

**PSYCHOLOGICAL ASPECTS  
OF  
GIFTED EDUCATION**

**2008**



# PSYCHOLOGICAL ASPECTS OF GIFTED EDUCATION

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- Editors: Ferenc MEZŐ & Szilvia PÉTER-SZAKA  
Department of Educational Psychology  
University of Debrecen, Hungary
- Lectured by: László TÓTH (PhD)  
Head of Department of Educational Psychology  
University of Debrecen, Hungary
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Send all inquiries to:

Kocka Kör  
Debrecen (Hungary)  
Tarján u. 55.  
H-4032  
E-mail: [info@kockakor.hu](mailto:info@kockakor.hu)

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## PREFACE

Research on giftedness has a tradition of two decades in the Department of Educational Psychology at the University of Debrecen, under the heading of László Balogh and László Tóth. This book summarizes (without the claim of completeness) the most important steps and research results that were accomplished during the past few years, so it presents segments of researches that were conducted in our Department. It contains essays and studies of teachers and PhD students of the Department of Educational Psychology and other departments of the Institute of Psychology.

As the title suggests, this collection of studies mostly covers the psychological aspects of gifted education and talent nurturing, but the studies are often bordering with other educational or applied psychological fields. Consequently, this book contains a varied and interesting compound of articles. It is addressed to researchers, as well as teachers or other experts involved in gifted education. University students and participants of teacher training courses may also make use of this book, as in addition to specific or applied topics on talent nurturing, some more general, theoretical reviews are also included. It may also serve as a usable and available source of material for English-speaking, foreign students.

The topics of this volume can be divided into two chapters: talent identification and talent development. The first chapter contains three studies. The first one summarizes general theoretical issues, then in the second study the author tries to find an answer for a question that is still open: should we lean on tests or opinions when deciding on giftedness? The third study of this chapter presents a possible way of early identification, by the investigation of executive functions in early childhood. The second chapter of the book contains seven papers. The first one gives us a general, theoretical outline of talent development that may serve as a basis for the appropriate interpretation of the following studies. The next writing summarizes the research results of a longitudinal study that investigates the changes and development of 10-12-year old talented children's motivation and learning strategies in two different environments, in 'integrated' and in 'selected' classes. The next three studies focus on special practical, and sometimes neglected problems of gifted education: the development of learning methods, motivation and personality. All these studies are based on the practical or research experiences of the authors, pointing out the functioning of general mechanisms under special circumstances. The last two papers present a segment of sport psychology that is an interesting domain of applied psychology, focusing on programs aiming at the development of sport-giftedness.

Hopefully our readers will get an impression about the rich variety of psychological aspect of gifted education, and this book will promote the dynamic growth of further research on talent development and the proper implementation of programs in gifted education both in Hungary and abroad.

Szilvia Péter-Szarka, Ferenc Mező  
Editors

## ❧ TALENT IDENTIFICATION ❧

### ASPECTS OF TALENT DIAGNOSTICS

Ferenc MEZŐ

(University of Debrecen, Department of Educational Psychology)

E-mail: mezof@freemail.hu

*Although identification and in-selection (to a talent development program) of the gifted at schools has a considerable tradition worldwide, this question has been still open nowadays. The aim of this study is to show the general steps and problems of talent diagnostics.*

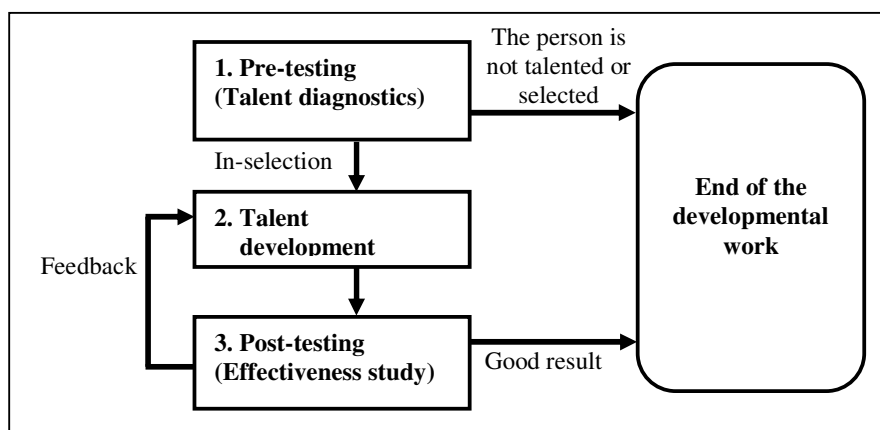
**Keywords:** talent identification; in-selection; talent diagnostics

The role of talent diagnostics in talent development programs is of capital importance. It helps: a) to identify the talented persons, b) to choose those persons who can be selected into a talent development program, c) to measure the effectiveness of talent development programs (Balogh & Tóth, 2001). Figure 1 shows the relationship between talent diagnostics and development. Objectives of 'pre-testing' are:

- talent identification, and/or
- in-selection to a talent development program,
- determining the developmental areas of a program.

The main purpose of talent development is to develop the strong and/or weak side(s) of the talented/in-selected persons. Objective of 'post-testing' is to control the effects of the talent development program.

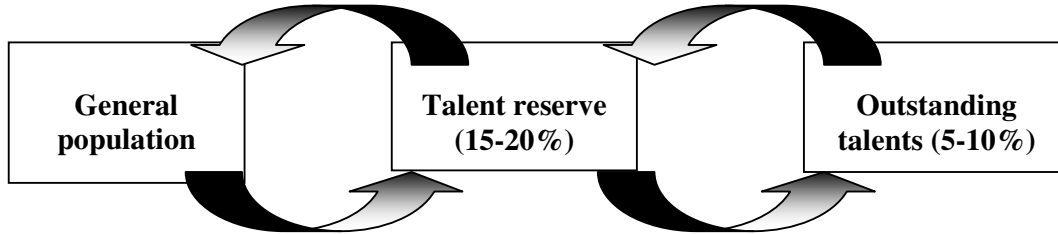
*Figure 1: Relationship of talent diagnostics and development (Mező and Mező, 2005, p. 8.)*



The Revolving Door Identification Model (RDIM by Renzulli, 1979) is based on the assumption that we cannot predetermine which students are or are not gifted (Figure 2.). The RDIM is a flexible identification model designed for education. It begins by identifying a group of students in the top 15-20% of the school population in general ability, to form the

Talent Pool. Renzulli defines it as the *first level* of identification. *Second level* identification assesses the talent pool students in regular and special program activities, as a result of which they can get into the group of the highly gifted (5-10%) and can get advanced level enrichment experiences. Decisions on members of groups are continuously revised, which means that according to advancing or declining performance of students, earlier grouping can be corrected.

Figure 2: The Revolving Door Model by Renzulli



The general steps of the planning of talent diagnostics are (Mező, 2004):

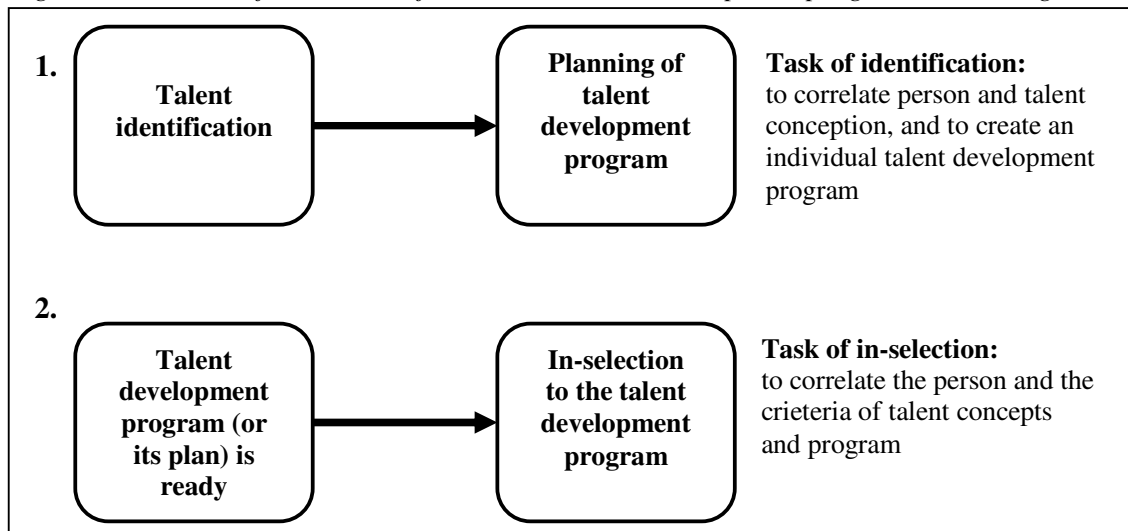
1. Defining the goals and areas of talent diagnostics;
2. Choosing/creating a talent conception applied;
3. Defining the criteria of identification/in-selection;
4. Planning of examination(s);
5. Defining models and process of in-selection;
6. Technical planning;

### Defining the goals and areas of talent diagnostics

First we have to define the specific talent areas (e.g.: mathematics, football, intellectual area etc.) and general goals of talent diagnostics (e.g.: do we want to carry out talent identification or selection into a specific talent development program?).

'Identification' and 'in-selection' – they are not synonymous concepts, but refer to similar procedures (Figure 3). Talent identification is not equal with selection into a program (in-selection). What is the difference between these notions?

Figure 3: Relations of talent identification and talent development programs according to time





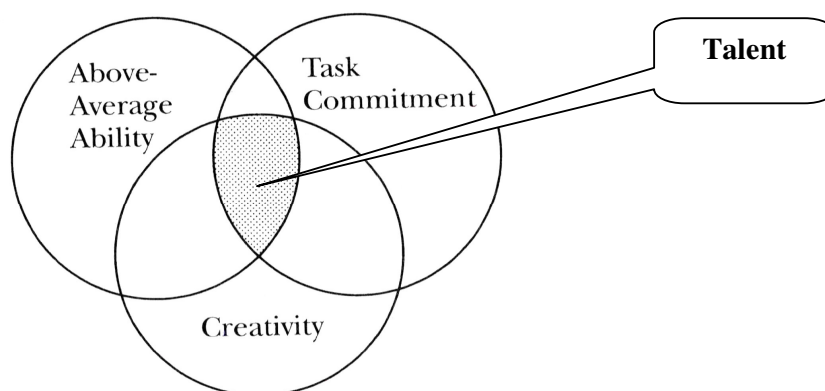
In case of talent identification we correlate persons to an applied talent concept. After identification we either create or choose an individual talent development program for the talented students, or development is not realised (e.g.: in case of a research or a study).

Selection into a defined development program focuses on the applied talent concept and the special characteristics of the given talent development program. Accordingly, task of in-selection is to compare students to the criteria of the applied talent concept and the criteria of the program, too.

### **Choosing/creating a talent conception applied**

We have to decide on a talent conception that is applied for the identification and/or in-selection. It works as a frame of interpretation of our further work and defines the basic principles of talent diagnostics. The talent conception we choose can be one that has been already formulated by an author - e.g.: Terman's (Talent = high intelligence), Scheifele's (Talent = high creativity), Renzulli's (interactive areas of talent are: above average abilities, creativity, and task commitment –see: Figure 4), etc. conception (see: Terman, 1925; Scheifele, 1953; Renzulli, 1979) or we can create our own one.

*Figure 4: Renzulli's 'Three ring model' of talent*



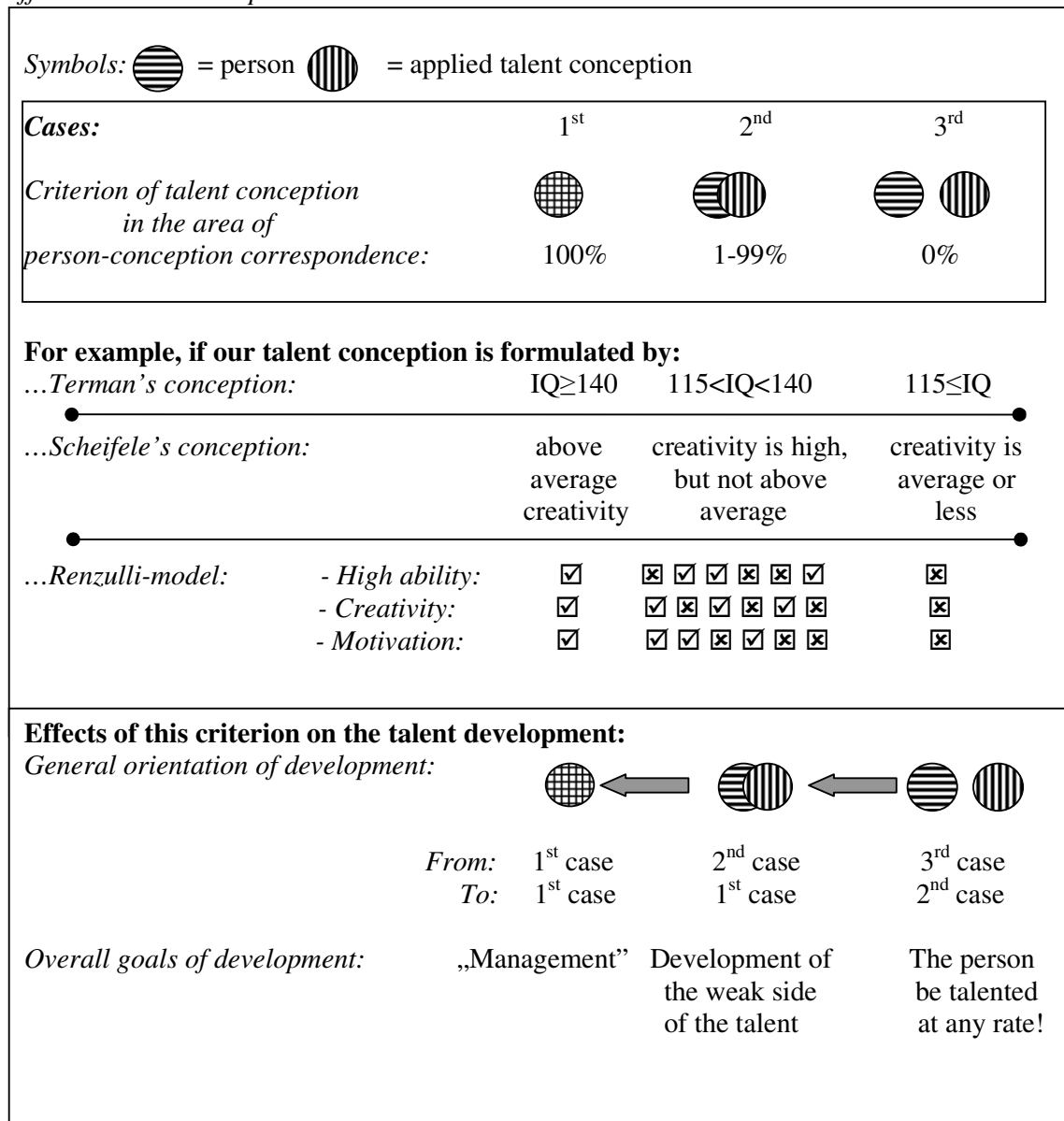
### **Defining the criteria of identification/in-selection**

There are two types of criteria: criteria of talent conception applied and criteria of a talent development program. In case of talent identification we have to define the criteria of talent conception applied. In case of in-selection we have to define the criteria of talent conceptions applied and the talent development program too.

*Criteria of talent conception.* We have to determine the relationship between the selected persons and the applied talent conception. It is an important decision, because it has an effect on the general orientation and goals of talent development program (see: Figure 5)

*Criteria of talent developmental programs.* In case of in-selection, we have to focus on the distinctive characteristics of the program. For example: if it is a program for children with underprivileged social background or only girls/boys or other special group of talented persons, then we have to take these facts into consideration.

Figure 5: Relationship between selected persons and the applied talent concept and its effect to talent development

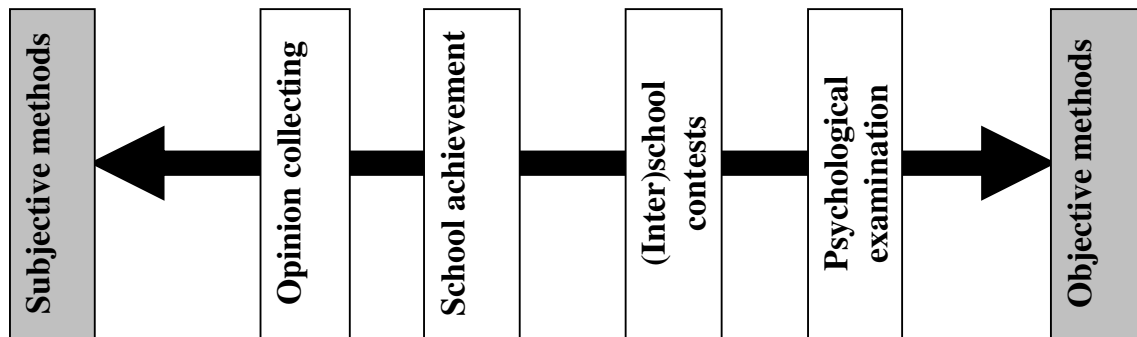


**Planning examination(s) for talent identification/in-selection**

After defining the criteria of talent identification/in-selection, we have to plan examination(s) that suit these conditions. At this point of planning, decisions should be made about the areas of diognistical methods and the threshold values.

There are four generally used methods of talent diagnostics in school environment. These are the diognistical methods of a) opinion collecting, b) school achievement, c) results of (inter)school contest, d) psychological examinations. These methods are ranged according to their objectivity, as Figure 6 shows.

Figure 6: Subjective-objective methods of the talent identification in school



We have to define the threshold values applied, too:

Threshold level of talent: an examinational value from which someone can be declared as talented.

Threshold level of in-selection: examinational value from which someone can be selected into a talent development program. It has two types:

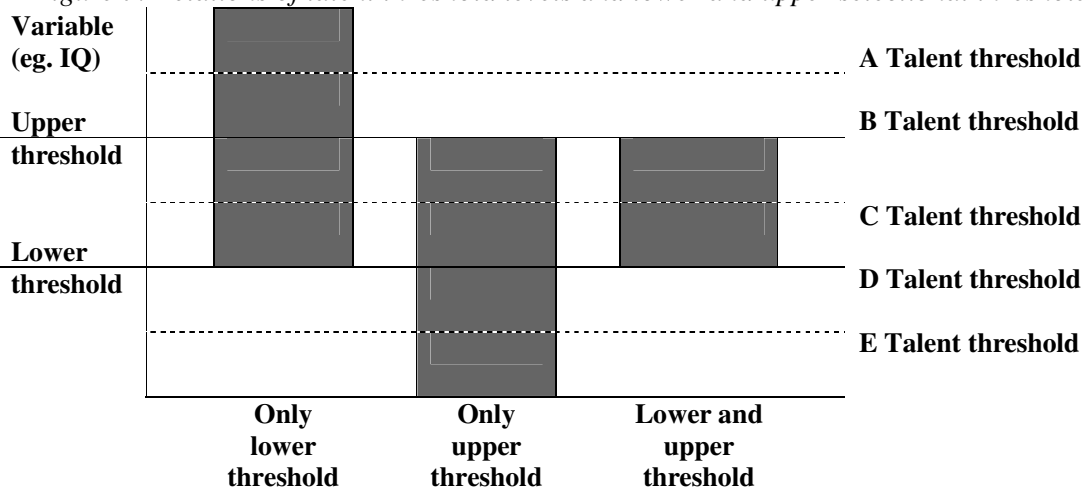
- a) lower threshold: the minimum value of being selected
- b) upper threshold: the maximum value of being selected (If someone has a better result than the upper threshold of a talent development program, an alternative program should be suggested or created for him/her, because the actual program will not be ideal for this person!!!).

Threshold values of talent and in-selection can be:

- a) absolute value. E.g.: the 135 IQ-value in Terman’s talent conception.
- b) relative value. E.g.: the ‘above average’ ability in Renzulli’s model, or the ‘best 10 persons’ of a scholl contest, or the ‘upper 20%’ of an examination, etc.

Figure 7 shows the relations of threshold levels of talent and in-selection. In this figure, black columns show the characteristics of the selected persons in the three cases of the category axis. The A, B, C, D and E lines symbolize the hypothetical values of the talent threshold. In the case of B and D lines the talent threshold is identical with the lower or upper selectional threshold. In the case of A, C and E lines the talent threshold is not identical with the selectional thresholds (Compare Figure 5!).

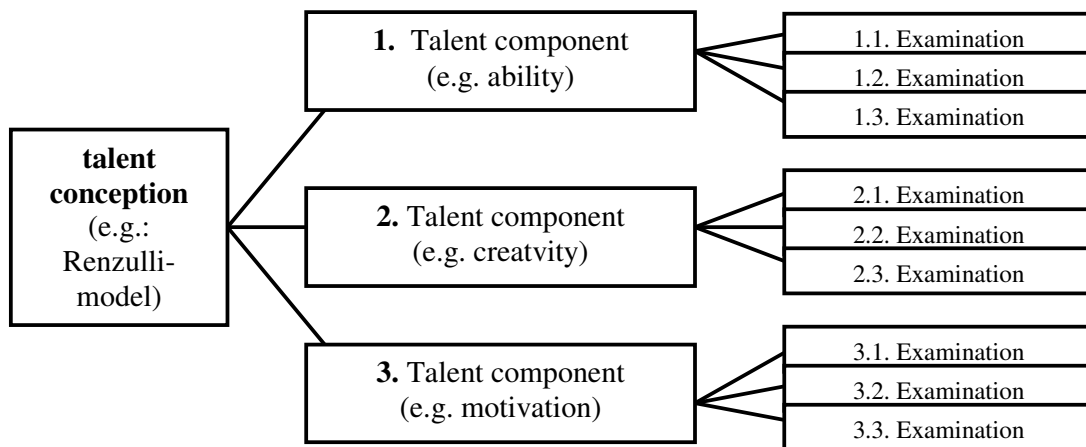
Figure 7: Relations of talent threshold levels and lower and upper selectional thresholds



### Defining models and process of in-selection

How can we determine the most appropriate ways and methods of identification taking professionalism and economical aspects (saving time and money) into account? If, for example, our applied talent concept is the widely known Renzulli-model, we have to examine abilities, creativity and motivation. If each of these fields is measured by three methods, we will get nine results together (Figure 8). But how can the diagnostical work be economically organized? How will the talented person be identified according to these results?

Figure 8. If we use 3-3 methods to assess the three components of the Renzulli-model, the total number of examinations will be 9.



If we choose measures efficiently, our work we will be professional and economical, as well. Now let us see three models of defining methods for identification:

a) *The hierarchical-model.* According to the hierarchical-model, selection has several stages and only those students can step forward to a higher stage who are in accordance with the criteria defined (Figure 9). Those who do not match the criteria of the talent concept or the program, drop out from the following steps of talent diagnostics. In this model examinations are structured as subject to economical (money and time-saving) aspects. Cheap, inexpensive methods are generally used in the earlier phases of diagnostical work, as the number of participants is relatively high at this stage. In later stages of selection more expensive methods can be used, as well, because the number of participants is less then before.

This widely-used method has a great disadvantage: if someone is dropped out at an early stage of selection (e.g. the stage of motivation diagnostics), his/her possible strong fields will not be revealed at all (e.g. s/he is the most intelligent and creative person in the world). The summarizing-model of identification answers this problem.

b) *The summarizing-model.* Figure 10 shows the central elements of selection according to the summarizing-model. Every student takes part in all examinations, which means that if we study 100 persons and we use 3 mesaures, we get 300 results together. It requires more time and money than selection by the hierarchical-model, but in the case of this model nobody

Figure 9: The hierarchical-model

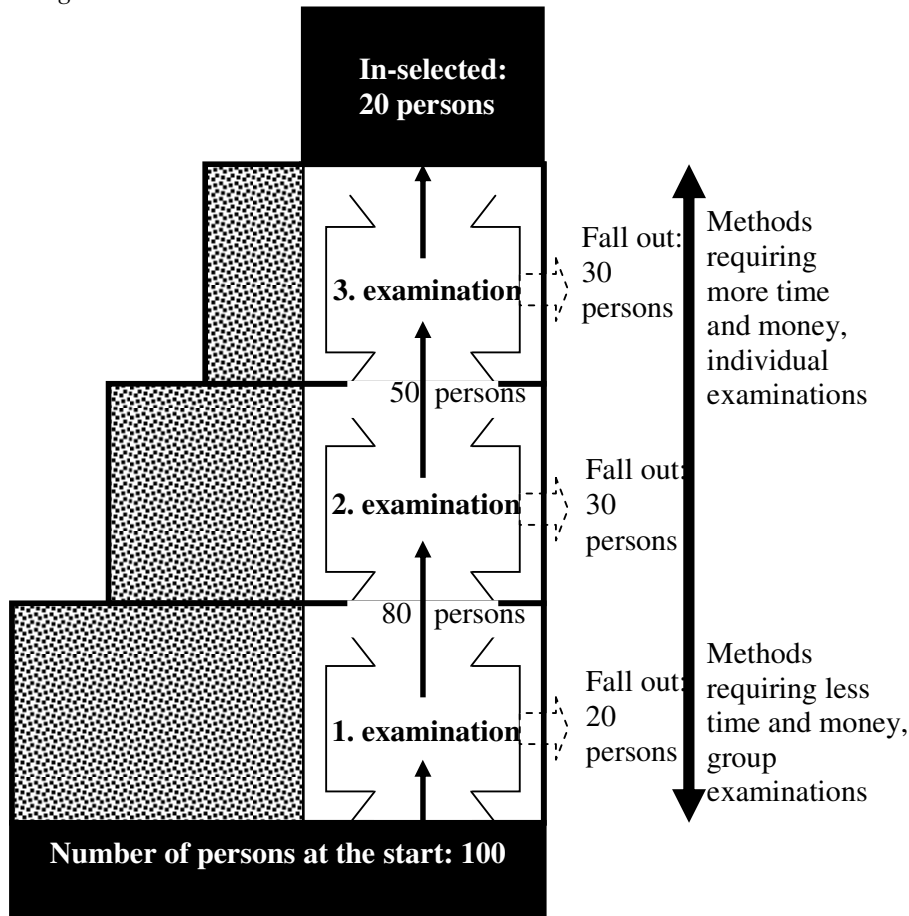


Figure 10: Examples for summarizing-model of selection

<b>A. Result:</b> <b>10</b>	=	<b>Exam 1:</b> <b>5</b>	+	<b>Exam 2:</b> <b>0</b>	+	<b>Exam 3:</b> <b>5</b>
<b>B. Result:</b> <b>0</b>	=	<b>Exam 1:</b> <b>5</b>	*	<b>Exam 2:</b> <b>0</b>	*	<b>Exam 3:</b> <b>5</b>
Number of participants =	100			100		100
Number of seats & papers =	100			100		100
Interpretation of data =	100			100		100
Get into the program	=	20 persons				
Drop out from the program	=	80 persons				

drops out too early because of one bad result. It means that if somebody is very intelligent and creative, but not motivated, s/he can be identified as gifted, and offered an individual development program.

