perspectives*. New York: MacMillan.
- Thierau, H. & Wottawa, H. (1990). Evaluationsprojekte: Wissensbasis oder Entscheidungshilfe? *Zeitschrift für Pädagogische Psychologie*, 4, 229-240.
- Treiber, B. & Weinert, F.E. (1985). *Gute Schulleistungen für alle? Psychologische Studien zu einer pädagogischen Hoffnung*. Münster: Aschendorff.
- Trost, G. (1986). Identification of Highly Gifted Adolescents - Methods and Experiences. In K.A. Heller & J.F. Feldhusen (Eds.), *Identifying and Nurturing the Gifted. An International Perspective* (p. 83-91). Toronto, Lewiston/N.Y., Bern: Huber.
- Wagner, H. (Ed.). (1990a). *Begabtenförderung in der Schule: Pädagogische Modelle in der Diskussion*. Bad Honnef: Bock.
- Wagner, H. (Ed.). (1990b). *Begabungsforschung und Begabtenförderung in Deutschland 1980-1990-2000*. Bad Honnef: Bock.
- Waldmann, M. & Weinert, F.E. (1990). *Intelligenz und Denken. Perspektiven der Hochbegabungsforschung*. Göttingen: Hogrefe.
- Weinert, F.E. & Wagner, H. (Eds.). (1987). *Die Förderung Hochbegabter in der Bundesrepublik Deutschland: Probleme, Positionen, Perspektiven*. Bad Honnef: Bock.
- Weinert, F.E., Helmke, A. & Schneider, W. (1989). Individual differences in learning performance and in school achievement: Plausible parallels and unexplained discrepancies. In H. Mandl, E. de Corte, N. Bennett & H.F. Friedrich (Eds.), *Learning and instruction* (p. 461-479). Oxford: Pergamon Press.
- Weinert, F.E., Schrader, F.-W. & Helmke, A. (1990). Educational Expertise: Closing the Gap between Educational Research and Classroom Practice. *School Psychology International*, 11, 163-180.
- Weinert, F.E., Schrader, F.-W. & Helmke, A. (1990). Unterrichtsexpertise - ein Konzept zur Verringerung der Kluft zwischen zwei theoretischen Paradigmen. In L.-M. Alisch, J. Baumert & K. Beck (Hrsg.), *Professionswissen und Professionalisierung* (Braunschweiger Studien zur Erziehungs- und Sozialarbeitswissenschaft: Bd. 28 (pp. 173-206). Empirische Pädagogik, Sonderband. Braunschweig: Copy-Center Colmsee.

- Wieczerkowski, W. & Jansen, J. (1990). Mädchen und Mathematik: Geschlechtsunterschiede in Leistung und Wahlverhalten. In W. Wieczerkowski & T.M. Prado (Eds.), *Hochbegabte Mädchen* (p. 134-151). Bad Honnef: Bock.
- Wieczerkowski, W. & Prado, T.M. (Eds.). (1990). *Hochbegabte Mädchen*. Bad Honnef: Bock.