When applying the Summarizing model, results of measures can be collected and summarized by various principles. Principles of the summarizing process determine the final results of talent identification, as shown in the examples above. Mathematical operations of the examples are not absolute ones, there are other ways of summarizing the results.

c) *The mixed model.* Using the mixed model means that both hierarchical and summarizing models are applied in a given part of the selectional procedure.

### **Technical and organizational steps of identification/in-selection**

Technical plan of talent identification consists of the following steps:

- Organization of a work-team
- Advertising for talent identification/in-selection
- Registration of the applicants
- Correction of the professional plan
- Inviting the applicants
- Execution of examination(s)
- Evaluation and decision-making
- Feedback to applicants
- Completion, end of work
- Financial planning

### **References**

- Balogh, László – Tóth, László (Eds.)(2001): *Gifted Development at Schools: Research and Practice*. University of Debrecen, Department of Educational Psychology, Debrecen.
- Mező, Ferenc (2004): *A tehetség tanácsadás kézikönyve*. (Handbook of guidance for the gifted). Tehetségvadász Stúdió – Kocka Kör Tehetséggondozó Kulturális Egyesület, Debrecen.
- Renzulli, J. (1979): *What makes giftedness: A reexamination of the definition of the gifted and talented*. Ventura (California), Ventura County Superintendent of Schools Office.)
- Scheifele, M. (1953): *The gifted child in the regular classroom*. New York: Bureau of Publications, Teachers College, Columbia University
- Terman, Lewis. M. (1925): *Mental and physical traits of a thousand gifted children*. Stanford (California): Stanford University Press

## TESTS OR OPINIONS? A PROBLEM OF IDENTIFICATION OF GIFTEDNESS

Ferenc MEZŐ

(University of Debrecen, Department of Educational Psychology)

E-mail: mezof@freemail.hu

*The central issue of the current study is to compare peers', teachers', and the persons' opinions, who are in the focus of identification of giftedness to each other and to the results of more objective instruments of measurement. Our aim is to gain experience about the interest reliability between opinion- and test-results, about the reliability of equivalent forms between opinions from different sources, and about the effect of the different types of opinions, measured personality-variables, sex, and age on the results. Furthermore, the aim of our research is to disclose and compare the organization of cognitive and non-cognitive personality-variables in relation to the results stemming from different persons' opinions and methods of measurements.*

**Keywords:** giftedness; talent identification; reliability; abilities; implicit personality-theory

Identification and differentiated care of gifted students is one of the most important questions of today's education (Balogh, 2004; Balogh and Tóth, 2001). Although identification and care of giftedness in school have a considerable tradition worldwide, this question has been still open nowadays. Whatever happens in the pedagogical programs of educational institutes in Hungary, the motive of caring for gifted students turns up in an emphasized way. When exploring its causal background we can emphasize four factors. The first factor is the possibility given by the law of education. The second one can be the professional calling. The third factor can be the advertisements campaign carried out in the terms of fascination of care of "giftedness". This campaign may result in success in "the battle for the souls who need to start being educated". This battle can be observed between schools year by year. The fourth factor can be the fact that the care of giftedness is a good investment for schools, especially when the efficiency of a given institute is measured by the prominent achievements of gifted students – either at national or at international level. Such a school can acquire "name", acknowledgement, and even financial advantages. Whatever motives may lie in the background the educational institutes undertaking the care of giftedness in school have to face the problems of identification of giftedness (Mező, 2004).

When planning and executing the identification of giftedness we have to form our opinions in several questions. What are these questions and opinions? For example, what does "giftedness" mean in our opinion? Terman (1925), Scheifele (1953), Otto (1957), Marland (1972), Renzulli (1979), Mönks and Renzulli (see: Mönks and Mason, 2000), Gagné (1985), Czeizel (see: Czeizel and Erős, 1995), Heller (1990), Ziegler and Perleth (1997), Ogilvie (1973), and many other authors have tried to answer the previous question (see: Balogh, 2004; Mező, 2004). Their answers, however, are often in contradiction with each other. Some other questions, which arise often, too are: What components does the concept of giftedness have? Which method is the best one to measure whether somebody is gifted or not? What is the most appropriate procedure to identify gifted students: using school-marks, psychological tests, the results of competitions, opinions from teachers/students? Alternatively: if I decide to

use psychological measurements and I have to take into account general intelligence, which is the most rational intelligence test among the many? Retaining the same example, if we use a given intelligence test for identifying giftedness, where do we have to set “the limit of giftedness”: at the IQ-score of 115 or 130, or should we regard the upper 5-10% as gifted? One group of these questions applies to the wider sets of problems of identification of giftedness (these problems can be discussed also independently of the identification); the other group of the questions aims at the problematic fields of practical, technical aspects of the concrete identification of giftedness.

What kind of possibilities does a school have, if it would like to identify gifted students attending its institute? The potential ways of identification of giftedness in school are organized between the two extremes of the subjective and objective methods. Do these procedures lead to the same results? Are the same students selected into a program for the gifted no matter whether we collect opinions or if we apply psychological methods? Can these methods substitute each other? When we form questions like these, it has a practical significance. If it turns out that, test-results and opinions have a strong correlation with each other, then, on the one hand, those can be substituted with each other; on the other hand, it is redundant to apply them parallel, since they would lead to the same result. If the contrary proves to be right, then we have to acknowledge that the decision over the method of identification determines the end result of the identification of giftedness; whereas if we apply these methods combined with each other we can get a more precise, more detailed picture of a given student.

Another very interesting question is how human features are organized in students’ and educators’ implicit personality-theories? Do we think in the same way or do we think differently if we as students form opinions about ourselves, or about our classmates. The teachers’ opinions as a school factor cannot be forgotten. Does the implicit personality-theory behind the teachers’ opinions correspond to the one of the students, or do the both differ? The question here is of practical significance from two points of view: 1) if we would like to execute the identification of giftedness in school by collecting opinions, it is worth to know what kind of personality-theories can be found behind the ways how each person in school form their opinions? What kind of rules organizes/distorts their opinions? 2) the properties of opinions regarding personality-traits accompanying each other and their consequences in behaviour are determinative in the case of human relationships in everyday life (for example, teacher-student, student-student), or in the case of school-carrier, and in the case of how one feels too. What we experience is also important if we compare these implicit personality-theories with the results of the objective methods of measurement.

The central issue of the current study is to compare peers’, teachers’, and the persons’ opinions who are in the focus of identification of giftedness with each other and with the results of more objective instruments of measurement. Our aim is furthermore to gain experience about the inter-test reliability between opinion- and test-results, about the reliability of equivalent forms between opinions from different sources, and about what kind of affect the type of opinions, measured personality-variables, sex, and age have on the results. Finally, the aim of our research is to disclose and compare the organization of cognitive and non-cognitive personality-variables in relation to the results stemming from different persons’ opinions and methods of measurements.

### **Hypotheses**

1. There is a quite weak correlation between opinions and test-results regarding all the examined personality-variables and all sub-samples. The literature on this topic tells us that correlation between objective and subjective methods of identification of giftedness is not convincing.



2. Different opinions concerning the same personality-variable show a quite differing correlation with test-results. For example, teachers' opinions have a better correlation with test-results rather than students' opinions. This supposition is based on the advantage resulting from teachers' qualification, professional and life-experience. We reckon on a better correlation also in the case of objective self-concept, rather than in the case of self-concept based opinions.

3. In the case of some personality-variables, correlation between opinions and tests is better than in the case of other variables. It is a commonplace in literature that creativity stays in background in school in comparison with intelligence. We can reckon on that opinions about intelligence have a better correlation with test-results, rather than opinions about creativity. Similarly, non-cognitive personality-variables can be different from each other regarding the correlation between subjective and objective methods of identification.

4. Sex and age expressed in grades (5<sup>th</sup> and 8<sup>th</sup> grade) do not have a considerable impact on correlations between opinions and tests regarding none of the personality-variables. Whether there is a significant difference between the means of opinions/test-results stemming from the sub-samples formed according to the sex and grade; or whether there does not exist such a difference, it has no considerable impact on the correlation between opinions and test-results.

5. Different opinions concerning a given personality-variable do not show stronger correlation with each other either. It is to be expected that subjective opinions are often contradictory to each other.

6. Structures of implicit personality-theories suggested by opinions are similar. If we compare quantitatively and qualitatively the implicit personality-theories concerning the fact that the examined cognitive and non-cognitive personality-variables accompany each other, there evolves a relatively unified "personality-concept".

7. Structures of implicit personality theories suggested by opinions are different from the structures characteristic of test-results. If we compare quantitatively and qualitatively the implicit personality-theories concerning the fact that the examined cognitive and non-cognitive personality-variables accompany each other, and the correlations observed in the case of test-results, we can expect that the pattern of correlations of the personality-variables according to subjective and objective methods is different.

### **Applied methods**

Before our study, a pre-study was carried out in 2001. The main aim of the pre-study was to try out and refine the instruments of measurement and to determine the time needed for data collecting. In the pre-study some students and educators of the Zsigmond Móricz Primary School in Mátészalka (Hungary) took part. The experience gained here helped us to prepare the final form of our study.

The real study had three separable steps. The first step is: asking students and their teachers to express their opinions about intelligence, creativity (fluency, originality, and flexibility), psychoticism, extroversion, neuroticism, and conformity on a five-point scale. It is obvious that we cannot expect a teenager to be aware of the meaning of terms like fluency or extroversion, so we decided to paraphrase these expressions in short, brief, expressive words.

After collecting opinions, we went further collecting data carrying out psychological measurements.

The third step was to compare opinions being collected and test-results in the case of (Spearman's) correlations, in the case of differences between sub-groups based on sex and age (variance-analysis), and in the case of implicit personality-theories regarding features accompanying each other (Spearman's correlation, cluster-analysis). Statistics were carried out with SPSS for Windows version 9.0.

### Sample of the study

In our research students of 5<sup>th</sup> and 8<sup>th</sup> grade (n=536) and their teachers (n=39; 23 of them were form masters for students of 5<sup>th</sup> grade and 16 were form masters for students of 8<sup>th</sup> grade) from 10 primary schools in the county Szabolcs-Szatmár-Bereg. 270 of all students were boys, 266 were girls. At the time of the study – school year 2001/2002 – 146 of the boys were of 5<sup>th</sup> grade, 124 were of 8<sup>th</sup> grade. 138 of the girls were of 5<sup>th</sup> grade, 128 were of 8<sup>th</sup> grade. If we have a look at the grades, we can see that 284 students were of 5<sup>th</sup> grade and 252 were of 8<sup>th</sup> grade. Our decision about examining the presented grades is many-sided: on the one hand, we applied experience of national and international researches; on the other hand, we wanted to examine the “input” senior classes and the “output” senior classes of primary school.

### Variables

#### 1. Personality-variables:

- Cognitive variables usually examined when identifying giftedness in school: intelligence, fluency, originality, flexibility
- Non-cognitive variables, which are considered as mediating factors in this study: psychoticism, extroversion, neuroticism, conformity

#### 2. Method- and instrument-variables:

- Procedures applied for measuring intelligence:
  - OTISZ-I test: the OTISZ-I intelligence test is a system of simple tasks, which does not need a certain qualification and is appropriate for measurements in groups. In the first line, it measures verbal and counting abilities, which are needed for successful learning. With this method, we can get information about the level of intelligence of a group fast (max. 30 minutes).
  - Collecting opinions about the expression “rational, logical thinking”.
- Instruments applied for measuring fluency, originality, and flexibility:
  - The Test of Circles of Creativity by Torrance: the Test of Circles is one of the sub-tests in the Creativity Test by Torrance. In this sub-test the task is to make as many and as original drawings as possible, whereby examinees have to use the circles drawn on the paper beforehand, and these circles are of the same size. It is important to know that artistic design and aesthetic qualities are not estimated – the test does not measure “the know how to draw”, and does not measure “the beauty of the drawing” either. It measures creativity. When estimating the results of the Test of Circles we scored fluency (the reaches of ideas), originality (original thinking), and flexibility (flexible thinking and being able to think in many points of view). We based the way of estimating on Kálmánchey's (1979, 1981) professional suggestions, so tests were judged by two independent persons.
  - Collecting opinions about the expressions “having many ideas”, “having original ideas”, and “thinking in a flexible way”.

- Instruments applied for measuring psychoticism, extroversion, neuroticism, and conformity:
    - HJEPQ: the Hungarian Junior Eysenck Personality Questionnaire (HJEPQ) is a version of EPQ developed by H.J. Eysenck, adapted for Hungarian children (Kálmánchey and Kozéki, 1988). The questionnaire consists of 86 yes-no questions, which measure the previous four personality-dimensions.
    - Collecting opinions about the expressions “having a hostile, violent temperament”, “a person of open character, being able to make contact”, “nervous, unbalanced”, and “keeping the rules”.
3. Types of opinion (examinees had to express their opinions in a 5—point scale):
- Self-concept (the students’ opinions about themselves): “how do I estimate myself along the given personality-variables?”
  - Objective self-concept relating to the classmates: “what do my class-mates think of me along the given personality-variables?”
  - Objective self-concept relating to the educators: “what do my teachers think of me along the given personality-variables?”
  - The class-mates’ opinions
  - The teachers’ opinions
4. Sample-variables:
- Sex: boy, girl
  - Age (expressed in grades): 5<sup>th</sup>, 8<sup>th</sup> grade
  - Role: teacher, student

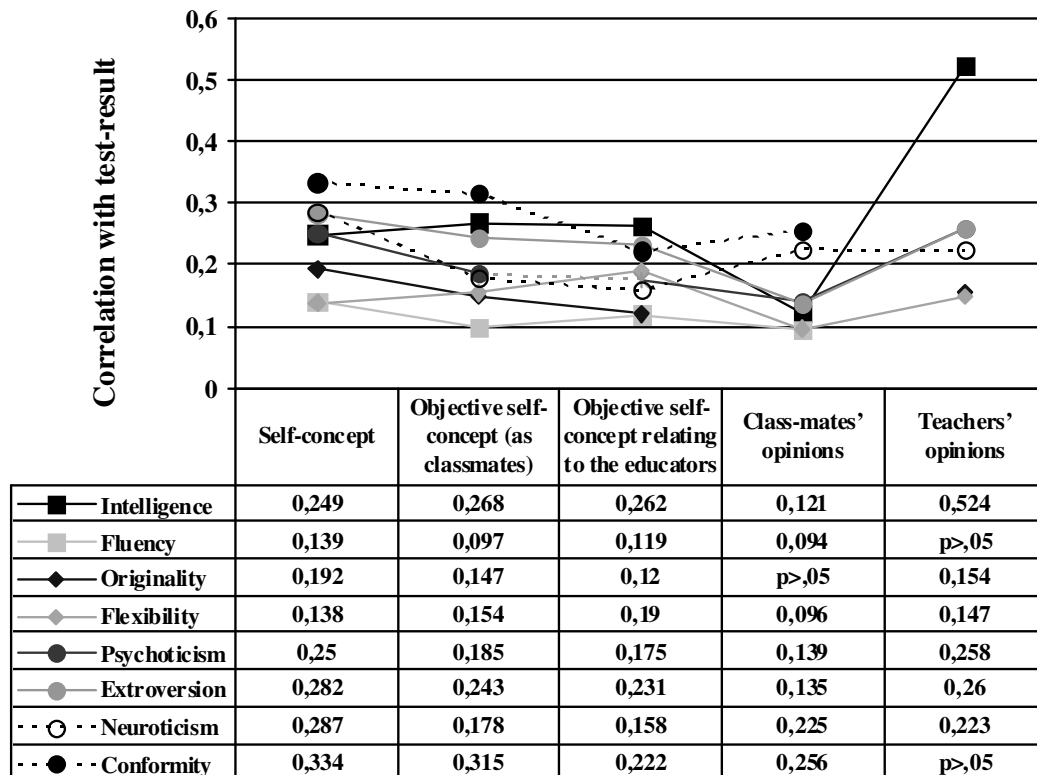
## Results

### *The relation between Opinions and Test-Results*

Our first hypothesis – which claims, “There is a quite weak correlation between opinions and test-results regarding all the examined personality-variables and all sub-samples” – has proved to be right. In most cases correlation  $r < .5$  was found between opinions and test-results (Figure 1). Its practical consequence is that the two methods cannot substitute each other.

If we still decide to use the methods of collecting opinions and of using psychological tests as methods substituting each other (it can happen because of one’s conviction, or because circumstances force one to do so), then we have to count with four consequences of general nature. The first consequence is the following: if we rely on opinions we do not have much chance to find all the students whom are found as gifted by the tests. The second one is: if we rely on opinions maybe, we select many students into the program for the gifted who would never get into it on the pure grounds of their test-results. The third consequence is: if we rely on tests, we do not have much chance to find all the students whom are regarded as gifted in the students’ and/or teachers’ opinions. Finally, the fourth consequence is: if we rely on test-results, we have the chance to identify students, whom we would never select on the grounds of the opinions.

Figure 1: Correlations of tests and opinions



Knowing the results, we can decide to apply the methods of collecting opinions and psychological measurements in parallel, in this case two aims of identifying giftedness can guide us. One of these aims can be that we are looking for “gifted” persons according to both methods. In this case, we can expect quite few “hits”. Based on the chronology and/or hierarchy two possibilities arise:

- 1) we would like to get reinforcement for the test-results by collecting opinions;
- 2) we would like to get reinforcement for the results of collecting opinions by applying tests.

The second possible aim is: we are looking for persons who are found to be “gifted” only according to one of the methods. Presumably, we are going to find more persons, than in the first case. In this case, there arise two possibilities too:

- 1) searching for students who are “gifted” according to test-results but not according to opinions;
- 2) searching for students who are “non-gifted” according to test-results but gifted in opinions.

#### *Impact of Opinion-Types on the Opinion-Test Relation*

Our second hypothesis – which claims that “different opinions concerning the same personality-variable show a quite differing correlation with test-results” - has proved only partly to be right (only in the context of teachers’ opinions about intelligence). Teachers’ opinions are better only in the case of intelligence ( $r=,524$ ) than students’ opinions; in other cases teachers’ opinions’ correlation is under 0,3, similarly to those of children (Figure 1). Summarized: the advantages resulting from the educators’ age, qualification, and experience

have not really predominated in the case of the examined personality-variables when educators' opinions about person-perception and the correlations of test-results were compared to the students' opinion-test correlations. This has its consequence on the identification of giftedness: it seems to be unfounded to prefer teachers' opinions to students' opinions when the identification of gifted students is based on estimation of abstract personality-variables. Its significance becomes clear if we take into account how important teachers' opinions can be in identification of giftedness. For example, in well-known longitudinal studies with sample of many participants like the one of Lewis M. Terman in the 1920s (Terman, 1925), or the one of Kurt A. Heller nowadays (Heller, 1990), the educators' opinions are very determinative, since the very first element of identification of giftedness in multiple steps has been based on their opinions. The sample selected by teachers served as a base for further testing in identification of giftedness. Consequently, the samples of their studies were made up by the "school-house gifted", and students who could have been regarded as gifted according to test-results despite the fact that in the teachers' opinions they were not were not paid enough attention.

Objective self-concepts concerning the examined cognitive and non-cognitive personality-variables seem none the more objective than opinions of self-concept nature. Thus, correlation between opinions and test-results does not become better if students are asked to regard themselves from the others' points of view. Generally, students give a little bit lower answer than their own self-esteem when they are asked to express their opinions of objective self-concept nature in point of cognitive personality-variables. Although it represents the students' beliefs that "my class-mates/teachers acknowledge my intelligence and creativity, but they underestimate me somewhat", the practical benefit of collecting opinions about objective self-concept in the process of the identification of giftedness is very slim.

#### *Impact of Personality-Variables on the Opinion-Test Relation*

Our third hypothesis – which claims, "in the case of some personality-variables correlation between opinions and tests is better than in case of other variables" – has proved to be right only in the case of teachers' opinions about intelligence. In other cases, it has not been affirmed. Students and teachers are more precise at judging intelligence than creativity, if we regard higher correlation with test-results as the criterion of precision (Figure 1). Nevertheless, students' opinions are less than 0,3 also in the case of judging intelligence. Compared to this correlation between teachers' opinions about intelligence and test-results with its 0,524 value is relatively high.

Opinions predict the test-results of creativity-variables with a quite low efficacy, almost randomly. Conversely, the results of creativity-test cannot predict how opinions define each student in point of creativity. The correlation between grade point average and the results of creativity-test is very low. This corresponds to the fact being formulated many times in the literature that creativity does not play an important role in school-achievement expressed in marks. We have to add to this that creativity does have significance in school-achievement (not expressed in marks). It is worth to notice, however, that teachers are able to judge the intelligence characterized with convergent thinking more precisely than creative abilities. It can be related to the fact that school-tasks show virtually negative discrimination against creativity (Mező and Mező, 2003). The majority of the tasks are of the type "absolute convergent task" for example. This means that the texts of the tasks ask students to give only one method and only one solution and in general, the key shows only one right solution and method. The resulting negative impact of the latent curriculum discriminates divergent thinking characterized with fluency negatively. Another example is: the texts of the tasks in most cases do not ask for original solutions and their keys do not score them either. Thus, these tasks do not measure, do not develop, and do not "show" the ability of original thinking.

Similarly, flexible thinking, which is able to shift among points of view, is overshadowed in school-tasks. Some other creative abilities like the sensibility to problems, defining problems, or holist thinking have similar destiny. Students and teachers face in the first line achievements needing convergent thinking in school-context, and creative achievements are not in question. It is obvious that this process has its effect on the development of person-perception.

Correlations in the case of non-cognitive personality-variables are also around or under 0,3.

#### *Differences of Sex and Age in the Opinion-Test Relation*

Our fourth hypothesis – which claims “sex and age expresses in grades (5<sup>th</sup> and 8<sup>th</sup> grade) do not have a considerable impact on correlations between opinions and tests regarding none of the personality-variables” – has proved to be right. The sex and/or grade of students giving opinions of self-concept nature do not have a considerable effect either on the opinion-test correlation, or on the average results of self-esteem. The same is true for the objective self-concept regarding classmates and teachers. Although there is significant difference between the corresponding sub-samples, we cannot experience difference of remarkable extent. We cannot rely on that boys or girls, students of 5<sup>th</sup> or 8<sup>th</sup> grade, or their teachers give opinions with a radically different mean and that those opinions would show weaker or stronger correlations with test-results. Opinions from classmates and teachers are not considerably influenced either by the fact whether the student who is going to be judged is a boy or a girl, or whether he or she is a student of 5<sup>th</sup> or 8<sup>th</sup> grade.

#### *Relation between the Types of Opinions*

Our fifth hypothesis – which claims that “different opinions concerning a given personality-variable do not show stronger correlation with each other either; it is to be expected that subjective opinions are often contradictory to each other” – has proved to be right. When we have a look at different opinions, we cannot speak about the reliability of equivalent forms. That is when using a given opinion concerning the examined personality-variables as a means of giftedness it might happen that we select other students than when using other types of opinions. We come to a very different result if we form our groups of gifted student when we rely on classmates’ rather than on teachers’ opinions.

We can experience the strongest relations between students’ self-concepts and their objective self-concepts regarding their classmates and teachers (correlation can be found between the two extremes of  $r=,413$  and  $,753$ ). If we apply these three opinions separately when gaining experience for developing groups in a program for gifted students, the groups might overlap each other, it is, however, more probable that the result is three groups of totally different persons. When applying opinions parallel we can select those who have objective self-concepts adequately or not adequately detailed, and we can work with them in future relying on these facts.

Correlations between classmates’ putative or real opinions are between the extremes of 0,357 and 0,472. The intelligence is an exception, its correlation is even weaker ( $r=,263$ ). It seems that students judge quite imprecisely how their teachers think about them (especially about their hostile and violent nature). The strongest correlation can be found in the case of intelligence, although it is only 0,494 of intensity.

The weakest relations can be experienced between opinions from classmates and educators ( $r=,1$  approximately). Here arise the possibility that the identification of giftedness based on teachers’ and class-mates’ opinions can result in groups of very different members, and it might happen that there will not exist even one student who would be selected no matter on which opinion the identification is based.

*Results Regarding to Implicit Personality-Theories*

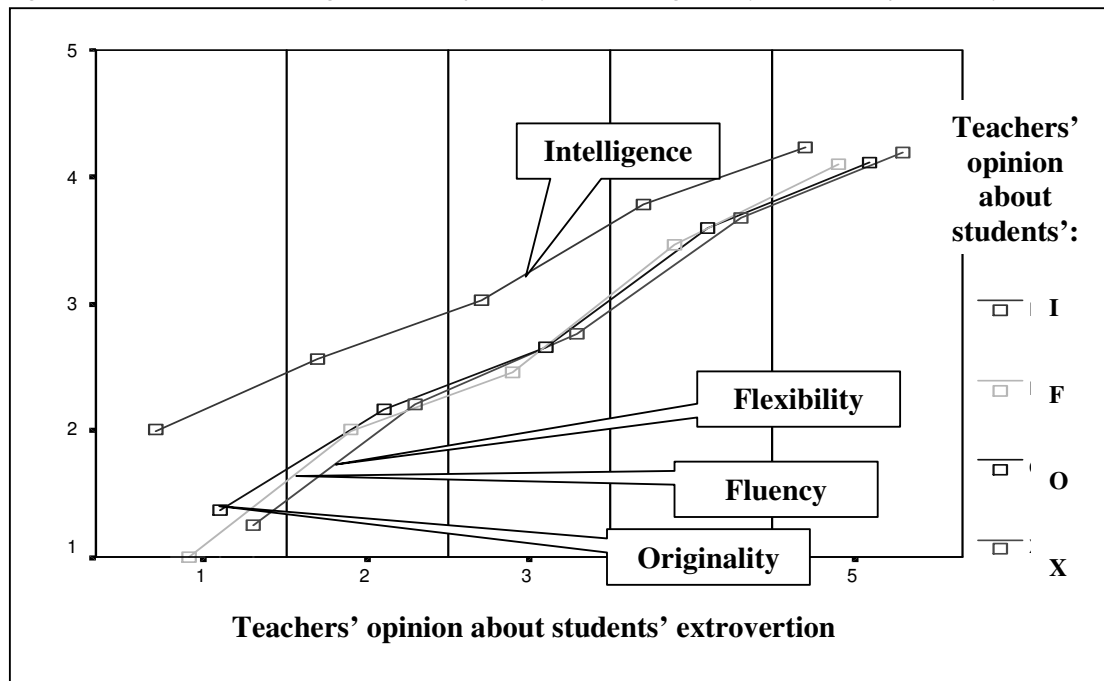
Our sixth hypothesis – which claims, “Structures of implicit personality-theories suggested by opinions are similar” – and our seventh hypothesis – which claims “structures of implicit personality-theories suggested by opinions are different from structures characteristic of test-results” – have both proved to be right. Our results let us conclude that structures of implicit personality theories concerning the correlation of characteristics suggested by opinions are very similar to each other and at the same time they are strikingly different from structures standing out in test-results. Characteristically the implicit theory suggested by teachers’ opinions happen to show the biggest different from the organization of test-results (Figure 2, see it on the cover). Additionally it seems that opinions about certain non-cognitive personality-variables (for example about extroversion and conformity) have a significant effect on forming opinions about cognitive personality-variables.

*Figure 2: Structures of implicit personality-theories suggested by teachers’ opinions are different from structures characteristic of test-results.*

*See it on the cover!*

According to the results, people who are able to show themselves as extrovert are judged both by students and teachers as more intelligent and more creative, and persons who seem to be introvert are regarded as holding moderate cognitive characteristics (Figure 3).

*Figure 3: The teachers’ opinion about students’ extroversion (as a non-cognitive personality-variable) has a significant effect on forming teachers’ opinion about students’ cognitive abilities as intelligence (=I), fluency (=F), originality (=O) and flexibility (=X).*



In the case of the tests, similar tendencies between the test-results of extroversion (HJEPQ-E scale) and of cognitive variables are less strong. The correlations of test-results between extroversion and intelligence ( $r=,236$ ;  $p=,000$ ), fluency ( $r=,077$ ; not significant), originality

( $r=.052$ ; not significant), flexibility ( $r=.106$ ;  $p=.014$ ) are less than in the case of teachers' opinions, where the correlations with extroversion are: intelligence ( $r=.493$ ;  $p=.000$ ), fluency ( $r=.634$ ;  $p=.000$ ), originality ( $r=.587$ ;  $p=.000$ ), flexibility ( $r=.578$ ;  $p=.000$ ). Its consequence on identification of giftedness is: reserved students have a disadvantage against their mates of more open character.

It is characteristic of the self-concept of students who are the target-persons of identification of giftedness and of the teachers' opinions that they presume an inverse proportion between violent nature and cognitive abilities. Teachers' opinions also reveal that educators may consider students' cognitive abilities whose nature is perceived as hostile as better, rather than those students' ones who are of nature that is more peaceful. Objective self-concepts and classmates' opinions suggest that in the persons' implicit personality-theories who form opinions there is a tendency to relate relatively higher cognitive abilities to extremely violent or non-violent nature. Whereas test-results do not show significant correlation between cognitive variables and psychoticism.

In teachers' opinions, there is some inverse proportion between cognitive abilities and nervous, unbalanced nature. Teachers' experience is reinforced by test-results tendenciously. Its consequence on identification of giftedness is: teachers' opinions may be impressed by the extent to which students show themselves as balanced, self-possessed of nature. It can happen that there is a difference of two scores on a five-point scale focusing on cognitive personality-variables depending on to what extent educators hold students as nervous of nature. Students' opinions suppose higher achievements in intelligence and creativity at the extremes of neuroticism.

If we have a look at test-results, it is quite characteristic that the highest value of the measurement of intelligence is linked to the lowest value of the conformity scale in HJEPQ – and vice versa. According to opinions, however, if a student is characterized as socially conform he or she will be characterized as more intelligent and more creative too. Its consequence on identification of giftedness is: groups formed by reclining upon teachers' and students' opinions relating to intelligence and/or creativity can be characterized by the fact that according to those who form their opinions students “who keep the rules” get into the groups, while if we recline upon test-results relating to cognitive abilities we can expect that non-conform students form the groups. In other words: students who are regarded as conform in the opinions have an advantage against those students who are regarded as non-conform, if the identification of giftedness is based on opinions. Non-conform students have a better chance to be selected into a group for the gifted if the process is based on tests of cognitive abilities. In connection with conformity, it is important to know that authors draw attention to non-conform behaviour when discussing creative giftedness in literature.

All in all it seems that introvert and/or non-conform students have a potential disadvantage when being identified based on opinions, because their cognitive abilities tend to be underestimated by students and teachers who form their opinions. Extrovert and/or conform students, however, have an advantage when being selected based on opinions, because their cognitive abilities are likely to be overestimated. Although in the case of neuroticism and psychoticism the effects are multiple, also these personality-variables can distort the estimation of cognitive abilities. The two types of groups of students may have equalized chances when more objective means of measurement are applied.

### **Summary**

The results of our study allowed us to form numerous practical conclusions, suggestions. We have been able to answer questions, which can be seen as crucial points in research of



giftedness. Typically both practical professionals, and university students who come into contact with identification of giftedness – whether being trained as regular or correspondent students – meet these questions, but they rarely find detailed, concrete instructions how to answer them. These instructions are presented in detail in the part about results.

Test-results and opinions have a quite weak correlation with each other and when we apply them separately, groups of different persons can be the result. Its practical conclusion is that they do not substitute each other. Pros and contras can be raised for and against both procedures. Tests are more objective for example than opinions are, but at the same time it might be difficult to get those tests, they need professionals to be carried out, they might be too expensive as well, and there might arise any other subjective and objective objections against their usage. Contrarily, it has in favour of opinions that achievement is not one-off like in the case of tests, but opinions are formed continually with time. Collecting opinions spares relatively much money and time; it is a quick method.

The parallel usage of tests and opinions seems to be the most acceptable way of identification and care of giftedness. This may be particularly sensible if our aim is to deal with children in a differentiated way who prove to be gifted a) according to both methods, b) according to only one method, c) according to none of the methods. The literature on giftedness generally suggests applying a combination of many methods, and then identifications should be carried out based on results, which show similar trends. This fact also advocates the parallel usage of tests and opinions. Nevertheless, it might have a negative consequence as well: students with contradictory results are often not selected into programs for the gifted; however, they are the persons who would really need special programs. Students who are found gifted with the help of tests but not by opinions could be helped by providing them with the possibility of developing their self-knowledge and/or by improving their school-climate. As a result, opinions and test-results would be more coincident. Students who are not found gifted by using tests but are regarded gifted when looking at the opinions might be helped by developing their abilities and personalities.

The weak correlation between opinions and test-results and its result being outlined previously may rise the need for improving, making stronger this relation. For the sake of the cause, we can make arrangements both at the side of opinions and at the side of tests. When making arrangements at the side of opinions we can ask questions about concrete, observable behaviour instead of about abstract characteristics. It would be important from this point of view that it is advisable to emphasize the problems in person-perception in teacher training (and also in training students). In this frame, we can try to intervene in the structure of implicit personality-theories in a way that they become similar to the organization of personality-variables according to test-results. If we consider the problem from the point of view of test-results, we can suppose that we will get a stronger correlation if we apply tasks in tests, which are closer to situations, which are used as experience-base for forming opinions. We can see that the chance for improving correlation between opinions and test-results is theoretically given and further research is needed to prove (or to confute) possibilities suggested here. However, we have to add that the low inter-test reliability between opinions and test-results does not mean any tragedy regarding the identification of giftedness. What is more it can have special force to organize groups in some cases!

### References

- Balogh, László (2004): *Iskolai tehetséggondozás*. Kossuth Egyetemi Kiadó, Debrecen.
- Balogh, László – Tóth, László (Eds.)(2001): *Gifted Development at Schools: Research and Practice*. University of Debrecen, Department of Educational Psychology, Debrecen.
- Czeizel, Endre – Erős, Erika (1995): *Számadás a táalentomról – A Karinthy család genetikai elemzése*. Corvina, Budapest.

- Gagné, F. (1985): *Giftedness and talent: Reexamining a reexamination of the definitions*. Gifted Child Quarterly, 17-25.
- Heller, Kurt A. (1990): Goals, methods and first results from the Munich Longitudinal Study of Giftedness in West Germany. In: Taylor, C. W. (Ed.), *Expanding Awareness of Creative Potentials Worldwide*. New York: Trillium Press. 538-543.
- Kálmánchey, Márta (1979): A Torrance-teszt alkalmazásának tapasztalatai ötödik osztályosoknál. *Magyar Pszichológiai Szemle*, 1979/2. 161-170. pp.
- Kálmánchey, Márta (1981): A kreativitás fejlesztésének néhány elméleti és gyakorlati kérdése. *Acta Psychologica Debrecina*. 1981, 5. szám.
- Kálmánchey, Márta – Kozéki, Béla (1988): Az Eysenck-féle személyiségkérdőív gyermek változatának hazai adaptációja (HJEPO). In: Mérei Ferenc – Szakács Ferenc (szerk.): *Pszichodiagnosztikai vademecum I. Explorációs és biográfiai módszerek, tünetbecslő skálák, kérdőívek. 2. rész (egységes jegyzet)*. Tankönyvkiadó, Budapest. 282-298.
- Marland, S. P. (1972): *Education of the gifted and talented: Report to the Congress of the United States by the United States Commissioner of Education (Background papers)*. Washington: United States Government Printing Office
- Mező, Ferenc (2004): *A tehetség tanácsadás kézikönyve*. Tehetségvadász Stúdió – Kocka Kör Tehetséggondozó Kulturális Egyesület, Debrecen.
- Mező, Ferenc – Mező, Katalin (2003): *Kreatív és iskolába jár!* Tehetségvadász Stúdió – Kocka Kör Tehetséggondozó Kulturális Egyesület, Debrecen.
- Mönks, Franz J. – Mason, Emanuel J. (2000): Developmental Psychology and Giftedness: Theories and Research. In: Heller, Kurt A. – Mönks, Franz J. – Sternberg, Robert J. – Subotnik, Rena F. (Eds.): *International Handbook of Giftedness and Talent*. Oxford: Elsevier Science Ltd. 141-156.
- Ogilvie, E. (1973): *Gifted Children in Primary Schools*. MacMillan Educ. Ltd.
- Otto, H. J. (1957): *Curriculum enrichment for gifted elementary school children in regular classrooms*. Austin (Texas): Bureau of Laboratory Schools Publications
- Renzulli, J. (1979): *What makes giftedness: A reexamination of the definition of the gifted and talented*. Ventura (California): Ventura County Superintendent of Schools Office.
- Scheifele, M. (1953): *The gifted child in the regular classroom*. New York: Bureau of Publications, Teachers College, Columbia University
- Terman, Lewis. M. (1925): *Mental and physical traits of a thousand gifted children*. Stanford (California): Stanford University Press
- Ziegler, A. – Perleth, C. (1997): Schafft es Sisyphos, den Stein den Berg hinaufzurollen? Eine kritische Bestandsaufnahme der Diagnose- und Fördermöglichkeiten von Begabten in der beruflichen Erstaus- und Weiterbildung vor dem Hintergrund des Münchner Begabungsmodells. *Psychologie in Erziehung und Unterricht*, 44, 152-163.

**INVESTIGATING THE DEVELOPMENT  
OF EXECUTIVE FUNCTIONS IN YOUNG CHILDREN  
A POSSIBLE TOOL FOR THE EARLY IDENTIFICATION OF GIFTEDNESS**

Judit Inántsý-Pap\* – Zoltán Kondé\*\*

(\*University of Debrecen, Department of Educational Psychology,

\*\* University of Debrecen, Department of General Psychology)

E-mail: [konde@tigris.unideb.hu](mailto:konde@tigris.unideb.hu)

*Executive control is supposed to be necessary for the efficient and appropriate behavior and to be the manifestation of numerous correlative processes including planning, selection of action, switching of task settings, memory updating. Several aspects of executive functioning develop in the preschool years; however they are not easy to investigate during that period because of methodological difficulties. The aim of our project is to investigate the developmental aspects of executive control and to develop “child-friendly”, computerized, touchscreen versions of well-known executive tests. These tests could serve as the basis for the early identification of giftedness.*

**Keywords:** intelligence, giftedness, executive control, attentional selection, task switching

### **Introduction**

The interest in human intelligence, as the most valuable "natural resource" from the beginning (Galton, Binet) arose from the point of view of social utility and research results were applied immediately in practice (school, army, factory) (see Brody, 2000). Today, the theoretical and practical aspects of intelligence constitute an autonomous research area within psychology (research on intelligence in cognitive psychology, psychology of giftedness), nevertheless it needs a multidisciplinary approach. The problem of intelligence and intellectual giftedness as a theoretical issue (definition, measurement, and factors in intelligence structure etc.) and as a practical question (how do we identify, cultivate gifted persons, etc.) are simultaneously autonomous and central questions of psychology. However, they are not isolable from each other. The identification of giftedness depends on the theory of giftedness and on the methods of measurement derived from that theory. One of the most important roles of the scientific psychology of intelligence is to serve the practice of the identification of giftedness.

### **Intelligence, working memory and executive functions**

Following the typical attitude of scientific psychology – that is commonly labeled as a reductionist approach - towards the experience of complex psychological problems the terms giftedness, or intelligence seem to refer to things that are manifestations of more elementary processes/mechanisms in the cognitive system. In other words, complex psychological phenomena need to be interpreted in lower level of cognitive or biological explanations. In recent years numerous empirical arguments favoring this view have been published in the literature of intelligence (see Ackerman, Beier and Boyle (2005). Appropriate, correct reductionistic interpretations of intellectual behavior should be based on well-defined, validated constructs (Deary, 2001). Although, the concept of working memory capacity and the construct validity of its measurement tools (see Oberauer, 2005) cannot be considered a

closed issue, a considerable effort has been made to clarify the relation between individual differences of intelligence and the effectiveness of working memory.

Working memory could be considered as the functional hub of cognition. The WM system is usually defined as a multicomponential, limited-capacity system for the temporary storage and manipulation of information (e.g. Baddeley and Logie, 1999). The (verbal and visual-spatial) subsystems specialised for different aspects or modalities of information determine the processes and limitations of information-processing. The central executive is thought to be an attentional-supervisory system for the control, coordination and regulation of processes in working memory. The processes of control are carried out by different but interrelated executive functions. A variety of cognitive processes are subsumed under the term *executive functions*, including *inhibition* of prepotent responses, or irrelevant information *shifting* of the focus of attention, *updating* the memory representations, *co-ordination* of the cognitive processes (Miyake, et al, 2000, Oberauer, et al, 2003). The effectivity of simultaneous storage and processing can be captured by the so-called WM tasks that provide indices for evaluating the WM capacity (WM span). For assessing the effectiveness of executive functions numerous experimental paradigms, mostly in close relation to attentional tasks has been developed. (See Csépe, 2005, pp. 122-126) These tasks offer the possibility to assess executive control in terms of reaction time and/or error rate.

Results of correlational studies, the more sophisticated latent variable analyses and structural equation modeling suggest structural and functional overlap between intelligence and the WM system. For example, Engle et al. (1999) found significant and considerable correlation between the latent variable of WM tests scores and that (gF factor) of intelligence test scores. In the model of Kane et al. (2004) the modality 'oriented' WM factors (verbal- and spatial-storage) and intelligence factors (verbal and spatial reasoning) were in close relation. In addition, the common factors (executive attention and general fluid) of WM factors and factors of intelligence were in close relation as well. Recently, Friedman et al. (2006) found that updating as an executive function is the most reliable predictor for the level of fluid and crystallized intelligence. In sum, these results suggest that the indices of WM processing seem to be correlated with intelligence test scores. However, underlying this correlation, the WM capacity, especially executive control abilities can be significantly but differently related to intellectual abilities and the causes underlying the correlation between working memory and fluid intelligences need to be considered unclear.

It should be also noted that the intellectual behavior seems to be very sensitive to the effects of contextual causes. According to the influential theories of giftedness (Renzulli, 1986, Mönks, 1992) the main factors of personality and other non-cognitive factors (motivation) are as important as the general and specific intellectual abilities (IQ, creativity, mathematical abilities). Furthermore, the environmental conditions are also essential for the optimal development of giftedness.

During childhood, intellectual abilities and executive functions show considerable improvement and the developmental trends seem to be parallel. As for the development of intellectual abilities (see Chen and Sternberg, 2000) - following Piaget's well known theory of cognitive development - different stages can be distinguished in childhood. On the other hand, the development of fluid abilities shows a continuous progression from beginning to early adulthood, at least in terms of the intelligence test scores.

The developmental progression of WM and the executive system can be partitioned into distinct, characteristic phases (see, Csépe, 2005, pp. 91-126.; Davidson, et al. 2006): some aspects of executive functioning (e.g. planning) develop in preschool years (before six years of age), while other aspects reach their peak at about ten years (attentional flexibility, inhibitory control), or not earlier than puberty (e.g. complex planning). However, the experimental investigation of the early development of the control abilities is difficult as a consequence of methodological difficulties. Apart from this difficulty, investigating the

executive functions may help elucidate in details, at more elementary level the development of intellectual functioning.

### **Aim of the project**

Our aim is to assure the possibility of early identification of giftedness. Working memory capacity and the level of attentional aspects of executive functioning are to be used for predicting the level of intellectual functioning. The approach presented here focuses mainly on attentional flexibility and attentional stability. These features of the attentional system are important components of executive control and have been regarded as ability to shift the focus of attention and to select the relevant and suppress the irrelevant information. The experimental paradigms were chosen on the basis of the methodology of attention research. Accordingly, computerised reaction time experiments were used to test attentional selectivity by using a version of the *Stroop task* and attentional flexibility by using the *task switching* paradigm.

In the conflict paradigms participants have to respond to task relevant information despite of task irrelevant information being present. In the Stroop task (see MacLeod, 1991), processing of the physical feature of a stimulus (colour of the target word) is hindered by the semantical information (word meaning). When the irrelevant information requires a different response from that required by the relevant one increased reaction time (and error rates) can be experienced compared to situations in which the two types of the information requires the same response. In order to characterize attentional selectivity we can use *compatibility cost* (the difference between the congruent and incongruent conditions in terms of both reaction time and error rate), as an index of efficiency of processing.

The task switching paradigm (Rogers, Monsell, 1995) is widely used for studying executive control. In a typical task switching experiments two choice reaction time tasks change in predictable or random design. As a repetitive finding of experiments a substantial performance decrement can be seen with respect to differences in response time and in response accuracy between switch and repeat trials. This difference is generally labeled as *switch cost* and used for evaluating the attentional flexibility.

The first step of our project is to develop a 'child friendly' version of the well known psychological tests and experimental paradigms in order to be able to evaluate the effectiveness of executive functions in children. In this way we will be able to use these methods to investigate the individual differences of executive control (the second step of our project).

The methods fashioned for the capabilities of young children need to be considered from two aspects: touch screen methodology and the story as the contextual information for tasks.

### **Touch screen methodology**

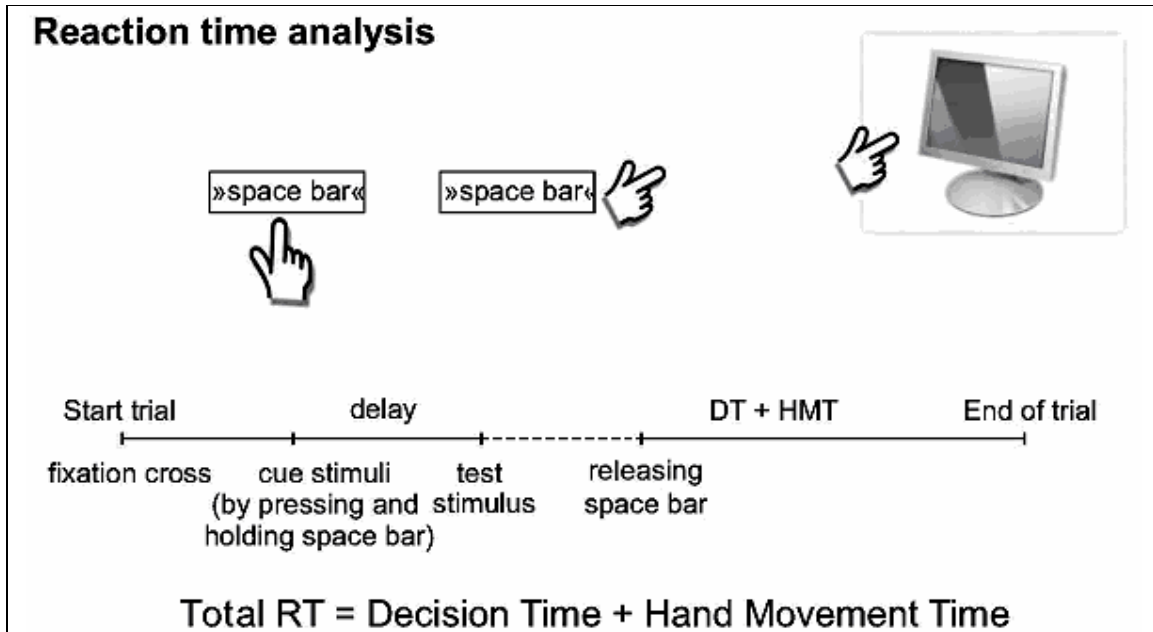
Computer-based testing has some important benefits compared to traditional paper-pencil methods. This methodology helps the tester in data collection and provides enhanced efficiency in data administration; on the other hand it could be more convenient and customized for specific group of participants, e.g. children or clinical patients.

In our proposed investigation touch screen methodology has great importance for reaction time analyses. Figure 1 shows the subtraction methodology used to determine response time.

Trials start with the presentation of a fixation cross. By pressing the space bar a cue stimulus pair will be presented on both sides of the fixation cross. After a short delay test stimuli will be displayed above the fixation cross and children will be asked to release the space bar and point to the correct picture (relevant to the task indicated by cue stimuli). The registration of the response time starts with the presentation of the cue stimuli (indicating the task to be performed in that trial) and comes to an end by tapping one of the cue stimuli

presented on the screen (see the tasks below). The reaction time (the Total RT) can be measured as the duration of the test stimuli presentation. Following a subtraction method, the time required by the decision (DT) can be differentiated from the hand movement time (HMT) as the difference of Total RT and the duration of holding down the space bar (from the time of the presentation test stimuli up to the release of space bar).

*Figure 1: The scheme of the subtraction methodology used in our experiment for estimating the components of response time.*



### The story

It was demonstrated that contextual information can have significant impact on the performance of participants even in abstract “laboratory” situations such as inductive reasoning or mathematical problem solving. First, impaired performance can be experienced in logical reasoning when additional contextual information is presented (e.g. irrelevant information in terms of the validity of the conclusion) (Stevenson and Over, 1995). On the other hand, the use of concrete and familiar material facilitated performance in conditional reasoning tasks (e.g. Wason task) compared to performance showed in case of abstract, decontextualized materials (Wason and Shapiro, 1971). Second, from the point of view of practical intelligence (Henry, et al, 2005) - as a part of the Sternberg’s successful intelligence theory - that may include tacit and practical knowledge as well as contextual information (e.g. social, emotional aspects), we can explain why the so called ‘street smarts’ can outperform individuals, who are overrated in standard intelligence measures (Ceci, Roazzi, 1994; Carraher, et al., 1985). Third, according to the Piaget’s developmental theory, intellectual abilities are closely related to both the development of sensory-motoric and perceptual development, especially in the early phase of development. Children’s performance is better when dealing with concrete materials compared to abstract materials.

The same argumentation can be applied to executive functions. The method typically used to capture children's executive control abilities is usually an analog version of adult tasks and it is not suited to the children's approach. However, the effectiveness of executive control can be captured in children more efficiently by using contextual rather than abstract material. For this end we would use stories as contextual frames that help children to understand and handle the task relevant and irrelevant information. The story explained before the experiment outlines a situation the children where the children are workers in the animal shelter and have to feed animals presented on the screen.

Furthermore, the stimuli in our experiments are not abstract visual or auditory signs and the responses need not to be expressed by using abstract response codes (e.g. originally meaningless key presses). On the contrary, the stimuli as well as the response alternatives are concrete and meaningful pictures of animals or real-world objects.

## Method

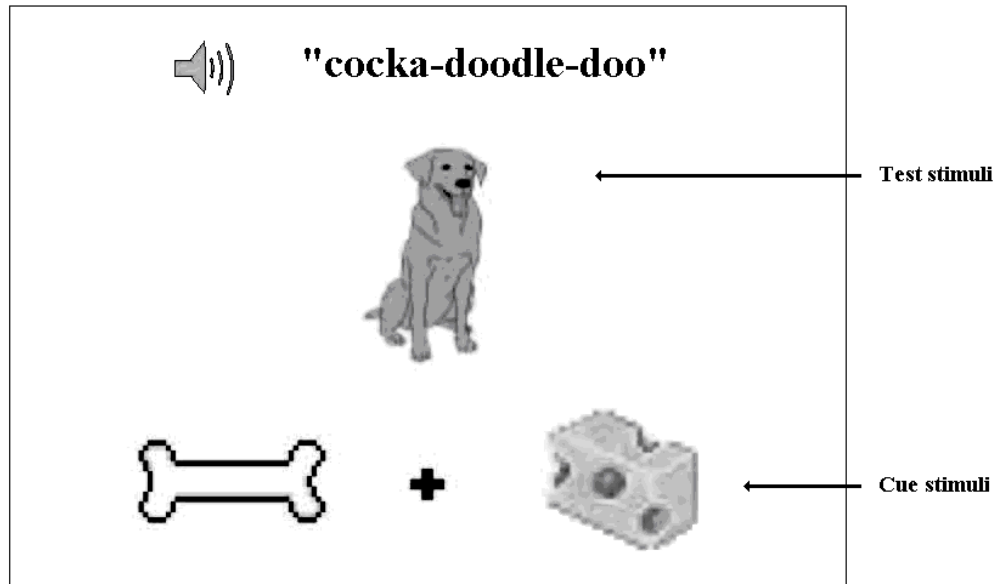
### *Participants*

Participants selected for the experimental investigations are either preschool children or schoolchildren in elementary school. Two groups will be created: the *young* group (ranged in age from 36 month to 60 month) and the *older* group (ranged in age from 60 month to 84 month). The groups will be balanced in terms of gender ratio. Each subject participates in all experiments.

### *The selection task*

Tasks and procedure. The selection task requires participants to take into account just the task relevant information and at the same time suppress the irrelevant information. In our contextualized tasks children have to focus their attention to the visual aspect of the test stimuli (a portrait of an animal presented in the center of the screen, above the fixation cross) and disregard the auditory information (animal voice presented through the speaker simultaneously with the portrait) (see Figure 2). The two information may correspond to each other (i.e. the children hear an animal voice corresponding to the animal presented on the portrait), or may not correspond (a different animal can be heard through the speaker than can be seen on the picture). The trial starts with the presentation of the cue stimuli. The cue stimulus consists of different food-picture pairs on the two sides of the fixation cross. After some delay test stimuli appear (cue-test stimulus interval 250 ms) for 250 ms, while the cue remains visible on the screen until a (correct or incorrect) response is executed. Children have to indicate the food relevant for the animal presented on the portrait by tapping the food picture on the screen. Two foods can never be equally relevant for the animal portrait. In the *compatible* conditions the portraits and the voice designate the same animal, in this case one food is relevant for both the visual and auditory stimuli and the other is irrelevant for both of them. In the *incompatible* condition the portrait and the voice does not match and one food is relevant for the animal presented on the portraits, but the other one is relevant for animal voice. In the *neutral* condition the portrait and the voice does not match, and one food is relevant for the picture but the other one is not relevant for the voice.

Figure 2: The stimuli of the selection task presented on the screen just before the subject responds. The cue stimuli (food pictures) flanked the fixation cross and the relevant test stimulus (an animal portrait) above the fixation cross (coupled with an irrelevant animal voice presented through the speaker). The subjects have to decide which food is relevant (favored) for the animal presented on the screen. As a response the appropriate cue stimulus (one food) needs to be tapped. This figure shows a neutral case, in which the test stimuli mismatch and one food is irrelevant for both of the test stimuli (animals designated).



In the training phase, children familiarize with the story, the animal portraits and animal voices separately, and also with the task. In the test phase we present the selection task in eight blocks of 15 trials. The ratio of the randomly presented stimulus in terms of the stimulus type (incompatible-compatible-neutral) is the same within blocks.

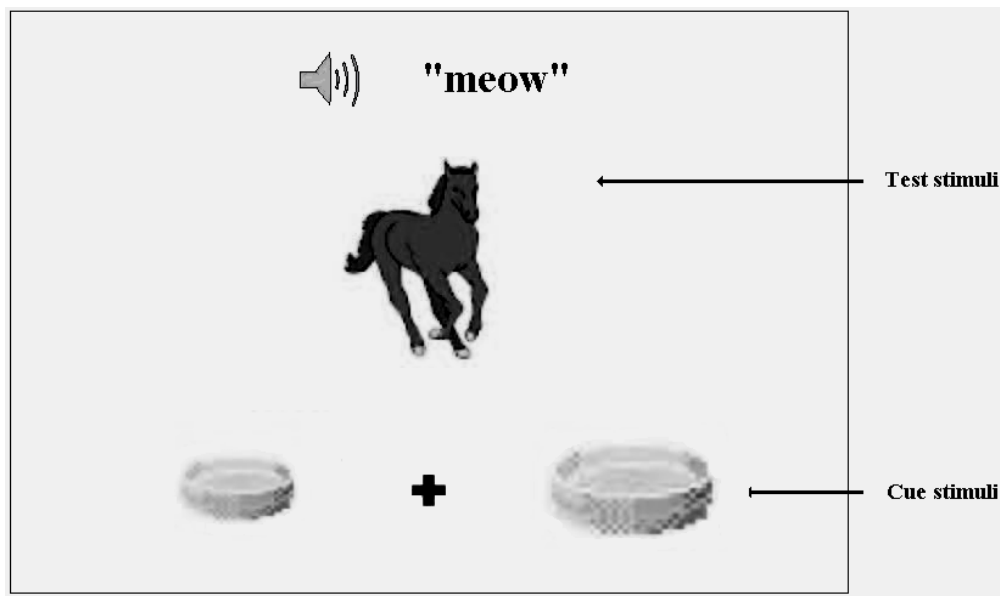
#### *Task switching task*

**Tasks and procedure.** In the task switching experiment two choice reaction time tasks (selection task) changes in predictable design. Children have to decide on the basis of visual information presented as an animal portrait and at the same time have to disregard the auditory information, or reversely, they have to decide on the basis of the auditory information (animal voice) and at the same time disregard the visual information (the portrait). The two stimuli never correspond to each other (the animal voice designate a different animal than the animal portrait does). Both tasks require the same 'little vs. huge' decision. In the "food" task the children have to indicate that the portion of the food is enough for the animal presented above the fixation cross (e.g., big animals need to have a big portion of food, a little animal only a small portion of food). In case of "drink" tasks the children have to indicate that the portion of the drink is enough (similarly to the "food" task) for the animal presented through animal voice. The two tasks are indicated unequivocally by visual cues, i.e. by the presentation of the pictures on the two sides of the fixation cross: a little and a great bowl for food indicates the "food" task and a little-great trough pair indicates the "drink" task (see Figure3).



The trial starts with the presentation of the cue stimuli (the pictures of the bowls indicating the “food” task or the pictures of the troughs indicating the “drink” task). After some delay (cue-test stimulus interval: 500 ms) test stimuli appear for 250 ms, while the cue remain visible on the screen until a (correct or incorrect) response is executed. Accordingly, the time assured for the preparation for the new task corresponds to the cue-test stimulus interval (500 ms).

*Figure 3: The stimuli of the “food” task presented on the screen just before the subject responds. The cue stimuli (a little and a great bowl for food) flanked the fixation cross indicates the tasks to be performed (“food” task) and the relevant source of the stimulus (the portrait in this case) to be processed. The test stimulus (an animal portrait) above the fixation cross (coupled with an irrelevant animal voice presented through the speaker) needs to be evaluated in terms of the largeness (little vs. huge). As a response the appropriate cue stimulus (larger bowl) needs to be tapped.*



In the instruction phase and training phase children familiarize with the story, the tasks, and the stimuli (animal voices and animal portraits separately). In the test phase we will have two types of blocks (single and switch). In the *single* blocks the two tasks will be presented separately, i.e. they perform the “food” task in four blocks of 16 trials and after some pause the “drink” task in four blocks of 16 trials. In the *switch* blocks the two task need to be performed alternately: in eight blocks of 16 trials the two tasks alternate predictably, after every fourth trial the task changes. In a switch block four switch trials and twelve non-switch (repeated) trials can occur.

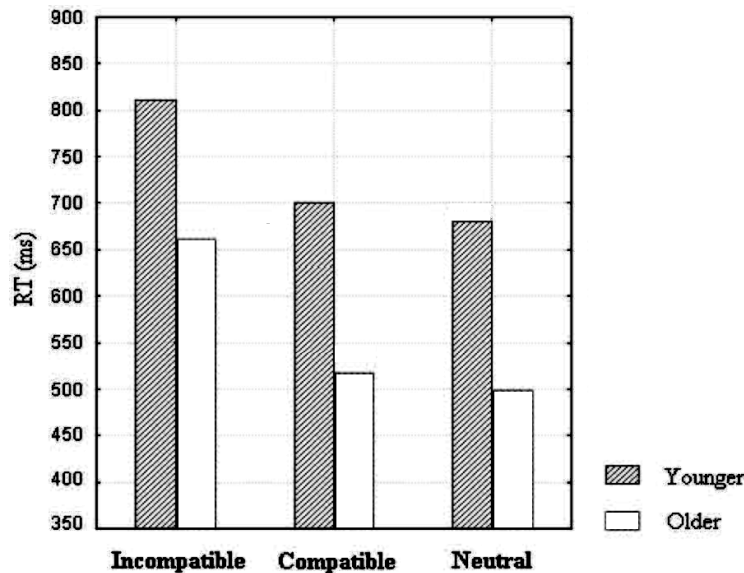
Two performance indices will be calculated as follows: the *Global switch cost*, by subtracting the mean RT to the tasks in the single blocks from the mean RT to the tasks in the switch blocks and the *Local switch cost* by subtracting the mean non-switch RT in the switch blocks from the mean switch RT in the switch blocks

### Expected results

First of all we hypothesize that the adopted and modified version of the attentional selection task and the task switch task offer an appropriate method for studying the executive functioning of preschool children. If this is true, than it means that we are able to capture the aspect of executive control we wanted and we get comparable data from preschool children and children in elementary school.

As for the selection task, we expect higher reaction times in the incompatible condition compared with the compatible and neutral conditions. The children are able to filter the irrelevant, interfering information, but the task irrelevant information influences the performance: the RTs to the target stimuli are higher when the irrelevant information would require different responses than the relevant ones. Furthermore, we hypothesize difference in the selection performance in terms of reaction time between the two groups we investigate: the compatible-incompatible difference is supposedly greater in the younger group than it is in the older group. In other words, the group differences are sharper when the irrelevant information hinder the children in responding as compared to the situation in which the irrelevant information facilitates the response. Accordingly, enhanced conflict is expected in the irrelevant condition and we predict that the control of the effect of irrelevant information and also conflict resolution is more effective in the older group. Our predictions for the selection task can be seen in Figure 4.

*Figure 4: Predicted mean reaction times (after subtracting the time needed for hand movement) to the incompatible, compatible and neutral stimuli for the younger and the older group.*

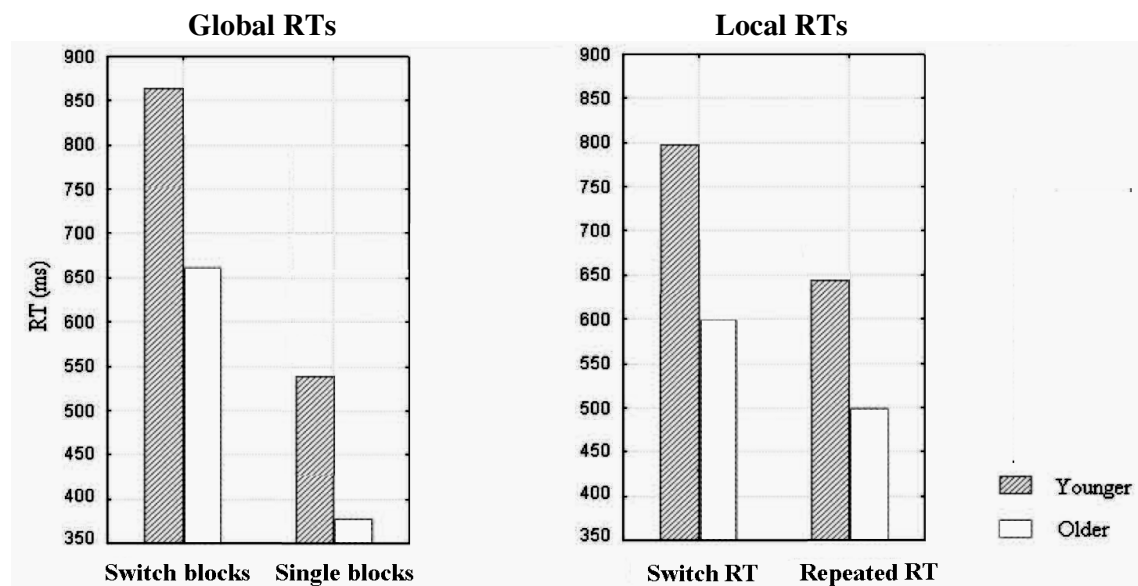


In case of the switch task we hypothesize effective switching performance for both age groups (see Dibbets, Jolles, 2006): the children are able to change the settings toward the tasks when it is required in order to give the successful and correct response. However, we predict that the switching requirement results in reduced processing of the tasks stimulus in terms of Global RTs: the reaction times are slower in switch blocks compared to those in the

single blocks. Furthermore, we expect sharp differences within the switch blocks (in Local RTs) between the RTs of the switch trials and of the non-switch trials.

In terms of the group differences we predict more effective control operation for the older children. They are able to effectively suppress the irrelevant task setting and reactivate the relevant one. Accordingly, we suppose smaller but significant switch cost for older group in Global RT-comparison as well as in Local RT-comparison. However, since the Global RT-comparison is more sensitive in discovering the developmental differences, we expect greater group difference in terms of the Global RTs compared to the Local RTs: the RT difference between the switch block and the single block (the Global switch cost) is greater in the young group that it is in the older group and the switch-repeat differences (the Local switch cost) is larger in the young group than in the older group. At the same time, the Global switch cost indicates sharper group differences than the Local switch cost. Our prediction for the switch task can be seen in Figure 5.

*Figure 5: Predicted Global RTs: The mean reaction times (after subtracting the time needed for hand movement) in the single block and switch block for the two groups (left side). Predicted Local RTs: The switch RTs and the non-switch (repeated) RTs in the switch blocks for the two groups (right side).*



### Summary

The aim of our study is to develop a laboratory method for studying executive functioning in young children, especially in preschool children. The contextualized selection task and the task switching task adopted for the capabilities of young children may offer a useful tool for studying executive functions, particularly attentional selection and attentional switching abilities in young children. Touch screen methodology makes possible a fine grade reaction time analysis of information processing related to executive functioning. The method presented above including the tasks and the stimuli is under construction and is in the test phase. In case of success we will be in position to state questions regarding the source of

individual differences of giftedness or intelligence. We are suspecting that the investigation of executive functioning in young children may reveal some interesting, possible relationships between the elementary level of information processing and the more global level of giftedness.

### References

- Ackerman, P.L., Beier, M.E., Boyle, M.O. (2005) Working memory and intelligence: The same or different construct? *Psychological Bulletin*, 131, 567-589.
- Baddeley, A., Logie, R. H. (1999) Working memory: The multiple component model. In Miyake, A., Shah, P. (eds.) *Models of working memory. Mechanisms of active maintenance and executive control*. 28-61. Cambridge University Press, Cambridge.
- Brody, N. (2000) History of theories and measurements of intelligence. IN Sternberg, R. J. (Ed.) *Handbook of intelligence*. Cambridge University Press, Cambridge, 16-33.
- Carraher, T. N., Carraher, D., Schliemann, A. D. (1985) Mathematics in the streets and in the schools. *British Journal of Developmental Psychology*, 3, 21-29.
- Ceci, S. J., Roazzi, A. (1994) The effects of context on cognition: Postcards from Brasil. In Sternberg, R. J., Wagner, R. K. (ed.) *Minds in context: Interactionist perspectives on human intelligence*. 74-103. Cambridge University
- Chen, Z., Sternberg, R.J. (2000) Intellectual development in childhood. IN Sternberg, R. J. (Ed.) op. cit. 92-116.
- Conway A.R.A., (2005) Cognitive mechanisms underlying intelligence: Defense of a reductionist approach. IN Wilhelm, O., Engle, R.W. (Eds) *Handbook of understanding and measuring intelligence*. SAGE Publications, 47-60.
- Csépe Valéria (2005) Kognitív fejlődés-neuropszichológia. Gondolat. Budapest
- Davidson, M.C., Amso, D., Anderson, L.C., Diamond, A. (2006) Development of cognitive control and executive functions from 4 to 13 years: Evidence from manipulation of memory, inhibition, and task switching. *Neuropsychologia*, 44., 2037-2078.
- Deary, I.J. (2001) Human intelligence differences: toward a combined experimental-differential approach. *TRENDS in Cognitive Sciences*, 5. 4, 164-170.
- Dibbets, P., Jolles, J. (2006) The switch task for children: Measuring mental flexibility in young children. *Cognitive Development*, 21., 60-71.
- Engle, R.W., Tuholski, S.W., Laughlin, J.E., Conway, A.R.A. (1999) Working memory, short term memory and general fluid intelligence: A latent variable approach. *Journal of Experimental Psychology: General*, 128, 309-331.
- Friedman, N.P., Miyake, A., Corley, R.P., Young, S.E., Defries J.C., Hewitt, J.K. (2006) Not all executive functions are related to intelligence. *Psychological Science*, 17 (2), 172-179.
- Heitz, R.P., Unsworth, N., Engle, R.W. (2005) Working memory capacity, attention control, and fluid intelligence. IN Wilhelm, O., Engle, R.W. (Eds) op. cit. 61-78.
- Henry, P.J., Sternberg, R.J., Grigorenko, E.L. (2005) Capturing successful intelligence through measures of analytic, creative, and practical skills. IN Wilhelm, O., Engle, R.W. (Eds) op. cit. 295-312.
- Kane, M.J., Hambrick, D.Z., Tuholski, S.W., Wilhelm, O., Payne, T.W., Engle, R.W. (2004) The generality of working memory capacity: A latent variable approach to verbal, visuo-spatial memory span and reasoning. *Journal of Experimental Psychology: General*, 133, 189-217.
- Macleod, C.M. (1991) Half a century of research on the Stroop effect. An integrative review. *Psychological Bulletin*, 109 ( 2), 163-203.

- Miyake, A., Friedman, N. P., Emerson, M. J., Witzki, A. H., Howerter, A., Wager, T. D. (2000) The unity and diversity of executive functions and their contributions to complex “frontal lobe” tasks: A latent variable analysis. *Cognitive Psychology*, 41, 49-100.
- Mönks, F. J. (1992) Development of gifted children: The issue of identification and programming. In Mönks, F. J., Peters, W. (eds.) *Talent for the future*. Van Gorcum, Maastricht.
- Oberauer K. (2005) The measurement of working memory capacity. IN Wilhelm, O., Engle, R.W. (Eds) op. cit. 393-408.
- Oberauer, K., Süß, H-M., Wilhelm, O., Wittman, W. W. (2003) The multiple faces of working memory: Storage, processing, supervision, and coordination. *Intelligence*, 31, 167-193.
- Renzulli, J. (1986) The three-ring conception of giftedness: A developmental model for creative productivity. In Sternber, R. J., Davidson, D. E. (eds.) *Conceptions of giftedness*. Cambridge University Press, Cambridge.
- Rogers, R. D., Monsell, S. (1995) Costs of a predictable switch between simple cognitive tasks. *Journal of Experimental Psychology: General*, 124, 207-231.
- Stevenson, R., Over, D. (1995) Deduction of uncertain premises. *Quarterly Journal of Experimental Psychology*, 48A, 613-643.
- Wason, P. C., Shapiro, D. (1971) Natural and contrived experience in reasoning problems. *Quarterly Journal of Experimental Psychology*, 23, 63-71.

## ❧ TALENT DEVELOPMENT ❧

### GOALS, PRINCIPLES AND TYPES OF TALENT DEVELOPMENT PROGRAMS

*Szilvia PÉTER-SZARKA*

(University of Debrecen, Department of Educational Psychology)

Email: pszszilvia@gmail.com

*In this study general issues and questions of talent development are introduced. What goals must be set for a good program? How can education be individualized according to students' needs? To answer these questions some suggestions are formulated in connection with the content of development programs, and some widely used methods of gifted education (eg. acceleration, enrichment, separation, project work) are presented.*

**Keywords:** goals of talent development, individualized education, acceleration, enrichment, separation, project work

Society needs its creative and intelligent individuals now, more than at any other time in history. As society becomes more complex, the need for education of the gifted becomes more obvious. Identifying and discovering gifted students means only the first step in complex talent development and nurturing, a serious and long work starts after it. The so called '3 D' model of talent nurturing describes the three steps of the process of dealing with gifted students (Gyarmathy, 2006). The first step is 'Description', or defining talent. On the basis of a definition for the talented we can start to 'Discover' or identify these students, and with these identified and selected students the 'Development' process can be started, a special program designed and implemented for them. It can be easily concluded that development must be preceded by thorough phases of defining and discovering the gifted students, so development is firmly based on the previous processes. Identification is no longer regarded as an end in itself but as means to prescriptive and individualized education.

#### **1. General aims and principles of talent development**

According to Feger's (1997) view it can be established that the aims of talent development can be the expansion of (1) the strong side of the talented, (2) the weak side of the talented, (3) improvement of the group atmosphere of the class, as a basis for the prevention of underachievement, and (4) the expansion of the other sides of the talented, which are not closely connected to the special field of giftedness. If we want to achieve all these goals, special and complex programs must be planned for the gifted students.

#### *Principles for planning programs for the gifted*

Schooling should provide adequate nurturance of the intellectual processes so that all children will derive full benefit from it. As a consequence, learning must be organized in many ways to accomplish the best for talented students. According to our well-defined and marked aims, education for the gifted should

- be based on a firm philosophical, psychological and pedagogical base,
- be planned to be responsive to community needs and also to national and global needs,
- reflect an inclusive rather than exclusive attitude,

- be an integral part of the total school system,
- focus on the total child, providing curriculum and instruction adaptation as well as guidance,
- be a continuous effort on behalf of a school system (Sisk, 1987).

### *Individualized education for the gifted*

The importance of individualizing education for gifted students has been stressed by a number of authors (Bahner, 1979; Jeter, Chauvin, 1982; M. Nádasi, 2001; VanTassel-Baska, 1992), yet, when individualized learning is examined in practice, a multitude of interpretations are found. Traditional education generally handles students as a body of people rather than individuals, but it is time to realize that in case of gifted students there is a need to move away from teacher-directed to student-directed learning whenever it is possible. Individualized education involves adaptation of the content, the process, the product, and the learning environment, if necessary, after a careful assessment of individual strengths and weaknesses of students (eg. achievement, intellectual aptitude scores, interest, creativity...). Individualized instruction is diagnostic and prescriptive as individual educational programs are developed for gifted students through teacher diagnosis. The prescription is cooperatively developed by both the teacher and the gifted student, and can include information from parents and other teachers. Necessity of individualized and personalized view of school programs is well-illustrated by the following short story of animals.

#### **Why a bee? (Author unknown)**

Once upon a time the animals had a school. They had four subjects: running, climbing, flying and swimming, and all animals took all subjects.

The duck was good at swimming, better than the teachers in fact. He made passing grades in running and flying, but he was almost hopeless in climbing. So they made him drop swimming to practice more climbing. Soon he was only average in swimming. But average is OK, and nobody worried much about it except the duck.

The eagle was considered a troublemaker. In his climbing class he beat everybody to the top of the tree, but he had his own way of getting there, which was against the rules. He always had to stay after school and write, Cheating is wrong 500 times. This kept him from soaring, which he loved. But schoolwork comes first.

The bear flunked because they said he was lazy, especially in winter. His best time was summer, but school wasn't open then.

The penguin never went to school because he couldn't leave home, and they wouldn't start a school out where he lived.

The zebra played hooky – a lot. The ponies made fun of his stripes, and that made him very sad.

The kangaroo started out at the top of the running class, but got discouraged trying to run on all fours like the other kids.

The fish quit school because he was bored. To him all four subjects were the same, but nobody understood that. They had never been a fish.

The squirrel got A's in climbing, but his flying teacher made him start from the ground up instead of the treetop down. His legs got so sore from practicing takeoffs that he began getting C's and D's in running.

But the bee was the biggest problem of all, so the teacher sent him to Dr. Owl for testing. Dr. Owl said that the bees wings were just too small for flying and besides they were in the wrong place. But the bee never saw Dr. Owl's report, so he just went ahead and flew anyway.

I think I know a bee or two, don't you?

## **2. Content of talent development**

According to the most-widely used Renzulli model (1986), talent development programs should (1) cultivate and develop general intellectual skills, with a special focus on the peculiar field of giftedness, (2) promote creativity through the acquisition of social elements of creative behaviour (eg. cooperation, constructive critique) and the elements of creative, divergent thinking (eg. use of associations, abstract, deductive thinking, use of analogies, metaphors, restructuring, looking for alternative solutions, imagination), and (3) provide a firm motivational basis for learning, considering social and peer relations and family support, as well.

Obviously students of different ages require different treatment. Early childhood is a time for developing basic emotional, verbal and cognitive skills, so children primarily need appropriate family background and time for playing. Gifted children should not be treated and developed separately from average children, but short, game-like individual programs must be provided if necessary. School-age children acquire basic skills like reading, writing and counting that are necessary for individual learning, so the main goal for this age group must be to stabilize these basic skills. General intellectual excellence may foreshadow directions of later development, and special fields of giftedness may also require individual development programs. In senior classes of primary school (11-14 years) the special fields of giftedness can be already identified, which means that the two main tasks of this period are to discover talent in time, and to provide appropriate nurturance for the talented students. Most often complex school programs for talent development begin at this age. Years of high school (14-18) are very essential for skill and knowledge improvement. It is very important that programs for gifted students must be flexible enough to provide facilities of various fields of arts and sciences, and it should focus on the weaker sides of students, as well as the development of personality and leisure activities. Higher education at universities is the last stage of formal schooling, when the talent potential can reach its full bloom. Choosing an adequate field of profession, mastering it and acquiring the general methods of research and practical work are of a capital importance.

## **3. Program types for the gifted**

In practice program services for the gifted are usually grouped into three categories, these are acceleration, enrichment and separation or special grouping. These methods are generally described separately, but in practice they cannot be fully sectioned out, there can be some overlaps between these methods.

### *Acceleration*

Acceleration is a way of speeding up the growth and manifestation of intellect in school. It gives the chance for faster students to make an advance in the material, which serves as the basis for getting into a higher grade. It has provoked considerable discussion and even disagreement over the years. Grade skipping is a special form of acceleration, which has the danger of causing gaps in the acquisition of learning and may bring psychosocial developmental problems. However, intellectually able students, eager to move ahead at rates faster than the conventional schooling system will allow, are less likely to be affected. Anticipated gaps in learning can be overcome by special preparatory educational experiences, as well.

A more fruitful approach appears to be accelerative learning without gaps. It means that students continually progress in certain subject areas, without leaving their original classes, and emphasis is placed on learning accomplishments, rather than grade chronology.



Acceleration in this way can lead to the most productive results, in spite of the difficulties of administration (Khatena, 1992).

Stanley (1977) also offers a number of different options for gifted student acceleration:

- early entrance into school
- early exit from school
- taking courses required in senior grades
- completing two or more years of study in a subject in one year
- using special mentors to stimulate and tutor students through various courses
- taking correspondence courses at high school or college levels.

Feldhusen and his associates (1986) declare that proper grade advancement decisions should always be based on individual assessment, which should include a comprehensive psychological evaluation of the child's intellectual functioning, academic skill levels and socio-emotional adjustment. They offer guidelines for successful grade advancement that include an IQ of 125 or above, levels of academic skills compatible with the advanced grade, freedom from social and emotional adjustment problems, high degree of motivation, good physical health, no undue parental pressure felt, positive attitudes toward the accelerated child by the teacher and grade advancement arranged on a trial basis, perhaps over a period of six weeks with the availability of counseling services. In this way acceleration can be effective and harmless.

### *Enrichment*

By enrichment activities teachers try to express students' potential more fully, with the use of enrichment of content and methodology. It means a complex way of development of skills, abilities and personality, which is in fact a mixture of several methods. Subject material is enriched not only in amount, but in content, as well. Its main aspects are novelty, difficulty, variety, with the elements of intellectual challenge and the development of creativity and social skills. Education often favors enrichment over acceleration, as a result of the fear of social-emotional problems that may derive from grade skipping.

Gifted children often have enriched experiences of the world, but they also need planned enrichment experiences provided by the teacher and the school. Teachers should help students by diverse grouping procedures, by making learning materials and texts more interesting and attractive for students, various methods of learning, often experientially based, and continuous feedback and manifestations of the results of learning (Khatena, 1992).

Renzulli (1977) offers the so called *Enrichment Triad Model* aimed at guiding the development of able students, and providing continuous permeability from one type of activity into another one. The objectives of his enrichment program are: (1) For the majority of time spent in the gifted programs, students have complete freedom to pursue topics of their own choosing, with their own preferred style of learning. (2) The primary role of the teacher is to provide each student with assistance in structuring realistic solvable problems and in acquiring the necessary methodological resources and investigative skills that are necessary for solving these particular problems.

The model comprises of three different types of enrichment: general exploratory activities, group training activities and individual investigation of real problems.

- *General exploratory activities* introduce students a wide variety of topics or areas of study from which they can select problems for in-depth investigation. If students get acquainted with various fields of study they have a better chance to find one that is in accordance with their interests and skills.
- The second phase of *group activities* aims to develop mental, cognitive and emotional skills that can enable students to deal more effectively with content. Development of

creativity, critical and reflective thinking, problem solving takes place in this phase, which forms the basis of later, autonomous learning and scuffle through a task.

- The practicing process of the second phase should lead to the actual use of these activities in *real inquiry situations*. This time students are expected to identify and choose solveable problems and find solutions for them. Learners should choose a task according to their interests and skills, and they are responsible for the solution, as well. Instead of direct instructions teachers have a role to prepare and facilitate students' independent and self-sufficient problem solving.

Renzulli's *Schoolwide Enrichment Model* (1995) offers new directions for enrichment: it implies that all students should have the opportunity to develop high order thinking skills. His model sets up the goals to improve the academic performance of all students in all areas of the regular curriculum, and to blend standard curriculum activities with meaningful enrichment learning. This model is flexible enough to allow each school to develop its own program based on local resources, student populations and faculty strengths and weaknesses.

Further strategies and tools for enrichment are listed by Mező (2004) as follows: independent learning and project work, learning centres or workshops, field trips, excursions, weekend or summer programs, competitions aimed at the solving of realistic, future problems, intellectual olympics. Content of enrichment programs should be interesting and challenging, for example arts, astronomy, aeronautics, oceanography, psychology, history of sciences or culture, making films or stock exchange. Writing, editing and publishing a school journal is a good chance to create an enrichment program.

#### *Separated programs, special grouping*

Gifted students have special needs and interests, which cause them to behave in other ways than average students, and it creates the necessity for them to be educated in a separate class or a separate school. Special schools, classes or groups can be established for talented children or we can work out individual developmental programs for them. Separated teaching of the gifted may be beneficial, because structuring and conveying a curriculum is easier for teachers as the group is composed of students with similar skills, and students are more likely to support each other in learning or in other fields of life. Their self-concept can be more realistic as they compare themselves to students with similar skills. As negative consequences of separated programs we can mention isolation or decrease of self-confidence, if students cannot feel their real value, their higher skills, because they are in interaction with students of the same skills.

Educators generally agree that gifted students need to work with other gifted students for at least part of the day to learn at their own pace and to motivate and stimulate each other. Controversy centre around the amount of time needed for such interaction. A continuum of special grouping services ranges from very little from very much time spent among other gifted students and the extent of specialization, and includes

- regular classroom,
- regular classroom with cluster,
- regular class with pull-out,
- regular class with cluster/pull-out,
- individualized classroom,
- individualized classroom/cluster,
- individualized lassroom with pull-out,
- individualized classroom/cluster/pull-out,
- special classes with some integrated classes,
- special classes and special schools (Sisk, 1987).

Summarizing the methods introduced above we can conclude that all these ways and methods of talent development can be used effectively, but always circumspectly and carefully. We must provide a joyful childhood for gifted children, as well, so in addition to development and supporting programs leisure activities and free time must be also provided for them. One has to realize that students and circumstances of learning are different, so there is not an exclusive or absolutely effective way of teaching, but we always have to adapt to the given conditions. Decisions on learning must be made together with the students, according to their special interests and skills. Furthermore, appropriate attitude of teachers is also necessary, so teachers of gifted children should be open, understanding and supporting.

#### *Ways of talent development in the classroom*

Professional literature on gifted education (Balogh, 2004; Gyarmathy, 2007; VanTassel-Baska, Stambaugh, 2006) presents a wide variety of methods and tools for talent development that can be applied for non-specialized learning groups, as well, for example the use of problem-solving techniques, special ways of raising questions, or brainstorming techniques. Now I focus on two widely used methods that most often appear in classrooms.

*Differentiation* means the modification of students' curriculum to accommodate their specific needs. This may include changing the content, structure or ability level of the material, or the teaching methods of the teacher. Students' interests, skills, needs and knowledge determine the right ways of teaching. Materials that can be acquired on different ways or different levels are the most appropriate for differentiated or individualized education, because these materials differentiate themselves. The simplest way of differentiation is to provide facilities for choosing between tasks that require similar time, but different ways of learning techniques or different depth of investigation.

*Project work* is more and more widespread in normal and in gifted education, as well. It refers to the process or work out of a given complex topic, which gives an opportunity for gaining and applying new experiences. It involves the planning, execution and presentation of a practical investigation under the guidance of a tutor but performed independently by each student. The main source of knowledge is experience. Project topics are generally interdisciplinary fields of arts and sciences, so a topic is worked out from different aspects. Teachers' tasks are to prepare and facilitate autonomous and self-supporting student work, and to help to combine students' experiences of a given topic. Project work often requires cooperation of students, so in addition to the development of cognitive skills and experiences, social and communication skills are also developed. Projects used in gifted education can be characterized by intellectual challenge (eg. use of logics, deductive thinking, structuring, applying knowledge..), the use of creative thinking (eg. originality, fantasy, changing of aspects, combination, risk-taking, seeking for alternatives...) and the use and development of social skills (eg. assertive behaviour, leadership, cooperation, arguments, reasoning, agreement, critique..).

#### **4. Summary**

Summarizing the above mentioned facts it can be established that the importance of talent nurturing and development is widely recognized in Hungary and in Europe, as well. The number of theoretical research, publications and articles, practical implications and programs are also increased in the last few decades.

In this paper I reviewed the basic theoretical considerations and frames for planning a talent development program, mainly for those educators or students who are not familiar with these basic principles. It serves as the very first step to think about or create and work out a

development program. Teachers or other experts dealing with gifted students must always apply these general principles according to their special needs, interest and potential, usually supported by talent development experts or counselors, thus create a real chance for gifted students to evolve their full potential.

### References

- Bahner, J. M. (1979): Individually guided education. In E. Ingas, R.J. Corsini (Eds.), *Alternative educational systems*. Itasca, IL: F.E. Peacock.
- Balogh László (2004): *Iskolai tehetséggondozás*. (Talent nurturing at school) Kossuth Egyetemi Kiadó, Debrecen.
- Feger, B. (1997): A tehetséggondozó programok. (Talent development programs) In: Balogh L., Polonkai M., Tóth L. (szerk.): *Tehetség és fejlesztő programok*. KLTE, Debrecen. 47-57.
- Feldhusen, J. F., Procter, T. B., Black, K. N. (1986): Guidelines for grade advancement of precocious children. *Roeper Review*, 9(1): 25-27,
- Gyarmathy Éva (2006): *A tehetség. Fogalma, összetevői, típusai és azonosítása*. (The gifted. Definition, elements, types and identification.) ELTE Eötvös Kiadó, Budapest.
- Gyarmathy Éva (2007): *A tehetség. Háttéré és gondozásának gyakorlata*. (The gifted. Its background and practice of development) ELTE Eötvös Kiadó, Budapest.
- Jeter, J., Chauvin, J. (1982): Individualized instruction: Implications for the gifted. *Roeper Review*, 5(1): 2-3.
- Khatena, J. (1992): *Gifted: Challenge ad Response for Education*. Itasca, IL: F.E. peacock.
- Mező Ferenc (2004): *A tehetség tanácsadás kézikönyve*. (Handbook of guidance for the gifted) Kocka Kör Tehetséggondozó Kulturális Egyesület, Debrecen.
- M. Nádasi Mária (2001): *Adaptivitás az iskolában*. (Adaptivity at school) Comenius Bt. Pécs.
- Renzulli, J. S. (1977): *The Enrichment Triad Model*. Wethersfield, CT: Creative Learning Press.
- Renzulli, J. S. (1986): The three-ring conception of giftedness: A developmental model for creative productivity. In: R.J. Sternberg, J.E. Davidson (Eds.): *Conceptions of giftedness*. New York: Cambridge University Press.
- Renzulli, J. S. (1995): New directions for the Schoolwide Enrichment Model. In: Katzko, M. W., Mönks, F. J. (Eds.): *Nurturing Talent. Individual Needs and Social Ability*. Van Gorcum, Assen. 162-167.
- Sisk, D. (1987): *Creative teaching of the gifted*. NY: McGraw-Hill Book Company.
- Stanley, J. C. (1977): Rationale of the study of mathematically precocious youth during its five years of promoting educational acceleration. In: J. C. Stanley, W. C. George, C. H. Solano (Eds.): *The gifted and the creative: A fifty-year perspective*. Baltimore: Johns Hopkins University Press. 75-112.
- VanTassel-Baska, J. (1992): *Planning Effective Curriculum for Gifted Learners*. Denver, CO, Love.
- VanTassel-Baska, J., Stambaugh, T. (2006): *Comprehensive curriculum for gifted learners*. Needham Heights, MA: Allyn & Bacon.

## THE DEVELOPMENT OF 10-12-YEAR-OLD TALENTED CHILDREN'S MOTIVATION AND STUDY STRATEGIES IN 'INTEGRATED' AND 'SELECTED' CLASSES<sup>1</sup>

Kornélia GÖMÖRY  
(University of Debrecen, College Faculty of Education)

E-mail: nelligomory@vipmail.hu

*In this study the development of gifted upper grade primary school (10 to 12-year-old) children in normal and selected classes is evaluated. The organisational approach of normal classes suggests that good, fair and weak ability students study together in the same class. In these circumstances, teachers identify students with special or superior abilities and strive to further develop their students' abilities applying differentiative methods in the classroom and also facilitating extra-curricular activities in the afternoon. In contrast to this, students are separated from other students and study together in special selected classes for years, allowing their teachers to devote all their attention to further developing their abilities in the regular classes as well as in extra-curricular programs. Development is measured by the change in academic achievements; however, other factors such as motivation and study strategies greatly affect students' academic accomplishment. These strategies were measured by psychological testing. The findings demonstrated that there was no significant difference in respect of psychological factors in favour of selected class versus normal class students to influence the selection of gifted students. On the other hand, it must be emphasized that the questions raised cannot be completely answered before the end of the respective students' primary school years. Records and findings of a four-year period will provide a more appropriate and accurate conclusion. However, the results so far indicate an optimistic final conclusion.*

**Keywords:** talent development; learning strategies, learning motivation

Children enter school with considerable differences regarding their aptitudes and abilities. While some perform under the average, others demonstrate outstanding performance. Those capable of achieving remarkable accomplishments in a field useful to society are generally called 'talented'. In other words: talent is a high level of skills and abilities. (Réthy and Vámos, 2006, page 36) The term 'gifted children' was first used in 1869 by Francis Galton. Galton referred to adults who demonstrated exceptional talent in some area as gifted. In his view children could inherit the potential to become gifted adults, and Galton referred to these children as gifted. Lewis Terman expanded Galton's view of gifted children to include high IQ. In the early 1900s, he began his a long-term study of gifted children, whom he defined as children with IQs of 130 or more. His study found that IQ alone could not predict success in adulthood. Leta Stetter Hollingworth, too, believed that the potential to be gifted was inherited. However, she felt that providing a nurturing home and school environment were also important in the development of that potential. In 1926, she published her book, *Gifted Children, Their Nature and Nurture*, and the term *gifted* has been used ever since to refer to

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<sup>1</sup> The research was conducted by Dr. Balogh László in the frames of the Psychology PhD program of the University of Debrecen.

children of high potential. According to Laszlo Nagy, gifted are the ones who display ability above the average. Nagy refers to three levels of giftedness: the applier (gifted), the one who develops things further (talent), and the innovator (genius). The factor of creativity was first applied in Guilford's model. In his definition of giftedness beyond the high level of intelligence he also emphasised the importance of creativity. The term 'dynamic talent' was created by Rolett in 1991. In his theory above-average abilities (dispositions) serve as basis for giftedness. In the development of abilities individual differences are experienced. The intensity of personal creativity dynamizes the development of abilities and activities. (Réthy and Vámos, 2006). Talent development begins with the recognition of giftedness, therefore, it is of outmost importance that families and schools recognise the factors that suggest giftedness (Falus, 2003).

The importance of talent management was recognised early in Hungary and Hungary joined the reform movement. The first phase of this movement was marked with Lajos Felmeri's work: 'The Handbook of the Educational Sciences', which highlighted the importance of exploring children's abilities and generally getting to know them. The principles of the Hungarian talent management program were laid down by László Nagy and Géza Révész. The second phase of talent management began in Sarospatak in 1935, was suspended in 1948 and then launched again in 1979 in the frames of the school talent management movement (Falus, 2003).

Systematic talent development in the Hungarian school system began to advance in the second half of the 1980's and several background factors catalyzed its progress. First of all, educators began to research into and elaborate the methods that respond to the requirements of complex, comprehensive, development strategies. Furthermore, research programs - conducted in the field - by the Psychological Institute of the Hungarian Academy of Sciences as well as the Department of Educational Psychology of the University of Debrecen further encouraged the movement. Last but not least, the foundation of *European Council for High Ability (ECHA)* in 1987 further stimulated the work. Its Hungarian branch was set up in 1988 and later, in cooperation with the ECHA, the Hungarian Council for High Ability (Magyar Tehetséggyongozó Társaság) was also established ensuring the flow of information between the professional bodies within and outside the country.

A generally accepted principle in talent development is that gifted children best develop their abilities in the environment they normally belong to. On the other hand, there are certain personal as well as material requirements of intensive talent development in short of which no talent evolves (Freeman, 1991; Mönks and Boxtel, 1985; Mönks and Peters, 1992; Dijk, Kok and Poorthuis, 1991). To further develop - potentially - gifted children's abilities so that they can reach their potentials, special talent development programs should facilitate their higher achievements - beyond the regular school curriculum. In the 1980's special 'selected' classes (relative homogenous groups) became a popular form of talent management in Hungary. Students with above-average abilities were collected in 'selected' classes and educated for years to further develop their abilities (Compare: Nagy, 2000). This organisational form was optimal to facilitate talent development, on the other hand, it carried the risk of segregation and worked 'against' efforts made in 'normal' classes. To avoid problems incurred with 'selected' type classes, heterogeneous class forms have been encouraged by professionals and preferred by schools since the turn of the millenium. Furthermore, theories supporting the natural, heterogeneous organisational forms in talent development have spread promoting the use of effective differentiation principles in the classroom.

Several studies have analyzed and evaluated the psychological effects of talent development programs in 'selected' schools in the past two decades (compare: Balogh, 2004). In the frames of these studies, factors (such as changes in learning strategies and motivation) dominating in talent evolvment and development were analyzed.

Why were these factors analysed?

- Exploring and further developing students' individual learning methods (techniques and strategies) have become of key importance in talent management in the past two decades, (Balogh, 2004), since the method of information processing plays a vital role in talent development.
- Motivation as the inevitable prerequisite for outstanding achievement serves as vital component of the term 'talent'. Regardless of special or even superior abilities, exceptional accomplishments cannot be achieved without motivation. (Balogh, 2004; Czeizel, 1997; Gagne, 1985; Renzulli, 1978; Páskuné, 2004).

### **The Objective of the Research**

The main objective of the research was to compare the development of gifted upper grade primary school (10 to 12-year-old) children of 'integrated' and 'selected' classes. Their development was monitored by measuring the changes in the students performance. Furthermore, changes in psychological 'background factors' such as learning strategies, motivation factors were monitored to determine how they affected the gifted students' intellectual involvement.

### **General characteristics of the sample examined**

699 10 to 12-year-old (fifth grader) students participated in the study. While nearly half of them (310 students) came from integrated classes (of the settlements of Taktaharkány, Szarvas, Szerencs, Mezőkovácsháza, Mád) 389 students attended special classes of selected children (in the towns of Szerencs, Budapest, Törökszentmiklós.)

The monitoring and evaluation was conducted and data was collected by László Balogh (Balogh, 2004), who made the data available for this paper.

The talent management programs of the schools participating in the study were based and operated on the same principles:

- Intellectually gifted children were selected into the program according to a complex list of factors at the age of 10. First, The children's attention (attention span, working memory, focused/selective attention) memory (visual and verbal) thinking (recognition of phenomena, conceptualization), intelligence and learning attitudes were tested. Furthermore, educators recommendations of the tested students as well as the students academic achievements were also taken into account.
- The key objective of the program is to further develop the selected students' learning strategies and motivation and to identify students with special abilities. (Compare: Balogh, 2004).

There were differences between the schools' organisational approach:

- In the schools of the five integrated classes students with outstanding abilities studied together with their average ability classmates in the lessons, and participated in special talent management programs (individually or in small groups) as part of their extra curricular activities) in the afternoons.
- The talent management in the other three schools (where the students were carefully preselected according to abilities and achievements) was performed in the lessons as well as in extra curricular afternoon activities.

The analysis consisted of two measurements, which were performed using the Kozéki-Entwistle's Learning Orientation Questionnaire and the Hungarian adaption of the Kozéki-Entwistle's Learning Motivation Questionnaire. The students were tested at the beginning and at the end of the academic year (in their fifth grade).

### *Kozéki-Entwistle's Learning Orientation Questionnaire*

Professionals of the field elaborated several methods to measure students' individual learning strategies (Mező, 2002, 2004; Mező és Mező, 2007) out of which the Kozéki-Entwistle's Learning Orientation Questionnaire was chosen to use in this study. Individual learning strategies were divided into three main groups by the authors. In each of the groups (deep approach, reproductive, organized) beside learning techniques motivation drives, motivation elements were also represented (Kozéki and Entwistle, 1986).

- 1) Deep approach strategy:
    - a Deep approach: drive to comprehend
    - b Holistic: striving to find logical links, connections, relating ideas
    - c Intrinsic: genuine interest in the subject, demonstrating enthusiasm for learning
  - 2) Reproductive strategy:
    - a Reproductive: mechanic learning
    - b Serialist: concentration on facts and details
    - c 'Fear of Failure': constant fear of lagging behind
  - 3) Organized strategy:
    - a Organized: well organized work
    - b Success orientated: striving for perfection
    - c Conscientious: Success orientation, striving to give back learnt material without fail
- 10th component: instrumental – learning for reward (good grades).

This analyzing method provided a well structured, informative set of data regarding students' individual learning methods and motivation factors directly affecting those methods.

### *Kozéki-Entwistle's Learning Motivation Questionnaire*

The previous analyzing method provided only partial information regarding motivation factors was partially provided. In order to obtain a more informative set of data and to paint a comprehensive picture describing motivation factors affecting the students' Kozéki-Entwistle's Learning Motivation Questionnaire was also applied in the study (Kozéki and Entwistle, 1986). Questionnaire is based on three main dimensions.

- 1) Affective (follower) dimension:
  - a Parental love: the need for care, attention, warmth and affection from parents;
  - b Identification: the need for being accepted by the educators
  - c Affiliation: peer culture and belonging (adoption to and being accepted by peers)
- 2) Cognitive (interested) dimension:
  - a Independence: following own path;
  - b Competence: the urge to acquire knowledge;
  - c Interest: mutual activity.
- 3) Performance (moral, self integrative) dimension:
  - a Conscientiousness: trust, desire for feedback;
  - b Desire for Order: desire to follow examples, set values;
  - c Responsibility: self-integration, desire for moral behaviour, moral personality.

## **Findings**

### **Analyzing learning strategies and techniques in integrated and selected classes**

It was hypothesized that all the children participating in the study - both in the integrated and the selected classes - strived for logical and rational way of learning.

The major objectives of the study were based around three key factors: the changes observed according to the three key strategies, the development monitored according to the 10



composite elements and the comparisons by schools.

The measurement values were generally lower in all three key strategies at the second measure (Table 1). The measurement values of the 'deep approach' strategies were the highest at both measures and both types of classes.

The gap between the 'deep approach' and the 'reproductive' strategies measurement values grew and learning methods shifted towards the former ones. Rational learning methods proved to play a more dominant role in students' motivation drives at the second measure. They strived to understand what they learnt, to grasp logical relations between things and generally demonstrated deeper and more genuine interest in the subject.

*Table 1: Findings of the Main Learning Strategies in Integrated and Selected classes*

Classes	Learning Strategies	Measure 1			Measure 2			Difference between averages	Significance
		N	Average	Standard Deviation	N	Average	Standard Deviation		
Integrated classes	Deep approach	336	72,49	9,16	326	69,98	10,61	-2,49	P < 0,001
	Reproductive	336	63,97	10,16	326	59,63	10,71	-4,37	P < 0,001
	Organised	336	69,50	8,97	326	66,44	9,02	-3,10	P < 0,001
Selected classes	Deep approach	392	73,77	8,02	351	72,44	8,14	-1,33	P < 0,01
	Reproductive	392	61,43	9,67	351	56,86	9,39	-4,57	P < 0,001
	Organised	392	69,31	7,40	351	65,14	8,68	-4,17	P < 0,001

Summarizing the changes of the three learning strategies in integrated and selected classes, it can be observed that the measurement values of all three key strategies lowered at the second measure as the students' drive for rational and logical way of thinking strengthened. The students' changed evaluation mechanism explains the lower measurement values gained at the second measure: since the 'agree entirely' answer was less frequently chosen by them, therefore the mean values of the second measure lowered. (The change observed in the students' evaluation mechanism may also contribute to the lower measurement values of the motivation elements gained at the second measure – that are to be analyzed later.)

Comparing the data of the two measures (Table 2) demonstrates that the position of the 'holistic' and the 'fear of failure' elements in both the integrated and selected classes, and that of the 'deep approach' and 'success oriented' factors in the selected classes elevated. This change is especially favourable, since it indicates the students' drive to understand things in relations and their decreased fear of lagging behind. Furthermore, it seems typical that students in selected classes strive for their best performance. The positions of the 'deep approach', the 'intrinsic' and the 'reproductive' elements slightly lowered in both types of classes just as the 'organized' element in the selected classes did. Yet the 'deep approach', the 'intrinsic' and the 'organized' elements in the selected classes remained top priorities. The fact that the 'reproductive' element both in the integrated and the selected classes ranked lower on the list demonstrates an increased drive for rational learning. A further positive outcome of the program is that the 'instrumentalist' element ranked as the very last on the priority list of the selected class students at the second measure, further suggesting that their main motivation in the study process was not the reward or good grades. The ranking of the other strategic elements remained the same as at the first measure.

Table 2: Priority list changes of the composite elements in integrated and selected classes

Composite Elements	Priority lists in integrated classes		Priority lists in selected classes	
	Measure 1	Measure2	Measure 1	Measure 2
Deep approach	4.	5.	4.	3.
Holistic	5.	3.	5.	2.
Intrinsic	3.	4.	2.	5.
Reproductive	7.	8.	7.	8.
Serialist	6.	6.	6.	6.
'Fear of Failure'	8.	7.	8.	7.
Organised	2.	2.	3.	4.
Success oriented	10.	10.	10.	9.
Conscientious	1.	1.	1.	1.
Instrumentalist	9.	9.	9.	10.

Changes in the main learning strategies were compared by schools. Weakening main strategies values were observed on average in integrated classes. The measurement values of the 'deep approach' strategies proved to rank the highest at both measures. The gap between the 'deep approach' and the 'reproductive' strategies increased in four schools, 'learning strategies' shifted towards the former ones as rational learning methods played a more dominant role in the students' motivation. Furthermore, their interest in the subject heightened as their enthusiasm for learning grew. On the whole, in most schools the role of 'reproductive' learning methods weakened in the students' individual work, while that of the cognitive learning strengthened.

All in all, the development was rather balanced among schools. Comparing the key learning strategies in the integrated and selected classes by schools, similar tendencies were to be observed.

#### **Analyzing learning motivation in integrated and selected classes**

It was hypothesized that the children participating in the study - both in integrated and selected classes - were more motivated to learn at the beginning of the program and there were no real differences in the motivations of the integrated and selected classes. The study was based on three key factors: the change or development observed regarding the students' main motivations (three main motivation drives), changes in the 10 composite elements and comparisons by schools.

Table 3 displays the changes in measurement values of the three main motivation drives in integrated and selected classes. Motivation values were higher at the beginning of the program than at the time of the second measure, although the students' changed evaluation

mechanism may provide a fair explanation for this change, since the 'agree entirely' choice was scarcely selected by the students at the second measure.

In parallel with earlier study findings (Kozéki and Entwistle, 1986; Balogh, 2004b) the interrelationships between the three main groups of motivation elements remained unchanged. The 'interested' element proved to be the weakest at both measures confirming a rather typical attitude of the age group. The values of the 'performer' dimension were the highest referring to the fact that evaluation and feedback were important for the students. The measurement values of the 'follower' dimension did not score much lower than those of the 'performer' dimension which means that 'parental care', 'acceptance' by educators and 'affiliation to the age group' were key factors in the students' motivations.

*Table 3: Measurement values of the groups of motivation elements in integrated and selected classes.*

Classes	Motivation	Measure 1			Measure 2			Difference between averages	Significance
		N	Average	Standard deviation	N	Average	Standard deviation		
Integrated classes	Affective	335	75,05	8,44	326	72,84	9,76	-2,25	P < 0,001
	Cognitive	335	68,81	10,10	326	67,80	10,56	-1,01	P < 0,05
	Performance	335	75,66	9,48	326	74,30	10,22	-1,36	n.s.
Selected classes	Affective	392	78,86	6,94	348	75,64	8,74	-3,22	P < 0,001
	Cognitive	392	74,07	8,29	348	71,48	9,12	-2,59	P < 0,001
	Performance	392	79,90	7,60	348	76,89	8,55	-3,01	P < 0,001

Measurement values of the motivation elements were compared by schools of integrated and selected classes. At the beginning of the program the motivation values in selected classes were higher than integrated classes. There were not significance changes in measured motivation values of integrated and selected classes, though the motivation values in the normal classes decreased less than in the selected ones at the second measurement. According to the findings of the study, the hypothesis was proved.

Changes in the order of motivation elements are displayed in table 4. 'Parental love' ranked top on the priority list at both measures in both types of classes, which indicated how much children are attached to their parents and what a crucial role parental care plays in outstanding school performance and achievements. In integrated classes 'independence', 'identification', 'interest' and 'the need for group activities' ranked higher, while in selected classes affiliation and 'responsibility' measure values improved between the two measures. 'Independence', 'acceptance' and 'group activity' ranked higher in the development of gifted students. Fellow students play an increasingly crucial role in the lives of selected classes students and so does becoming a person with moral values. 'Independence', 'interest' and 'conscientiousness' ranked the same in selected classes at both measures. 'Feeling under pressure' ranked last at both measures both in integrated and selected classes, which indicates that teachers were not overdemanding.

*Table 4: The Priority List of Motivation in 'Integrated classes' and in 'Selected classes'*

Elements of Motivation	'Integrated classes'		'Selected classes'	
	Measure 1	Measure 2	Measure 1	Measure 2
Warmness	1.	1.	1.	1.
Identification	6.	2.	6.	7.
Affiliation	7.	9.	7.	5.
Independence	9.	4.	9.	9.
Competence	5.	5.	5.	6.
Interest	8.	3.	8.	8.
Conscientiousness	2.	7.	2.	2.
The Need for Order	3.	8.	3.	4.
Responsibility	4.	6.	4.	3.
Feeling under Pressure	10.	10.	10.	10.

Changes in the measured values of the motivation elements of both integrated and selected class students were compared by schools. The findings demonstrate that motivation values of integrated school children were considerably high at the beginning of the program in all six schools, which values remained unchanged in four of the schools. However, as regards to the 'interest' factor lower values were gained in two schools at the second measure, which may indicate that refining and expanding, group activities and following their own path were not regarded important for students in these schools.

The interrelationships between the three main groups of motivation elements remained unchanged between the two measures in integrated classes. The measurement values of the 'interested' factor ranked the lowest in all participating schools at both measures, which fact is rather typical of the age group. The values of the 'performer' dimension ranked highest on the average after both measures, suggesting that evaluation, feedback, accepting and following values were important for the students. The difference between the measurement values of the 'follower' and 'performer' dimensions statistically was insignificant in four schools, suggesting, that affiliation to the age group, parental care and acceptance by educators were important for students in these school. In one of the schools, however, considerable difference was measured between these values, indicating that warmness, affiliation to the age group and acceptance seemed to be less important in this school.

All in all, the overall development regarding motivation factors between the two measurements was more or less balanced in all six schools, since significant changes did not occur between the measured values in four of the schools. Despite the slight difference between the schools, their overall development was balanced.

Selected class motivation values ranked high at the first measure in all three schools and at the second measure they displayed no significant change in one of the schools, while in the other two schools decreasing tendencies were observed. The interrelationship between the three groups of motivation factors, however, remained unchanged in all selected classes. The 'interested' motivation factor proved to be the weakest at both measures in all 3 schools confirming a rather typical attitude of the age group. The 'performer' dimension's measurement values ranked the highest after the two measures in all schools but one, demonstrating that evaluation, feedback as well as accepting and following values were of vital importance for the students. The difference between the measurement values of the 'follower' and 'performer' dimensions was insignificant in two of the three schools,

suggesting that affiliation to their age groups, parental care and acceptance by educators were regarded as essential for the students of these schools.

On the whole, the overall development regarding motivation factors between the two measurements was balanced in all three schools, since significant change did not occur in measured motivation factors.

Comparing the changes in the values of the motivation factors by schools demonstrates that measured values ranked generally high in all participating schools at the beginning of the program and remained unchanged in four integrated and two selected schools. However, in two integrated and one selected schools much lower measurement values were gained at the second measure. The declining measurement values of the 'interested' factor in school number 1, 2 and 3 (selected) and in school number 2, 3, 4 and 5 (integrated) seemed rather unfavorable, since independence, thirst for knowledge and group activity were not regarded as essential for the students of these schools.

The interrelationships between the three main groups of motivation factors remained unchanged in all participating schools. The measurement values of the 'interested' factor ranked the lowest in all participating schools at both measures. The values of the 'performer' dimension ranked highest in all schools except for school number 2 (integrated) and school number 3 (selected), suggesting that evaluation, feedback, accepting and following values were important for most students. Measurement values of the 'follower' dimension were not much lower than those of the 'performer' in schools number 1 and 2 (selected) and schools number 1, 3, 5 and 6 (integrated), suggesting, that affiliation to the age group, parental care and acceptance by educators were generally considered as important for the students. All in all, despite some slight differences between some of the schools' measured values, the overall development regarding motivation factors between the two measurements was rather balanced in all schools.

### **Summary**

The main objective of this study was to compare the development of background psychological factors such as Learning strategies and learning motivations talent management in selected and integrated classes and to determine how development features in the talent management of the traditional integrated classes differed from those of the selected classes preferred among teachers. Learning strategies and learning motivations were measured and compared in order to find out whether similar positive development features in the talent management of integrated classes can also be discovered. The findings of our study can be summarized as follows:

- The measurement values referring to rational learning ranked higher between the two measures, suggesting that the students in both types of classes strived for logical and rational learning.
- There were considerable differences regarding the intensity of the decrease in reproductive learning priorities among schools, however, the main tendency was the same in most schools: the role of the mechanic learning methods decreased in the integrated as well as the selected class students' individual work.
- There were no significant differences between the measurement values of motivation factors of integrated and selected classes; the students were generally highly motivated for learning regardless of organizational forms.
- Development regarding motivation measurement values, were more or less balanced in integrated classes, there was no significant change in motivation measurement values in four of the five schools.

The above findings demonstrate that there was no significant difference in respect of psychological factors in favour of selected class versus normal class students. On the other hand, it must be emphasized that the questions raised cannot be completely answered before the end of the respective students' primary school years. Records and findings of a four year period will provide a more appropriate and accurate conclusion.

## References

- Balogh László (2004): *Iskolai tehetséggondozás*. Kossuth Egyetemi Kiadó, Debrecen.
- Czeizel Endre (1997): *Sors és tehetség*. Minerva, Budapest.
- Dijk, W., Kok, W. A. M. és Poorthuis, G. T. M. (1991): *Educating Gifted Pupils in Regular Schools: Intraclass Differentiation*. *European Journal for High Ability*, 2. 1. sz. 35–42.
- Falus Iván (2003): *Didaktika*. Nemzeti Tankönyvkiadó, Budapest.
- Freeman, J. (1991): *Gifted Children Growing up*. Cassell, Heineman, Portsmouth, Nh.
- Gagné, F. (1985): *Giftedness and talent: reexamining a reexamination of the definitions*. *Gifted Child Quarterly*, 3.sz.17–25.
- Kozéki Béla és Entwistle, N. J. (1986): *Tanulási motivációk és orientációk vizsgálata magyar és skót iskoláskorúak körében*. *Pszichológia*, 2. sz. 271–292.
- Mező, Ferenc (2002, 2004): *Learning strategies*. Pedellus Novitas Kiadó, Debrecen.
- Mező, Ferenc – Mező, Katalin (2007): *Tanulási stratégiák fejlesztése az IPOO-modell alapján (Második, átdolgozott kiadás)*. Tehetségvadász Stúdió – Kocka Kör Tehetséggondozó Kulturális Egyesület, Debrecen
- Mönks, F. J. és Bostel, H. W. (1985): *Gifted Adolescents: a Developmental Perspective*. In: Freeman, J. (1985, szerk.): *The Psychology of Gifted Children*. John Wiley and Sons, Ltd. New York
- Mönks, F. J. és Peters, W. (1992, szerk.): *Talent for the Future*. Van Gorcum, Assen/ Maastricht. 184-186.
- Nagy Kálmán (2000): *Tehetségfejlesztő program a törökszentmiklósi Bethlen Gábor református Általános és Szakiskola, Kollégiumban*. In: Balogh L. (szerk.): *Tehetség és iskola*. Kossuth Egyetemi Kiadó, Debrecen. 215–218.
- Páskuné Kiss Judit (2004): *Az iskolai motiváció mérésének problémái, eredmények*. In: Balogh L., Bóta M., Dávid I. és Páskuné K. J. (szerk.): *Pszichológiai módszerek a tehetséges tanulók nyomon követéses vizsgálatához*. Arany János Tehetséggondozó Program Intézményeinek Egyesülete és az Arany János Programiroda, Budapest. 77–112.
- Renzulli J. S. (1978): *What makes giftedness? Reexamining a definition*. *Phi Delta Kappa*, 60. sz.180–184.
- Réthy Endréné és Vámos Ágnes (2006): *Esélyegyenlőtlenség és méltányos pedagógia. A gyakorlati pedagógia néhány alapkérdése*. ELTE PPK, CD2, Budapest.

## THE IPOO-MODEL OF LEARNING AND ITS DIAGNOSTICAL AND DEVELOPMENTAL POSSIBILITIES

Ferenc MEZŐ

(University of Debrecen, Educational Psychology Department)

E-mail: mezof@freemail.hu

*In the past few years, we have worked out a new and useable learning model for effective diagnostic and developmental work. This is the IPOO-model. The aim of the present study is to demonstrate how we can work with the IPOO-model in learning diagnostics and development. This study consists of three parts. First, we define some basic concepts. In the second part the IPOO-model of learning is presented, and finally, we give some examples of using the IPOO-model.*

**Keywords:** learning, diagnostic, development, IPOO-model

In our days we can observe an increasing interest in learning development and diagnostics in Hungary. The manifestations of this interest are:

- a) the numerous requests of the schools, education institutions and organizations, teachers, parents and students for the learning researchers that they show and teach effective learning methods to teachers and pupils/students. In Hungary we organise trainings to learners (from elementary school to university) and for teachers and parents.
- b) the increasing number of books on learning development may be significant, because the law of supply and demand shapes bookselling.
- c) learning development is a compulsory or optional course in several Hungarian universities and colleges of teachers education.

An important and necessary component of learning development is learning diagnostics. It helps to identify and measure learning problems, the goals of development and the effectiveness of development.

In the past few years, we have worked out a new and useable learning model for effective diagnostic and developmental work. Let us call it briefly the IPOO-model.

The aim of the present study is to demonstrate how we can work with the IPOO-model in learning diagnostics and development. This study consists of three parts. First, we have to define some basic concepts. In the second part the IPOO-model of learning is presented. Finally, we give some examples of using the IPOO-model.

### **Basic concepts**

Below the concepts of the learning variable, learning diagnostic, learning development and learning ideal are defined and described.

*Learning variable:* It is a sort of property of learning. It is a simple statistical (nominal, ordinal or quantitative) variable with two or more different values. For example, the 'Time of Learning' ordinal variable has three different values: 'too much', 'enough' or 'not enough'. If this variable is a quantitative variable, we can measure the seconds, minutes or hours of

learning. Learning developers have to choose and determine the applied learning variable and the type of statistical scale and values for learning diagnostics and development.

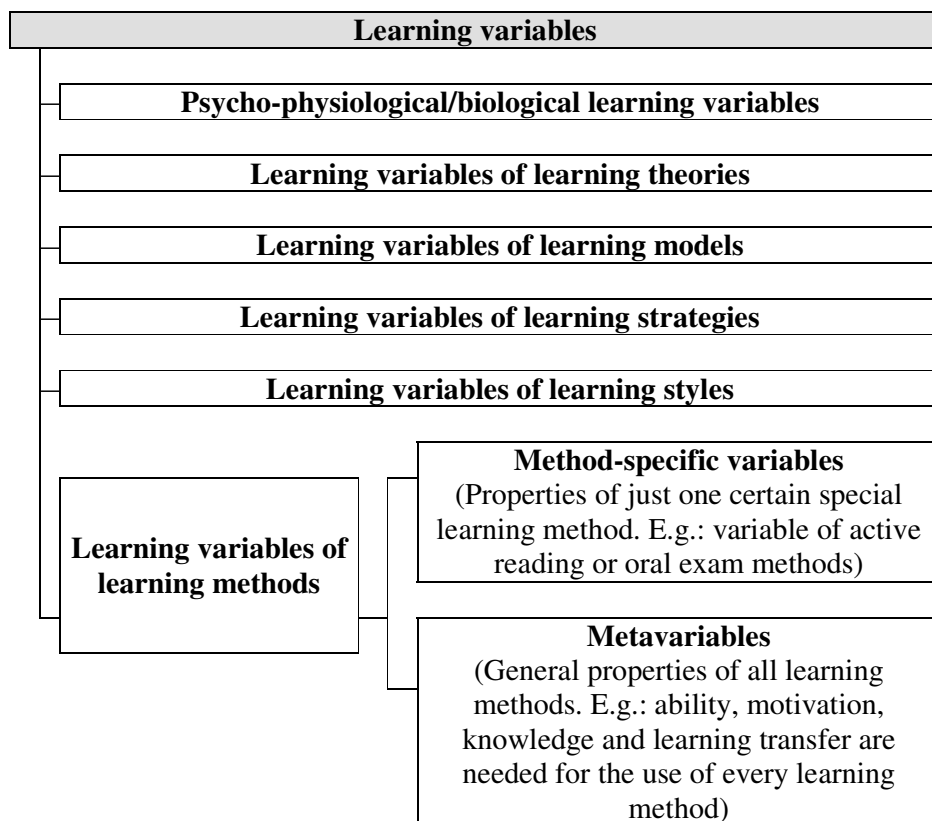
Several multitudinous learning variables have been described. Figure 1 shows a simple grouping of these. The first group of Figure 1 shows the psycho-physiological and/or biological variables (e.g.: variables of intercell communication in duration of learning, or types and effects of neurotransmitters, or variables of changes of EEG etc.).

The second group of Figure 1 shows the variables of learning theories. These theories – e.g., the theory of the classical conditioning (Pavlov, 1927) and the operant conditioning (Skinner, 1974), etc. – try to describe the general process and acts of learning. Their learning variables, among others, are the following: stimulus, response, duration of conditioning, reinforcement, schedules of reinforcement etc.

Another group consists of the variables of learning models. These try to describe and predict school learning. For example, Carroll's model uses the following learning variables: learning efficacy = duration of learning / necessary learning-time (Carroll, 1963).

Learning strategies are patterns of information processing activities (Das, 1988). A learning strategy is the battery of some special learning actions ('The term 'strategy' was originally a military term that referred to procedures for implementing the plan of a large-scale military operation' – Schmeck, 1988, 5. p.). For example, Claire Weinstein (1988) describes five different strategies. These are: rehearsal, elaboration, organizational, comprehension monitoring, affective strategies.

Figure 1: Principal groups of learning variables (Mezů and Mezů, 2007, 11. p.).





According to Schmeck, 'if ever we observe that an individual has an inclination to use the same strategy in varied situations, we can suspect the presence of a style' (Schmeck, 1988, 7-8. pp.). Learning styles try to describe the bio-psychological, cognitive and motivational properties of learning and/or the learners. As Katona and Oakland (1999) write, we can find three groups of theories of learning styles: 1) some theories are based on the biological differences (e.g.: dominance of the left or right brain hemisphere – Torrance and Rockstein, 1988); 2) other theories rest on the differences of cognitive styles (e.g.: Witkin's 'field-dependent' and 'field-independent' styles or Pask's 'holist' and 'serialist' styles or Marton's 'holistic' versus 'atomistic' styles, etc. – see: Schmeck, 1988); 3) some theories are built on the motivational differences (e.g.: 'Hope for Success' or 'Fear of Failure').

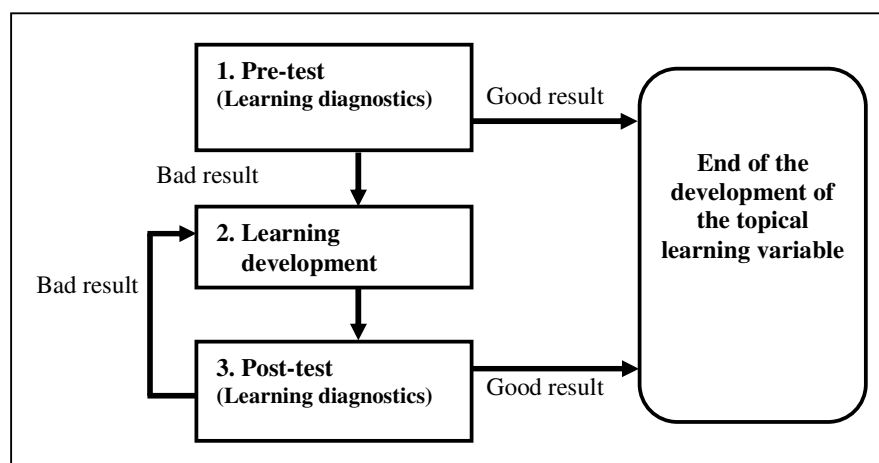
The last group of learning variables concentrated on learning methods. We can distinguish two types of these variables (Mező and Mező, 2005, 2007): method-specific variables and metavariables. Method-specific variables can be used in one special learning method (e.g., variable of the active reading or the oral exam methods). Metavariables are useable with all learning methods. For example, every learning method needs a sort of ability, motivation, knowledge and learning transfer.

Direct learning development aims at the development of the method-specific variables of the learning methods, the last group of the learning variables (the 'indirect' learning development objectives are the learning abilities – Balogh et al, 2001).

*Learning diagnostics:* measurement of the value of a learning variable with psychological and/or pedagogical methods (for example: observation, experiment, interview, content analysis, questionnaire, test).

*Learning development:* adjustment of the ideal value (the 'learning ideal') of a learning variable. Figure 2 shows the relationship between learning diagnostics and development. The objective of the 'pre-test' is to determine the kind of learning problems. The objective of learning development is to put an end to the learning problems. The objective of the 'post-test' is to control the effect of the learning development.

Figure 2: The relationship of learning diagnostics and development (Mező and Mező, 2005, 8. p.).



*Learning ideal:* a special value of a learning variable, which is the goal of the development of learning. The developers determine the ideal value of a learning variable. We can see that determining the ideal value of a learning variable is considerably subjective.

### The IPOO-model of learning

According to the IPOO-model (Mező, 2002, 2004), school learning is an information processing procedure, and it has four components:

- Input (I): from selecting the theme to effective reading techniques.
- Process (P): from mnemotechniques to the holistic system of knowledge.
- Output (O): from the oral or written presentation to everyday skills.
- Organising (O): organising of learning (time, place, money, systematization, legalisation of knowledge, etc.)

Every phase is built on special abilities, motives, methods. These phases are in a special connection with each other:

$$\text{LEARNING} = (\text{INPUT} + \text{PROCESS} + \text{OUTPUT}) * \text{ORGANISING}$$

In this formula the plus sign (+) adverts that the value of the input, process or output component (as learning variable) may be zero. For example: if somebody learns some foreign words (so input is given), but she/he never uses those (has no output; in other words: the value of the 'output' variable is zero), we will talk about learning (without output).

The symbol of multiplication (\*) adverts that if any of the values of the factors of the multiplication is zero, then the result (of the learning) will be zero. For example, learning without organising is impossible. Everyone (e.g.: a teacher, the school or the autodidact learner) has to organise learning in a way. Therefore, we have to develop the organising competences, skills and knowledge to develop the autodidact learners. At the same time, schools waste their work-force on learning (organising) development, if they do not develop the input, process and output competences of the learners.

According to the IPOO-model, we can differentiate three information processing possibilities (as learning variables): learning may be deficitive, reproductive and productive. These are determined by the aspects of relationship between input and output:

- *Deficitive learning*: input > output. If input is more than output, learning will be ineffective. For example: a poem has four verses (as input), but the learner can reproduce (as output) less than four verses. The most important characteristic of this kind of learning is information deficit.
- *Reproductive learning*: input = output. If input is equal to output, learning will be reproductive without adequate processing. It is often very much. For example: a poem has four verses (as input), and the learner can recite (as output) all of the four verses, but she/he does not understand the words, the verses, the poem, the metaphors of the poem, etc. The learner tries to memorise the lesson word by word, but the learner does not dope the lesson out.
- *Productive learning*: input < output. If input is less than output, learning will be meaningful, holistic and creative. For example: a poem has four verses (as input), and the learner (at the moments of output) can recite all of the four verses and she/he understands the poem, and she/he searches for the connections between the new lesson and his/her earlier knowledge. The result is productive, creative learning. This type of learning is the most important goal and learning ideal in the learning development by the IPOO-model.

The differential diagnostics of reproductive and productive learning can be realized by a confused text (as input). If the oral or written output is exactly the same as the input text, the learning will be reproductive. If the output is not confused, the learning will be productive. The text for the diagnostics of deficitive learning may be any factual (confused or non-confused) text.

Learning problems can be seen from the aspect of the IPOO-model:

$\text{LEARNING} = (\text{INPUT} + \text{PROCESS} + \text{OUTPUT}) * \text{ORGANISING}$ $\text{PROBLEM} \quad \text{PROBLEM} \quad \text{PROBLEM} \quad \text{PROBLEM} \quad \text{PROBLEM}$
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Some typical learning problems are:

Input-problems:

- 1) 'What will be the topic of the learning?'
- 2) 'Where can I find information about my learning topic?'
- 3) 'How can I use resources effectively?'

Process-problems:

- 1) 'I don't understand the text, the lesson!'
- 2) 'I have to learn too much. I cannot memorize everything...'

Output-problems:

- 1) 'I hate oral exams.'
- 2) 'How can I write my dissertation?'
- 3) 'How can I apply my knowledge in my LIFE?'

Organising-problems are classical problems of time, place and the cost of learning etc.

All of these problems can be revealed by observation, experiment, interview, content analysis, questionnaire and/or test. The general goal of learning development is to improve these phases, and to give effective problem solving methods to the learners.

### **Work with the IPOO-model**

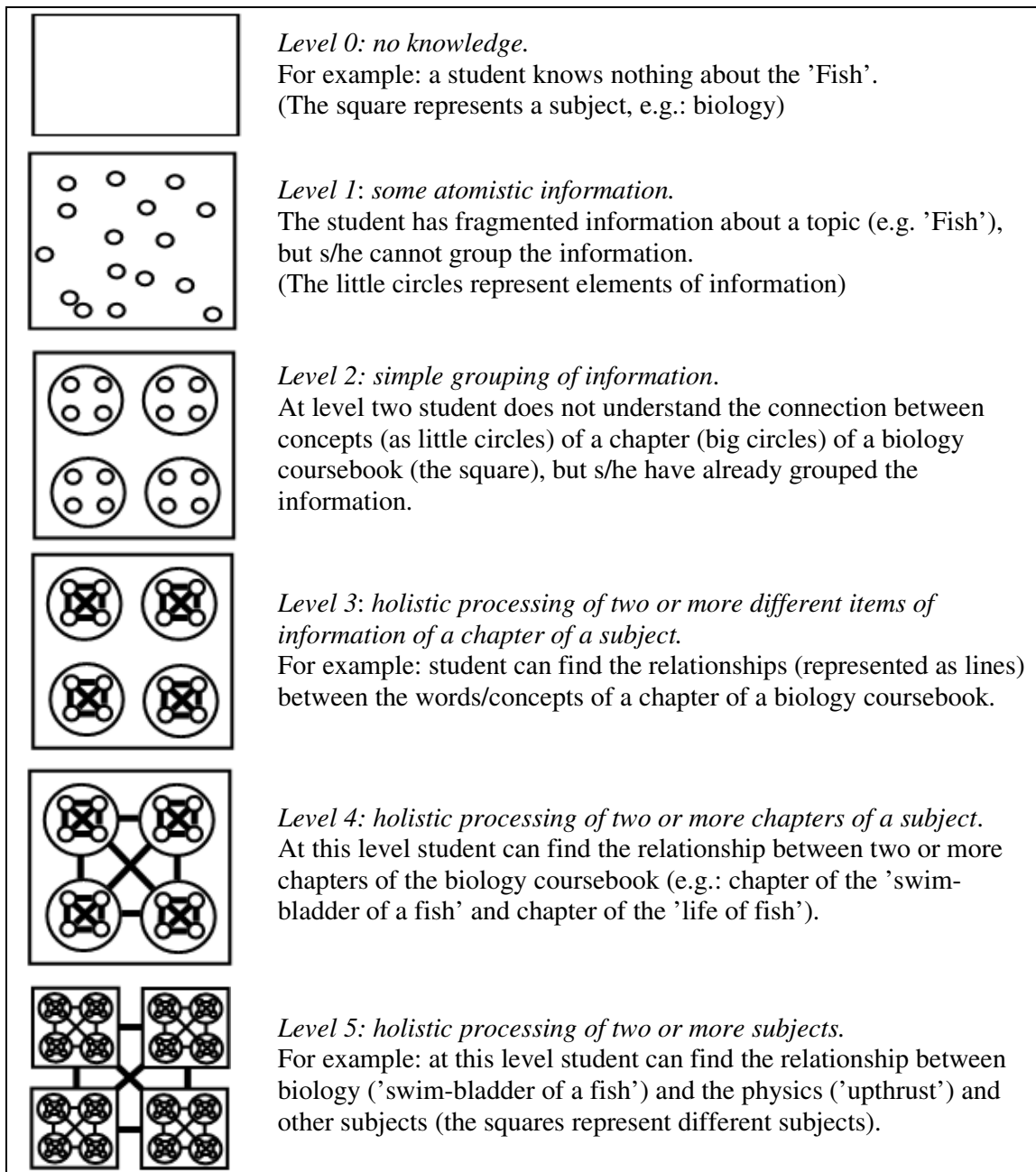
How can we use the IPOO-model in learning diagnostics and development? Figure 3 shows an example. It shows a possible algorithm of learning of textual information. Above all, we have to teach this algorithm to learners (Step 0). Steps 1-9 show different actions and competences for productive learning. We can analyse all the steps of Figure 3 by learning diagnostics.

Figure 3: The learning strategy of textual information according to the phases of the IPOO-model (Mező and Mező, 2005, 68. p.). The 'IPOO – minimum program'.

IPOO	The algorithm of learning organization	Needed competences	
<b>Input (and its Organising)</b>	Making note of spoken or written words, surveying and/or reading of written words.	0. Knowledge of this algorithm	
		1. Making notes, reading, survey.	
<b>Process (and its Organising)</b>	Is the text structure uniformed?	2. The learner is able to determine whether the structure of the text is uniformed or not.	
	Yes, the text structure is uniformed.	No. The text structure is multiformed.	
	I have to identify the text structure, and...	I have to identify the structures, and all of these...	3. The learner is able to recognize different text structures.
	I decide whether the system of the text is good or not.		4. The learner is able to decide on the appropriateness of the system of the text.
	System of the text is good.	The system is wrong: I have to re-edit the text, and during:	5. The learner is able to re-edit the text.
	I have to select the direct (factual) information: I select the essentials from the original or reedited text. Essentials are: proper names, definitions, numeric data, coherencies. I neglect unimportant information. I summarize the text of a page by using charts.		6. The learner is able to select the essentials, to summarize code and decode the charts.
	Holistic processing, generating indirect (extrapolatable) information: I have to look out for the ineffable/unwritten coherencies (among the concepts, paragraphs, chapters, (course)books, school subjects, experiences, information of TV and internet, theory and practice etc.) and I have to generate the indirect information.		7. The learner is able to look out for holistic coherencies and indirect (extrapolatable) information.
	I have to memorize direct and indirect information and I have to prepare these for the presentation/utilization.		8. The learner has effective mnemonic techniques.
	<b>Output (and its Organising)</b>	I have to present/apply my knowledge.	9. The learner has effective presentation techniques, and/or is able to apply the new knowledge.

What can we think about the holistic processing and holistic system of knowledge in step 7 of Figure 3? On one occasion a student had to take an exam in the 'Fish'-theme in biology and the 'Upthrust'-theme in physics. Both oral exams were successful. The student's knowledge was high-class, wasn't it? Later a teacher asked this student: 'What is the relationship between the functioning of a swim-bladder of a fish and upthrust?' The student's answer was: 'I don't know. Neither biology nor physics book wrote about it.' Is this student's knowledge high-class? Or: what kind of processing level does the student have? If we take a look at the grouping of holistic information processing levels below (Figure 4), we will see that this student did not have 'Level 5'-processing.

Figure 4: Organising the information from the 'no knowledge' level, across the 'atomic'-level to the intersubject holistic information processing (Mező and Mező, 2005, 95. p.).



The role of some metavariables is very essential for successful development. These are: ability of using a particular method, motivation for using the method, knowledge of the method and transfer of using the method. Possible values and investigations of these metavariables (using a simple three-grade ordinal scale):

Values of the 'Ability of method usage' metavariabale are:

- 2 = the learner's intellectual abilities are sufficient for using the method (it is the learning ideal)
- 1 = the learner's intellectual abilities may be sufficient for using the method
- 0 = the intellectual abilities are insufficient

Investigation: intelligence test, guess of intelligence, estimation of intelligence, or: if method usage is successful, the learner will have sufficient abilities. In general, one testing or estimating is enough for all methods.

Values of the 'Motivation for using the method' metavariabale are:

- 2 = the learner has intrinsic motivation for using the method (it is the learning ideal, because if somebody knows a method, but she/he doesn't use it automatically, the development will be unsuccessful. The goal is that the method usage will be habitual.)
- 1 = the learner has extrinsic motivation for using the method (the motivation is triggerable)
- 0 = the learner doesn't have motivation for using the method (untriggered motivation)

Investigation: if the learner has intrinsic motivation, he/she will use the method without the teacher's warning (2 point). If the teacher has to warn the learner to use the method, the learner's motivation will be extrinsic, triggerable (1 point). Otherwise the motivation is zero. We have to measure this metavariabale with every method.

Values of the 'Knowledge of the method' metavariabale are:

- 2 = the learner has practical knowledge of the method (it is the learning ideal)
- 1 = the learner has only lexical knowledge about the method
- 0 = the learner doesn't know the method

Investigation: if the learner uses a method successfully, he/she will have practical knowledge of the method (2 point). If the learner does not use the method, but he/she can speak about it, he/she will have lexical knowledge about the method (1 point). Otherwise the 'knowledge of the method' metavariabale is zero. We have to measure this metavariabale with every method.

Values of the 'Transfer of using the method' metavariabale are:

- 2 = the learner uses the methods in identical tasks in different subjects in every possible situation
- 1 = the learner does not use the methods in every possible learning situation
- 0 = no transfer

Investigation: the diagnostics of the 'transfer of method' can be realized by observation. For example, we can observe using a method in different subjects (mathematics, physics, literature etc.). Or we can analyse the written products of the learners of different subjects. We have to measure this metavariabale with every method.

The Figure 5 shows a practical algorithm of diagnostic of these metavariabales.

Figure 5: Investigational questions, possible results, developing goals and simple algorithm of diagnostics of metavariables (Mező and Mező, 2005, 51. p.).

Investigations		Results of learning diagnostics	Goals of learning development
<p><b>Question 1:</b> Are the learner's intellectual abilities sufficient?</p> <p>Testing: intelligence test (or guess...)</p>	<p>No →</p>	<p>The learner doesn't have sufficient intellectual ability for using the method.</p>	<p>Developing the intellectual abilities and/or we can give the learner one or more easier methods.</p>
<p>Yes ↓</p>			
<p><b>Question 2:</b> Is the learners disposed to use the learning methods successfully and without warning?</p> <p>Testing: observation, experiment</p>	<p>Yes →</p>	<p>The learner has got:</p> <ol style="list-style-type: none"> <li>1) sufficient intellectual abilities,</li> <li>2) intrinsic motivation for method usage (because warning was unnecessary),</li> <li>3) practical knowledge of the method (because method usage was successful).</li> </ol>	<p>We have to test the 'transfer of method usage' metavariable!</p>
<p>No or unsuccessful ↓</p>			
<p><b>Question 3:</b> If somebody warns the learner, will the learner use the method duly?</p> <p>Testing: observation, experiment</p>	<p>Yes →</p>	<p>The learner:</p> <ol style="list-style-type: none"> <li>1) has sufficient abilities;</li> <li>2) doesn't use the method successfully without warning;</li> <li>3) can use the method by extrinsic motivation (warning), so:</li> <li>4) has some lexical knowledge about the method.</li> </ol>	<p style="text-align: center;">Developing the intrinsic motivation and the practical knowledge of the method.</p> <p style="text-align: center;">If it is possible, we can try to develop the 'transfer' metavariable!</p>
<p>No or unsuccessful →</p>	<p>No or unsuccessful →</p>	<p>The learner has sufficient(?) abilities. He/she doesn't use the method either unbidden or after warning.</p>	<ol style="list-style-type: none"> <li>1) developing lexical and practical knowledge;</li> <li>2) developing intrinsic motivation for method usage;</li> <li>3) we have to retest the abilities of the learners and/or the level of the needed abilities for method usage.</li> </ol> <p style="text-align: center;">If it is possible, let's try to develop the 'transfer' metavariable, too!</p>

### Plan of research in the near future

In our days, learning diagnostics is compelled to use questionnaires (principally). Regrettably, the information of the questionnaires could be false, desinformative. Sometimes the validity, reliability and objectivity of these utensils are not very good. It has negative impact on the effectiveness of learning development.

Our possible alternative method would be an objective learning achievement test instead of questionnaires. Though achievement tests are preferred methods in the area of studying abilities (see: intelligence tests), these are not in use for the research of learning strategies and methods. The application of learning methods and strategies can be measured by tests. The problem is: we do not know any learning achievement test which can measure the variables of the IPOO-model.

In the near future, we will make a new learning test and its handbook. These will be useable in the following areas:

- Learning diagnostics: we will have an objective test, which can identify the problems of learning and show the efficiency of developmental work.
- Learning development: the handbook of the test will suggest developmental possibilities and methods, and will contain tasks and examples.
- Research: the translated versions of the test will be useable for national and international comparative research on learning by educational and psychological specialists.
- Education of teachers: diagnostical and developmental application of the test and the knowledge of its variables can be a part of higher and academic (post)graduated education of teachers. We have already used the IPOO-based learning development for the teacher education at the University of Debrecen (Debrecen, Hungary) and at Eszterházy Károly College (Eger, Hungary) and in Slovakia and Serbia for a few years.
- School psychology: the test would be a practical tool for school psychologist.
- Talent identification: this test will be useable for the identification of the gifted and talented persons in the learning area.

### References

- Balogh, László – Dávid, Imre – Nagy, Kálmán – Tóth, László (2001): Learning Techniques and Self-knowledge with Talented Schoolchildren. In: Balogh, László – Tóth, László (Ed.): *Gifted Development at Schools: Research and Practice*. University of Debrecen - Department of Educational Psychology, Debrecen. 159-168. pp.
- Das, J. P. (1988): Simultaneous-Successive Processing and Planning. Implications for School Learning. In: Schmeck, Ronald R. (Ed.): *Learning strategies and learning styles*. New York: Plenum Press
- Katona, Nóra - Oakland, Thomas (1999): Tanulási stílus – egy integratív megközelítés. (Learning style) *Alkalmazott Pszichológia* I. évf. 1. szám, 18-29. pp.
- Mező, Ferenc – Mező, Katalin (2005): *Tanulási stratégiák fejlesztése az IPOO-modell alapján* (Development of Learning Strategies by IPOO-model). Tehetségvadász Stúdió – Kocka Kör Tehetséggondozó Kulturális Egyesület, Debrecen.
- Mező, Ferenc – Mező, Katalin (2007): *Tanulási stratégiák fejlesztése az IPOO-modell alapján (második, átdolgozott kiadás)* (Development of Learning Strategies by IPOO-model – 2nd edition). Tehetségvadász Stúdió – Kocka Kör Tehetséggondozó Kulturális Egyesület, Debrecen.



- Mező, Ferenc (2002, 2004a): *A tanulás stratégiája*. (The Strategy of Learning) Pedellus Novitas Tankönyvkiadó, Debrecen.
- Pavlov, Ivan P. (1927): *Conditioned reflexes*. Translated by G.V. Anrep. London: Oxford University Press
- Schmeck, Ronald R. (1988): An Introduction to Strategies and Styles of Learning. In: Schmeck, Ronald R. (Ed.): *Learning strategies and learning styles*. New York: Plenum Press, 3-19.
- Skinner, B. F. (1961): *The Behavior of Organisms*. New York: Appleton-Century-Crofts.
- Torrance, E. P. - Rockstein, Z.L. (1988): Styles of Thinking and Creativity. In: Schmeck, Ronald R. (Ed.) (1988a): *Learning strategies and learning styles*. New York: Plenum Press
- Weinstein, Claire E. (1988): Assessment and Training of Student Learning Strategies. In: Schmeck, Ronald R. (Ed.): *Learning strategies and learning styles*. New York: Plenum Press. 291-316.

## MOTIVATION TO LEARN FOREIGN LANGUAGES

Szilvia PÉTER-SZARKA

(University of Debrecen, Department of Educational Psychology)

Email: pszszilvia@gmail.com

*Motivation to learn foreign languages is a significant determinant of successful language acquisition. My study explores the relations and changes of foreign language learning motivation, learning motivation, learning orientation, intelligence, self-concept and locus of control in the 5th, 6th and 8th grade of elementary school. The questionnaires were administered between 2003 and 2005, so I have the possibility to compare the results and draw conclusions about development tendencies. I formulate some suggestion about how to make language classes more motivating, and thus challenge language teachers to establish a highly motivating classroom practice.*

**Keywords:** motivation, foreign language learning, individual differences, changes in time, intelligence, learning orientation, self-concept, achievement scores, motivational strategies

As a result of globalizational processes it is inevitable to get into contact and communicate with people of different languages and cultures. The new situation requires foreign language communication skills instead of just knowledge of the foreign language. That is why language learning is becoming a more and more significant issue in schools and in research, as well. These changes resulted in the need to increase our understanding of successful language learning. But how should we teach and learn effectively? Several studies shed light on the importance of motivation, as one of the most important factors that determine school achievement (Csíkszentmihályi, 1990; Deci, Ryan, 1985; Ellis, 1994; Kozéki, Entwistle, 1986; Réthyné, 1988). The same is true for foreign language learning (Dörnyei, 1987; Gardner, 1990). However, motivation to learn a foreign language (L2) has its special characteristics, some earlier findings of school motivation are also relevant in this field.

### **Motivation to learn a foreign language**

Theories of motivation to learn a foreign language focus on various aspects of human motivation. It is due to the fact that second or foreign language learning is a learnable school subject, so studies on general learning and achievement motivation are of a direct relevance. On the other hand, it is highly affected by social and cultural influences, so 'in the acquisition of a second language, the student is faced with the task of not simply learning new information (vocabulary, grammar, pronunciation etc.) which is part of his *own* culture but rather of *acquiring* symbolic elements of a *different* ethnolinguistic community. This involves imposing elements of another culture into one's own lifespace' (Gardner, 1979:193-4).

The most influential L2 motivation theory has been proposed by a Canadian researcher, Robert Gardner. He emphasizes the social psychological aspects of motivation as he claims that the learner's attitudes towards the L2 and L2 community strongly influence motivation. The coexistence of different linguistic (English and French) communities drew his attention to the importance of *integrative* motivation that refers to 'a motivation to learn a second language because of positive feelings toward the community that speaks that language' (Gardner, 1985:82-3). He also defined *instrumental* orientation that refers to learning for practical reasons such as getting a better job, higher salary or passing the language exam. In the early phase of research instrumental motivation was thought to be in opposition with

integrative motivation, as the utilitarian counterpart of it, but later it turned out to be in connection with some attitudinal factors, which means that it may also influence L2 learning motivation positively.

Gardner's socio-educational model focuses on individual differences that play an important role in language learning: (1) biological or experiential antecedent factors, eg. gender, age, learning history, (2) individual difference variables like intelligence, language aptitude, learning strategies, language attitudes, anxiety and motivation, (3) language acquisition context, like formal and informal context and (4) linguistic and non-linguistic learning outcomes. The Attitude/Motivation Test Battery (AMTB) presented by Gardner and his colleagues explores the main components of his L2 motivation theory, and is still the only standardised test in the field (Gardner, 1985).

In the early 1990s a number of researchers called for an educational shift in motivation research, to expand theory into everyday classroom practice. One of the most influential articles declared that 'we seek to encourage a program of research that will develop from, and be congruent with the concept of motivation that teachers are convinced is critical for SL success' (Crookes, Schmidt, 1991:502). This idea gave a new stimulus to motivation research and a number of theories suitable for classroom application and empirical research related to classroom environment has been proposed.

Figure 1: Dörnyei's framework of L2 motivation (Dörnyei, 1994:280)

<b>LANGUAGE LEVEL</b>	Integrative motivational subsystem Instrumental motivational subsystem	
<b>LEARNER LEVEL</b>	Need for achievement Self-confidence <ul style="list-style-type: none"> <li>• Language use anxiety</li> <li>• Perceived L2 competence</li> <li>• Causal attributions</li> <li>• Self-efficacy</li> </ul>	
<b>LEARNING SITUATION LEVEL</b>	<i>Course-specific motivational components</i>	Interest (in the course) Relevance (of the course to one's needs) Expectancy (of success) Satisfaction (one has in the outcome)
	<i>Teacher-specific motivational components</i>	Affiliative motive (to please the teacher) Authority type (controlling vs. autonomy supporting) Direct socialisation of motivation <ul style="list-style-type: none"> <li>• Modelling</li> <li>• Task presentation</li> <li>• Feedback</li> </ul>
	<i>Group-specific motivational components</i>	Goal-orientedness Norm and reward system Group cohesiveness Classroom goal structure (cooperative, competitive or individualistic)

Following this line a classroom investigation by Clément et al. (1994) shed light on the significance of three main motives that play an important role in a school context, without any direct contact to the L2 speaker community. Results show that *integrative motivation*, *linguistic self-confidence* and *appraisal of the classroom environment* are the most influential motivational factors, which also confirms the relevance of further psychological and pedagogical research. Dörnyei Zoltán broadened the focus of this study and developed a more general framework of L2 motivation, giving a list of motivational components categorized into three main dimensions. He identified three dimensions of motivational components, the *Language Level*, the *Learner Level* and the *Learning Situation Level*. This study, being a pedagogical psychological one, focuses mainly on the learners' attributes, the Learner Level (Figure 1).

Dörnyei draws our attention to another important feature of motivation: instability and variability in time. It means that motivation is changing during the language learning process, so if we want to study the motivational background of students, we should take time factors into consideration (Dörnyei, Ottó, 1998).

### **Other personal factors in connection with L2 motivation**

Defining learning motivation often starts with achievement motivation, however it is not always enough. Learning motivation - on the one hand - is narrower than achievement motivation as it refers to school activity only, while achievement motivation can appear and develop anywhere else. On the other hand learning motivation is a broader concept, because learning and striving for good results is not the only purpose of school activity, but other social and moral aims may appear.

Kozéki's concept of school motivation emphasizes that there are several successful ways of motivating learners according to their personality characteristics (Kozéki, Entwistle, 1986). He identified three main dimensions of school motivation: *affective-social*, which develop and appear in personal interactions, *cognitive*, which are based on acquiring new competences and following one's fields of interest, and *moral* dimensions, which are composed of meeting the requirements and taking responsibility. Each dimension can be divided into three elements: (1) Affective-social: love for parents, acceptance by teachers, belonging to peers, (2) Cognitive: independence, need for acquiring knowledge, group activities and (3) Moral, self-integrative: conscience, need for external values, responsibility. The 10th element is Feeling to be under pressure by teachers. All the motives are potentially present in every child, but their intensity depend on motivating effects influencing the child right from birth. So family life and family activities play the most important role in forming learners' motivational structure.

In addition to intellectual capacity and motivation, students' *self-concept* also play an important role in school achievement. Self-concept includes all the features that one attributes to him or herself. It consists of self-relevant experiences and self-esteem (McCandless, 1976), so it contains cognitive, emotional and motivational, as well as conscious and unconscious elements (Dévai, 1988; Pataki, 1982). Children's self-concept is formed and firmly established at a very early age, mainly as a result of social feedback and family effects, and can be changed only under special circumstances.

Going to school is an important step in the formation of self-concept, because the evaluation of achievement, failure and success becomes continuous, students get feedback regularly. Self-concept and school achievement mutually influence each other, so generally students with poor school performance have a more negative self-concept than those who are successful at school. Poor self-concept suggests the person is incapable of fighting difficulties, so these students do not trust in themselves. As a result of it school performance becomes weaker, and failures will go on reducing self-confidence. And to the contrary,

successful students have a more positive self concept and greater self-confidence, have better connections with their parents, teachers and peers, which increases their learning motivation and results in good school performance (Kőrössi, 1997). Self-efficacy (Bandura, 1977), a person's belief that his/her behaviour will lead to the achievement of a desired purpose, functions as a mediator between cognitive functions and achievement. People who see themselves as self-efficient are likely to set challenging aims, they are persistent in coping with difficult tasks, and they make strenuous effort to achieve their goals, so it serves as a base for motivational factors.

### **Goals of study**

On the basis of the above mentioned models the main goals of this study are:

- to investigate the Learner Level of language learning motivation (learning orientation, intelligence, self-concept, locus of control),
- to follow the changes of motivation through a longer period,
- to reveal the relationship between foreign language learning motivation and other personal factors.

My study aims to examine what constituents foreign language learning is composed of and how these components are in connection with learning motivation, and other characteristic features of students, like learning orientation, intelligence, self-concept, locus of control and school achievement. In addition I try to find an answer for the relations of gender and motivation, with a special focus on the changes during the time period under investigation.

### **Method: subjects and measures**

Deciding on participants of research I had to take three main points into consideration:

- I wanted to study the changes of motivation from the beginning of language learning, so I needed students, who started it not too long time before.
- I had to find students of that age, who understand and are able to fill motivation questionnaires.
- I planned to follow changes of motivation through a longer period, so I needed students who continue their studies in the same school where they started.

According to these principles I chose the age group of 10-14 year-old, higher form-students, who started language learning an year before the first occasion of data collection, they were old enough to fill out questionnaires that measure student characteristics I was interested in, and most of them were supposed not to change school in the following years, so I could carry out data collection without losing participants. Participants of research were 374 students of five primary schools of four settlements, in Debrecen (Hatvani István Általános Iskola, Békéssy Béla (later Bolyai János) Általános Iskola), Mátészalka (Móricz Zsigmond Általános Iskola) Szerencs (Bolyai János Tehetségfejlesztő és Informatikai Általános Iskola) and Törökszentmiklós (Bethlen Gábor Református Tagozatos Általános Iskola). The same tests were administered in 2003, 2004 and 2005, in the 5th, 6th and 8th form, so I have the possibility to compare the results and draw conclusions about the development tendencies.

When making decisions about research methods I was led by two main principles: I was looking for methods which are able to measure motivational and other learner characteristics in groups of 10-14 year-old students, and are reliable in statistical terms. Following these principles I obtained data regarding learning motivation and learning orientation from Kozéki-Entwistle's Learning Motivation and Learning Orientation Questionnaire, I measured foreign language learning motivation with the questionnaire introduced by Clément, Dörnyei and Noels (1994), and I used Raven Progressive Matrices, Tennessee Self-concept Scale and Rotter's questionnaire of locus of control to reveal further student characteristics. School achievement was valued on the basis of school grades. For statistical analysis of results I

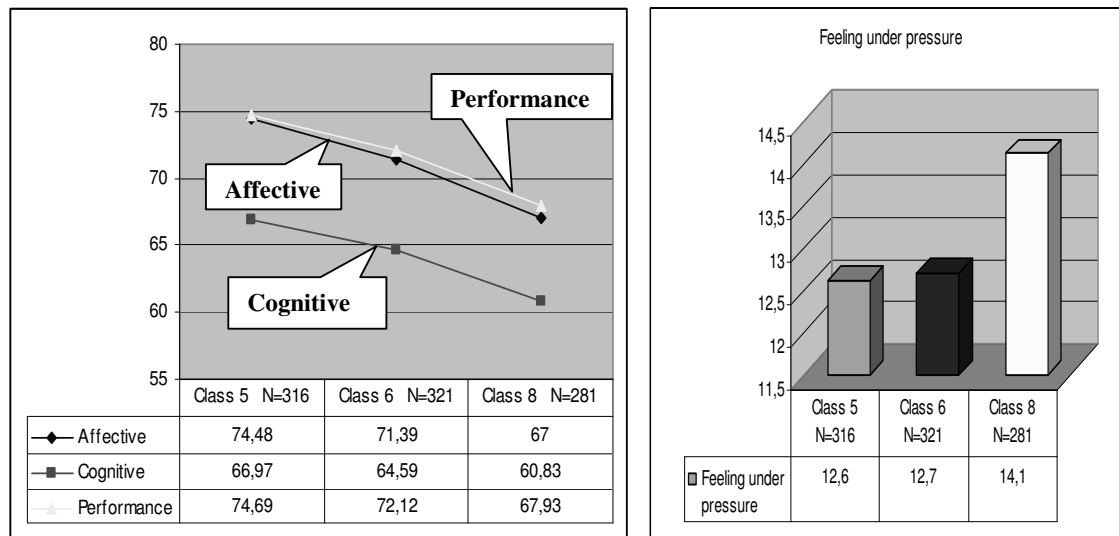
used SPSS 13.0 program and applied Pearson's and Spearman's correlation, one-sample, independent-samples and paired-samples T-test, variance analysis and Repeated Measures test.

### Results

My hypotheses concerning the results of the study are based on the literature review and can be arranged into six main groups. The first and largest group (1) contains expectations considering the general features and development tendencies of motivation. The second group of hypotheses (2) refers to the relationship between motivation and special learners' features like learning orientation, intelligence, self-concept and locus of control. The next group (3) contains predictions about school achievement and final grades of foreign languages, so we can find links between students' characteristic features and school achievement. Gender differences (4) were also expected, that help us to find the background factors of different school success of boys and girls. The last hypothesis is in connection with special subgroups of students: (5) it lists expectations referring to differences between schools and classes.

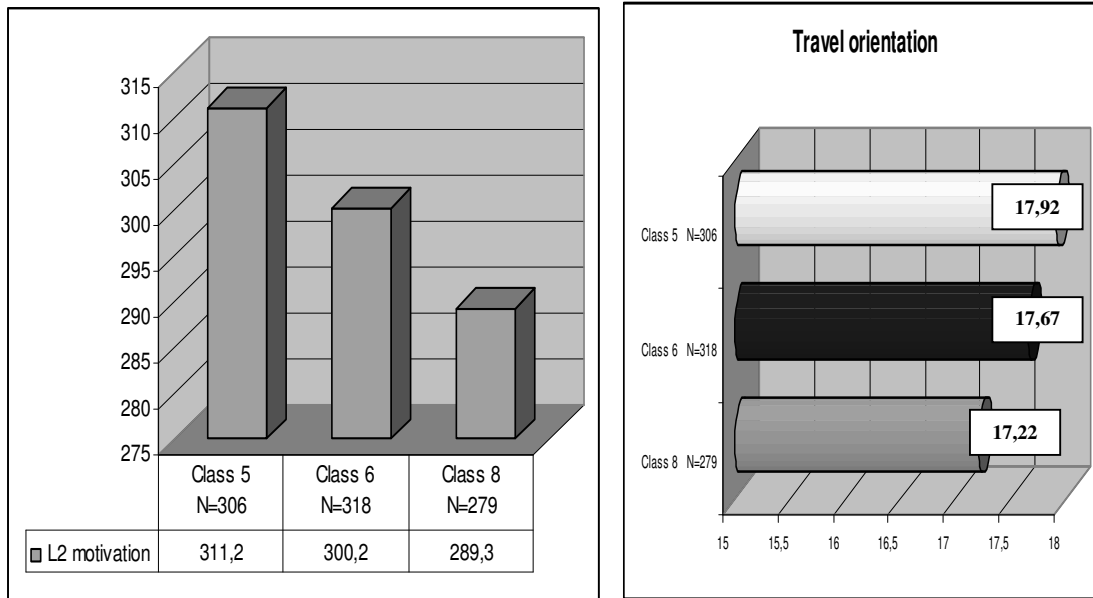
According to previous assumptions learning motivation scores gradually decrease from 5th to 8th form, while Feeling Under Pressure show an increasing tendency (Table 1). Changes in adolescence and in attitudes towards learning, changes of interpersonal relationship and social interaction, higher expectations, approaching high-school studies and inadequate teaching methods may be related background variables of these ensuing motivational changes. The leading motivational dimension is Performance motive, so meeting the requirements, taking responsibility and completing tasks are the most important factors of motivation.

Table 1: Changes of Learning motivation scores



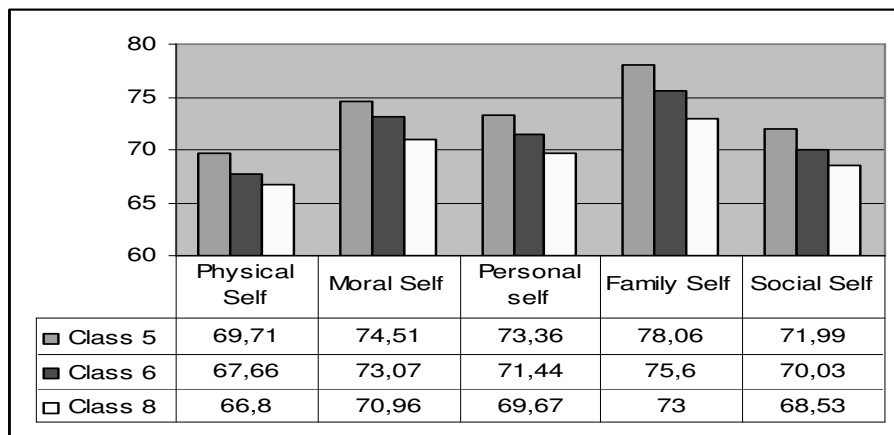
Predictions of changes in foreign language learning motivation were also supported by the results, because a significant decreasing tendency can be seen in nearly all subscales. A thorough analysis of subscales show that Travel orientation, Language use anxiety and Attitude toward language learning remain more or less the same during the three years of research (Table 2).

Table 2: Changes in Foreign Language Learning Motivation



Results show that dimensions of learning orientation also show decreasing tendencies, while Instrumental orientation is growing. The scores of self-concept fall in value, too, and they are closely associated with motivation scores (Table 3). The same is true for the locus of control. According to the results, intelligence is not connected closely to learning and language learning motivation.

Table 3: Changes of Self-concept scores



School achievement and final grades of foreign languages grew worse during the period of investigation. They are mostly determined by motivational factors, intelligence and some aspects of self-concept.

The study of gender differences unambiguously points out the better school achievement and stronger motivational basis of girls.

Differences between schools and classes are generally easy to explain, knowing the special characteristic features of them, however, the ambivalent result (good grades – low motivation) of one of the schools needs further interpretation.

### Conclusions

The results of my study allowed me to form numerous practical conclusions and suggestions about classroom motivational strategies. The question of practical usefulness may arise: Then how should we motivate students to learn foreign languages? On the basis of these research results I would list some motivating techniques, most of them are in accordance with Dörnyei's (2001) recommendations:

- We should strengthen students' self-concept and self-esteem through positive reinforcement, individualized and sometimes easier exercises to provide motivation and feeling of success.
- Decrease feeling of being under pressure, self-criticism and classroom anxiety by helpful, accepting behaviour and encouragement.
- Set up tasks and projects in which students can work independently according to their own choices and interest, provide regular feedback of progress and take time to celebrate any success to ensure feeling of satisfaction and to strengthen performance motives.
- Build affective motives and attachment through good student-teacher relationship by congruency, empathic understanding and positive regard.
- Boys need a greatly challenging and motivating classroom environment because of their lower motivation and higher feeling of being under pressure.
- Pay attention to girls with low self-esteem, who do not feel confident because of their physical and personal problems.
- Highlight the importance and usefulness of speaking foreign languages by showing its values in the globalized world to form positive attitudes toward language learning.
- Develop group-cohesion by the use of small-group tasks and activities where students can share personal information and get to know each other better.
- Promote knowledge and travel orientation by reminding students that mastering an L2 can be an instrument to accomplish these goals.
- Take into account the motivational and personality changes and demands arising from adolescence.

Future research should focus on the investigation of other ability and personality factors, with a special attention to qualitative data collection techniques. In addition, a more sophisticated statistical analysis of data should explore underlying models and the directions of relations.

This study may be used as a step to establish a motivation-sensitive language teaching practice in creating a positive motivational climate to enhance school achievement and foreign language proficiency as an ultimate purpose.

### References

- Bandura, A. (1977) *Social learning theory*, Englewood Cliffs, NJ, Prentice Hall.
- Clément, R., Dörnyei, Z., Noels, K. A. (1994) 'Motivation, self-confidence and group cohesion in the foreign language classroom', *Language Learning*, 44: 417-448.
- Crookes, G., Schmidt, R. (1991) 'Motivation: Reopening the research agenda', *Language Learning*, 41: 469-512.
- Csíkszentmihályi Mihály (1990) 'Motiváció és kreativitás: Út a megismerés strukturális, illetve energetikai megközelítéseinek szintézisé felé' (Motivation and creativity: towards a synthesis of structural and energistic approaches to cognition), *Pszichológia*, 10 (1): 3-25.
- Deci, E. L., Ryan, R. M. (1985) *Intrinsic Motivation and Self-Determination in Human Behaviour*, New York, Plenum.



- Dévai Margit (1988) 'Az énkép jellemzőinek vizsgálata 9-14 éves korban, összefüggésben egyes személyiségjellemzőkkel' (Relation between self-concept and some personality characteristics at age 9-14), *Pszichológia*, 8 (4): 557-573.
- Dörnyei Zoltán (1987) 'A motiváció szerepe az idegennyelv tanulásában' (The role of motivation in foreign language learning), *Pszichológia*, 7 (3): 393-417.
- Dörnyei Zoltán (1994) 'Motivation and motivating in the foreign language classroom', *Modern Language Journal*, 78: 273-284.
- Dörnyei Zoltán (2001) *Motivational Strategies in the Language Classroom*, Cambridge University Press.
- Dörnyei Z., Ottó I. (1998): Motivation in action: A process model of L2 motivation. *Working Papers in Applied Linguistics (Thames Valley University, London)* 4:43-69.
- Ellis, R. (1994) *The Study of Second Language Acquisition*, Oxford University Press.
- Gardner, R. C. (1979) 'Social psychological aspects of second language acquisition', In: Giles, H., St. Clair, R. (eds) *Language and social psychology*, Blackwell, Oxford. 193-220.
- Gardner, R. C. (1985) *Social psychology and second language learning: The role of attitude and motivation*, Edward Arnold, London.
- Gardner, R. C. (1990) 'Attitudes, motivation and personality as predictors of success in foreign language learning', In: Parry, T., Stansfield, C. (eds) *Language Aptitude Reconsidered*, Englewood Cliffs, N.J.: Prentice Hall. 179-221.
- Kozéki, B., Entwistle, N. J. (1986) 'Tanulási motivációk és orientációk vizsgálata magyar és skót iskoláskorúak körében' (The analysis of motivations of and orientations towards studying in British and Hungarian children), *Pszichológia*, 6 (2): 271-92.
- Körössy Judit (1997) 'Az énkép és összefüggése az iskolai teljesítménnyel' (Self-concept and its relation to school achievement), In: Mészáros, A. (ed.) *Az iskola szociálpszichológiai jelenségvilága*, Budapest, ELTE Eötvös Kiadó. 67-85.
- McCandless, B. R. (1976) 'Az én-kép és kialakulása' (Self-concept and its development), In: Pataki, F. (ed.) *Pedagógiai szociálpszichológia*, Budapest, Gondolat. 145-176.
- Pataki Ferenc (1982): *Az én és a társadalmi azonosságtudat* (The self and social identity), Budapest, Kossuth Könyvkiadó.
- Réthy Endréné (1988) *A tanítás-tanulási folyamat motivációs lehetőségeinek elemzése* (The analysis of motivational facilities of the teaching-learning process), Budapest, Akadémiai Kiadó.

## ENCOUNTER GAMES IN TALENT DEVELOPMENT IN HUNGARY (TEACHER TRAINING)

Imre DÁVID

(University of Debrecen, Department of Educational Psychology)

E-mail: davidi@vipmail.hu

*The central issue of this study is to demonstrate the role of encounter games in teacher training and to sketch a 90-hour training course. The most important topics covered by this course are: introducing oneself, criteria for the so-called mature personality, creativity, examination and improvement of peer relations, peer co-operation and competition, verbal and non-verbal communication, the handling of conflict situations and the notion of motivation, relaxing.*

**Keywords:** talent development; teacher training, encounter games

Why is it supposed to be such a significant improvement that the courses on self-knowledge and peer-knowledge have been introduced into the curriculum for high school students? The main reason for this is that so far, no controlling body with a nationwide scope of authority in Hungary has ever made such a thing possible before. It had only been present in a couple of schools, and even there only as an experiment, that psychology could be “smuggled into” the lower levels of academe (Dávid & Páskuné Kiss, 1992). We believe that it is important for us to underline that, within the framework of *Arany János Tehetségfejlesztő Program* [Talent Development Program named after János Arany], at most locations, it is in the halls of residence that these classes are held, and a voluntary basis for participation is guaranteed all the way through. Naturally, neither grades are given, nor there are subject requirements to be satisfied in the courses. One of its benefits is that at many places teachers work in unison with the school-psychologists, which means that teachers, less trained in group-management skills, have a continuous chance to learn the ropes of the field from experts. We would like to emphasize how important it is for the teachers to be able to be aware of the limits of their own competence. Which is to say that they should be able to come up with situations, games, and conversation topics, being aware of the predictable psychological consequences and developments of which they could confidently manage or keep under control.

The chief objectives we wanted to achieve in the 90-hour training session were prepared by us at Debrecen University, and could be summed up as follows (Dávid, 2002; Balogh & Dávid (1994.):

- participants should have an access to an intensive (3 x 30 hours) training session based on direct personal experience so that they could acquire a more adequate and differentiated knowledge of their own selves.
- both strengths and weaknesses of their personalities should be worked upon and improved.

- participants should become thoroughly familiar with the five-year-long curriculum of the course on self-knowledge prepared for the students, with all of its psychological relevances and overall background.
- they could rely upon their own direct personal experience of the specially structured exercises, situations, and games which are related to the schedule of training and represent the chief means of development.
- they should attain skills and specific approaches required for the launching, management, and group dynamics based analysis of a psychological group.
- the individual training sessions should also provide a kind of supervisory possibility, so that the group members have an opportunity to discuss their own experience of running a course for their students, including the difficulties as well as the successes that they have encountered as group leaders.

Now, first of all, I would like to present an outline of the structure of our 90-hour training course. For the first two occasions (2 x 30 hours), the classes were run by my colleague, Judit Kiss Páskuné, and myself. As for the third meeting, previously assigned pairs of group members had a chance to moderate the discussion, taking three-hour turns each. The group members noted their impressions and opinions about the work of each pair, after which we viewed the videotape material recorded during the sessions, and analyzed it together, in order to provide appropriate feedback to each individual pair of group leaders. The group members could introduce a selection of topics that they had prepared for their own students earlier, so they could test their group leader's skills and ideas within a psychologically safer and more protected environment. Their tasks also included preparing a written analysis and presentation of the psychological relevance of the topic area of their choice (including its theoretical background and its effect influencing or facilitating group dynamics, plus the collection of further games, questionnaires, lists of aspects and characteristics related to the topic area, etc.), and the preparation of written handouts for the rest of the group members.

During the teacher training course, we introduced a number of elements taken from a wide variety of sources applied in other psychological training sessions, some of which we adapted to the specific environment in high schools, while a sizable portion of the material used was of our own.

As far as content is regarded, we can give you the following list of the most relevant topic areas around which we have built a range of structured exercises, games, tasks, and questionnaires:

- introducing oneself (living quarters, family conditions, introducing oneself in writing or in a symbolic fashion, strengths and weaknesses, self-identity within the family, roles, and body-image)
- criteria for the so-called mature personality (i.e., which are the development objectives they wish their students would reach, including the related possibilities that the sessions on self-knowledge and, in a broader sense, schools can offer)
- creativity (the performance-based and verbal elements of the so-called Torrance battery, distant association tests, brain-storming techniques, problem-solving games applied in team-building: "survival adventures" in the desert, in an airplane crash, or in a cave rescue operation, papertower-building competition, etc.), The components of

creativity, the characteristic features of the creative personality, product and process, the establishment of a creative environment, and factors blocking the creative processes (Balogh-Dávid, 2001).

- examination and improvement of peer relationships (playful sociometry, different forms of space sociometry, the hierarchy of groups, attractions and rejections)
- peer co-operation and competition (united efforts in order to achieve common goals in pairwork, small group, and larger group situations: for example, a timed building contest with wooden blocks among pairs, language games in small groups when the objective is to list new animal names built out of the ones given, competition situations in organization building for obtaining the largest share of available resources, etc.
- the characteristic features of verbal and non-verbal communication, the criteria for effective communication, the skill of influencing one's partners (for example, making them explain or draw figures made up of geometrical forms, acting out a story in a way that one member of a pair is reciting it, while the other member accompanies it with gestures, the writing of texts or stories in scholarly or belletristic style, acting out of a communication situation as a picture, as a group of statues, or as a dramatic play — for example, six people of different nationalities travelling in the same compartment on a train, etc.
- the world of emotions: handling of conflict situations in an aggressive, submissive, or assertive way, completing a form on conflict management, situational games.
- the notion of motivation: games related to the hierarchy of necessities or to personal requirements, mapping up the individual motivational patterns and preferences. Motivation of performance, questions of requirement level, reception and processing of successes and failures, changes of performance due to constraints of time (playful competition tasks).
- relaxing, active, and tension-easing games (Dávid-Balogh, 1997).

We would like to present one typical game. The first task was that participants had to build a tower out of newspapers without the use of any instruments (i.e.: scissors, glue, or other objects which would facilitate the construction) during a 25-minute time period. Before the actual timing was started, we asked them for an estimate concerning the height of the tower they thought they could actually build just by themselves. Following the construction part, we announced who the winner of the competition was and then analyzed the psychological relevances of the level of needs, co-operation, and creative problem-solving process. With reference to the game, we also discussed the significance of sociometric studies and presented a number of other playful implementations of it. The 90-hour training course was the first of two levels, and the second one started last September for the four groups. This is going to be yet another 90-hour (3 x 30 hours) course. We were glad to hear that participants had been greatly assisted by what they had experienced during the first half of the training course in their efforts to organize and to manage their own courses on self-knowledge. Adapted to their individual possibilities at their schools, they ingeniously developed and further improved the

games and exercises they had practiced together. We hope that the professional knowledge they had acquired can be further improved and perfected in a broad spectrum of possibilities for the benefit of their talented students in the Talent Development Program named after János Arany, introduced in 21 high schools of Hungary.

### References

- Balogh, L. – Dávid, I. (1994.): A further training program at the University of Debrecen for teachers doing talent development. *Nurturing Talent*, Nijmegen, 1994. 35-36. p.
- Balogh, L. – Dávid I. et al. (1997): Learning techniques and development of self-knowledge by means of special program with talented school children. In: Sugárné Dr.Kádár Júlia (Eds.): *Acta Psychologica Debrecina.*, Vol. 20., KLTE, Debrecen, 173-183. p.
- Balogh, L. – Dávid, I. (2001): Teacher's Opinion about the Nature of Giftedness. In: Balogh, László – Tóth, László (Eds.): *Gifted Development at schools: Research and Practice*. University of Debrecen Department of Educational Psychology 35-43.p.
- Dávid, I. (2002): Teacher's training Program at the University of Debrecen. *Developmental of Human Potential Investment into our Future*. Tel-Aviv Ortra Ltd. 126.p. 2002.
- Dávid, I. – Balogh, L. (1997): Teacher's opinion about the nature of giftedness. In: *Acta Psychologica Debrecina*, vol. 20., Kossuth University, Debrecen. 189-196.p.
- Dávid, I.- Páskuné Kiss, J. (1992.): Empathy and communication skills developing training for teachers. *Competence and Responsibility*. München, 1992. 112-113. p.

## COMPLEX PSYCHOLOGICAL PROGRAMS DEVELOPING SPORT-GIFTEDNESS

Róbert OROSZ\* – Noémi KERÉKES\*\*

(\*University of Debrecen, Department of Educational Psychology,

\*\*University of Debrecen, Department of Sociology and Social Policy)

E-mail: orro@freemail.hu

*The central themes of this study are: broadening the approaches of giftedness, an early example of holistic development, developing programs beyond the expansion of physical abilities, developing in system-approach, aspects organizing complex developing programs, perspectives of complex psychological programs developing sport-giftedness in Hungary.*

**Keywords:** sport, talent development, complex program

### **Broadening of Giftedness-Approach**

Considering the history of research on giftedness, we can recognize a gradual broadening of perspectives in the theories of giftedness. In the beginning researchers put the emphasis on a single factor. Terman's theory for example is a one-factor model: according to him giftedness is determined most by intelligence. Or in Szeifele's conception giftedness is creativity in fact (Mező, 2004, 2008). These one-factor-theories were followed by theories with numerous dimensions. In these multidimensional theories unfolding of giftedness depends on the combined presence of numerous factors. In his three-ring-theory Renzulli (1986) for example claims that the basis of unfolding giftedness is given by the combination of intellectual abilities over average, creativity, and commitment to tasks. These theories being described up to this point focus on only intrapersonal factors. With the broadening of giftedness-conception researchers have paid more and more attention also to social environment. Mönks expanded the Renzulli-model, emphasizing the role of family, school, and peer-groups in unfolding of giftedness (Mönks - Boxtel, 1996). In his 4x2+1 factor-model Czeizel (cit. Balogh, 2006) considers giftedness from an even broader approach. Czeizel determines 4 intrapersonal and 4 social-environmental key-factors in the manifestation of giftedness. The important intrapersonal factors are: general intellectual aptitude, specific mental aptitude, creativity, and motivation. In the case of the social-environmental factors Czeizel suggests to take into consideration the societal factor beyond family, school, and peer-relations (these latter factors were also present in Mönks' conception). What is more, Czeizel suggests that an extra factor should be introduced called: fate; with this he refers to that also the unpredictable fate as an irrational factor plays an important role in unfolding of giftedness (Mező, 2004).

Taking the previous thoughts as a starting point it is supposed that the unfolding of giftedness in sport – analogously to giftedness in other fields – is determined by numerous factors being in interaction with each other. Intrapersonal, interpersonal, and social factors, or from other point of view: rational factors (being measurable in an objective way, such as physical makings) and irrational factors (for example emotions or the factor of fate) play a role in the unfolding of giftedness in sport. All these factors should be paid attention to when developing is considered, that is if we develop giftedness in sport, the need for developing and executing of complex, multilevel programs emerges.

### **An Early Example of Holistic Developing**

The idea, that increasing physical capacity needs more than the mere developing of body-abilities, is not new-born. A good example for it is the conception of Hwarang-do.

Hwarang-do stems from Chorea in the 4<sup>th</sup> century. Its meaning is: the road of flourishing youth. Three kingdoms could be found in the land that time. In the smallest kingdom called Silla an elite commando was formed by noble youngsters: their task was to protect the land against the attacks by the other two kingdoms. The Hwarang were successful also against enemies being higher in number (Serényi – Harmat, 1987). The secret of their success could stem from the conception of their training. The young people were taught not only armed war-arts and ones by sheer force of that time, but also science, arts, philosophy, meditation, and the contact with nature.

Hwarang-do might be one of the fore-runners of developing of giftedness in sport in system-approach inasmuch as trainers concentrated also on the holistic developing of numerous factors – seemingly being not in very strong relationship with physical abilities – beyond body. Body-, psychical, and mental development were regarded as not separable entities.

### **Developing Programs beyond Developing Physical Abilities**

Today in Hungary the most sport-experts realize and recognize that achievement is determined by factors of giftedness beyond physical abilities needed in the given sport. It can be often heard that “the match will be decided in mind” or that somebody “has not enough self-confidence”. Still in developing activities the developing beyond physical training is much less stressed. The number of trainers is relatively low who devote time for mental training at the “expense” of the training-time. Because of the lack of holistic point of view it is more difficult to find resources for financing the trainings.

International and also Hungarian researches and experiments show that the developing of factors of giftedness beyond physical ones have favourable impact on the sport-career.

Lénárt and Berczik (2002) developed a long-term, complex, sport-psychological program for women’s junior national team in kayak. During the preparation-time relaxation, mental training, NLP exercises, and methods generally used in group-psycho-therapy were applied. After two-year-work in preparation the efficiency of the program was measured by analyzing subjective feedbacks from the sport-women and their trainer and by analyzing the results of psychological tests. Both the trainer and the sport-women found the knowledge acquired during the program useful, and according to the trainer the training played a favourable role in the women’s human development. The results of the tests showed that the competitors’ self-esteem developed, their autonomy and independence increased, and they become more able to control their emotions in a more effective way.

Acsai and her colleagues (2002) developed a complex, psychological program for national tennis-players. The developing program contained individual and group-tasks, such as yoga, psycho-drama, exercises of imagination, relaxation, and mental training. After taking part in the program both the individual and the group-results improved, the competitors’ anxiety decreased, their self-confidence and concentration-performance increased.

Greenspan and Feltz (cit. Weinberg – Williams, 2001) examined circa 20 essays, which discussed the efficiency of psychological programs in different sports such as golf, karate, basketball, or figure-skating. 17 among 20 essays claimed that the achievement had changed in a favourable direction. Up to 1994 researchers had examined discussions about 45 psychological intervention programs, and they found that 85% of the publications had written about positive results (Weinberg – Williams, 2001).

### **Developing in System-Approach**

The interaction of the individual giftedness-components and the relations of their interaction can be understood best in system-approach. The base suppositions of system-approach are the following:

*1. Systems are known to consist of parts being in interaction with each other. If there is a change in the functioning of any part, that will influence the functioning of the other parts and of the whole as well.*

In psychological point of view the individual can be regarded as a system consisting of many parts being in interaction with each other, similarly to the organism in biological point of view. The psychic subsystems within the person function in an interaction with each other. The change of any part has impact on the other parts, and so on the functioning of the whole. So for example affective problems influence the whole person's cognitive functions and effectiveness, or inversely: cognitive processes can help solve emotional problems. A sport-man may prepare physically to the maximum rate, in vain, if he generally loses his ability of concentration in situations of competition. And if he makes failures in high-stake-situations, that worsens his achievement. In cases like this it is advisable to develop concentration, or to disclose emotional problems that distract attention; these methods may result in better achievement in comparison with physical exercises. From the previous it follows: if individual development is supported at numerous levels, due to their interactions it may have a favourable impact on the maturing of the separate subsystems and the whole personality.

A good example of the interaction is the so called sensory integrating therapy. Jean Ayres' (Californian brain-researcher) therapy-method is given by the observation, that the maturity of nervous-system, and its integrative function (which co-ordinates different areas) can be increased by giving equilibrium- and other sensory-motor stimuli. The motor- and equilibrium-system of the truncus cerebri and cerebellum are in contact with other areas of the nervous-system that means also with areas being responsible for controlling emotions and with higher cortical centres as well. Children are offered toys which increase the stimulation of their equilibrium-system (such as monkey bars, tilting, rotating means, etc.). While playing with these toys areas of the nervous-system are involved that help (re)live deep emotions; this happens parallel to maturing of areas being responsible for organizing major movement and equilibrium. In an adequate therapy-setting (re)living deep emotions may help treat earlier traumatic experiences. Finally the more harmonious co-ordination of functions of the nervous-system at different levels is accompanied by the more effective functioning of the whole personality. It means that due to the motor-playing activities problems such as learning difficulties, attention disorder, or anxiety symptoms stemming from the deficit of the early mother-child relationship can be treated in a highly effective way (<http://www.fernevtan.hu>).

Propos of the sensory integrating therapy Szvatkó (<http://www.fernevtan.hu>) writes about the developing in system approach. In her point of view development means more and more increasing complexity of necessity, the differentiation of parts, and not their connections to the forming whole and to the whole personality without any conflicts. This process can happen only in an interactive way. In the middle of the changes the most important environmental condition for the human is the world of close relationships: it energizes the human to be able to maintain the sense of the individual continuity and coherence. So if somebody really thinks about "developing" one or other child, he/she has to realize, that results can be reached only by taking the whole personality into consideration.



*2. The whole of the system is more in quality than the mere sum of the part.*

Accepting this statement we have to pay attention to the interaction within and outside the personality, too, beyond developing separate giftedness-components. From this point of view the role of specialists' communication and teamwork – working at different fields – gets high stress.

Although the unfolding of giftedness is determined by numerous components, the existence or the lack of any component itself does not guarantee the development or the lost of giftedness. For example the insufficiency of support from family makes the fulfilment of sport-career more difficult, but it does not definitely hinder it. We know an athlete, whose father did not want to let his son go to the trainings, because the father thought that work around the house were more important. But permanent conflicts did not hinder the athlete from hard preparing and reaching outstanding results, what is more, his urge that he should demonstrate for his father, became the source of motivation. On the other hand we know another athlete, whose compulsive demonstration for his father is a key-component in hindering him from showing a real break-through toward an outstanding achievement.

*3. Systems strive for restoring a dynamic balance.*

The person strives for reserving a state of balance both at biological and psychological level. If there is a change in his/her psychic balance (for example because of stress or crisis), he/she tries to restore it. If the balance cannot be restored in an appropriate way, then physical or psychical problems can occur.

On the other hand development-processes cause the temporary loss of balance. (Let us think about Piaget's theory about cognitive development (cit. Tóth, 2000), or let us imagine a junior football-player who gets into a star-team and he reaches his first successes – these happenings cause emotional stress for him.) If the person succeeds in restoring the state of balance at a higher level, we can speak about development.

During development it is worth paying attention to the shifts between balance-states. And although the aim of developing is that the person shall be able to reserve his/her inner biological/psychic balance or raise it to a higher level, the potential loss of balance or regression often can be attributed to the natural process accompanied by changes.

From this point of view psycho-therapy differs from the psychological developing or from the sport-psychological counselling, because in psycho-therapy the system (person, couple, family) tries to raise itself to a level of higher energy-state after a balance-loss of large-size and/or longer period. This can happen with the help of an outer participant (system).

*4. The system is in interaction with the system of its environment and so the former is the part of the latter.*

According to this statement the individual as psycho-dynamical subsystem is the part of the system of his/her environment, he/she is in permanent interaction with it. That is the individual's inner psychic systems can be described with the principles of functioning being similar to broader environmental systems, which the individual is part of.

Being the part of the system of his/her environment the individual influences this system to a high extent, and also the environment has a very great impact on the individual's effective functioning. It was explored in psychiatric practice that patients, whose state improved to a great extent during the treatment in hospital, after being let home, relapsed. Experts drew the conclusions from observations of similar type that the system of family tries to restore its balance of function similarly to a living system. So the ill system tries to

restore the balance of low energy, of which the patient was also part before the treatment in hospital, that is why the family tries to return the patient into his/her previous role (Dallos – Procter, s. a.).

The individual's most direct environmental system is the family. The family has multiple impact of great size on the unfolding of giftedness. Van Rossum (2001) for example asked junior national athletes doing different sports about their parents' role in their sport-careers in the last 12 months. The competitors emphasized for example the financial support, transport, their parents' presence at the competitions, or moral support. Impact from the family can be felt not only at such manifest levels. The roots of self-esteem, the belief in our abilities, our images to what extent we can be successful at all stem from our primary social environment.

The trainer, co-trainers, and peers may play a role in the unfolding of sport-giftedness. Researchers showed for example that in given cases the trainers' expectations and thoughts about the sport-men's abilities have a real impact on the competitors' development and achievement. The impact of self-fulfilling prophecies like this is within the trainers' communication. Trainers who are more influenced by their own opinions initiate fewer interactions with sport-men being thought less gifted; however sport-men being thought high-able are given more useful feedbacks and instructions of better quality (Sternberg Horn et al., 2001). For example if a competitor who is thought to be less able makes a mistake in an activity, in a movement, the trainer may tell to him: "It does not matter, Pete, look at Johnny how he does it." If Johnny who is thought to be high able makes the same mistake, the trainer may tell him: "It will not be bad, but you have to stretch your leg, push your hip rather ahead, and your whole movement should be followed by your look."

The peers' values, acceptance, the social role in the group, the society's mood also can influence the sport-career; it is a crucial question for example whether in the periods critical from the point of view of giftedness-loss (such as adolescence, or the temporary decrease of motivation) the sport-man stays in the club.

The trainer-parent relationship also influences the sport-man. There follows two examples among the numerous possibilities about the interaction. In the first case a single runner trainer got involved into her relationship with her athlete to an extremely high extent. Their relation was similar to a mother-daughter relationship. She called the competitor simply "the child", and it happened that she burst into tears when the athlete lost the competition. Taking the role of the parent the trainer got into latent conflicts with the athlete's mother. The competence-competition between adults may influence the child-caretaker relationship easily, too. Adults see better each other's mistakes, and if they transmit this toward the child, the parent-trainer conflict influences also the child-parent relationship into unfavourable direction. In the cited case the "idyllic" relation got so bad that it resulted in the absolute end of the common work. The second example is about the trainer-parent communication. A mature trainer is able to differentiate between the aims- and values-orientation of junior and professional sports. In junior sports the primary aims are development, joyful activities, acquirement of new abilities, excitement, and beyond these aims success and win. In professional sports financial aims become dominant, which are unimaginable without success. Some parents put too much emphasis upon achievement and win already in junior sports. It is important that in such cases the trainer should be able to transmit the right point of view toward the parents with his/her mature and efficient communication. If parents have too great expectations about achievement after all, that is only the win is important for them, after a short time children may easily lose their interests in sports (Smoll, 2001).

### **The Points of View in Organizing Complex Developing Programs**

Taking all the previous into consideration we can claim that a holistic developing which pays attention also to the interaction of as many factors as possible can contribute to the more holistic unfolding of giftedness. So if developing of sport-giftedness is in question it is also worth paying significant attention to organizing complex developing programs. If we organize such programs it is worth considering the following questions according to the principles of system-approach:

- What kind of physical, affective (emotional), and cognitive factors may have key-roles in the giftedness in a given sport?
- How do the previous factors influence the functioning of each other? How can the change in a given field influence the functioning of other factors?
- What kind of social-environmental factors do influence most development? How do they interact with intrapersonal factors?
- What kind of methods can further the development of intrapersonal factors?
- How can we involve social environment in order to further individual development? What kind of subsystems can be involved into the developing (e.g. through regular consultations, team-work)? What kind of subsystems can be involved only in an indirect way (e.g. through working with the individual on family-influences applying individual or group-exercises of system-approach)?
- How can the individual's social aptitudes be developed in the direction that he/she becomes more able to get the support of his/her environment to his/her sport-career, or that he/she becomes able to eliminate undesirable environmental influences?

### **Perspectives of Complex Psychological Programs Developing Sport-Giftedness in Hungary**

In Hungary it can be observed that in sport-experts' opinions the developing beyond physical characteristics is more and more important. Practical experiences however show that beyond the emerging of the need there is not much done in order to make possible that sport-men take part in complex developing programs. One of the most important conditions of expanding of complex psychological programs in sport-giftedness is that psychological culture becomes ingrained in the Hungarian common knowledge from the highest leaders' level to the junior sport-men's level. One hand it can be furthered by the communication between the experts and their sharing experiences, other hand by teaching junior sport-men the importance of psychological founding. The latter issue for example can be solved by psychological group-programs in the most efficient way. These founding programs can be followed by individual and group- developing programs later on, and by longitudinal examinations which disclose the efficiency of these programs. Summing the experiences of the programs these examinations can supply points of reference in further development and in making the programs more efficient.

It is important, that our expectations toward the psychological programs developing sport-giftedness are realistic: similarly as physical developing-development happen through years, psychological developing does not make wonder either. Further developing is often hindered by that we expect: wonders come true quickly; so it is important to realize that psychological processes need a longer period of time to have their influence, and that significant changes may cause the loss of balance in given cases, that can cause even temporary decrease in achievement. It is also important to know that mental practicing needs persistence and time similarly to physical trainings. Finally if we ensure everything to a sport-man that is needed for development, in comparison to our knowledge and possibilities, we have not still taken into account the factor 'fate'.

**References**

- Acsai Irén – Rapcsányi Éva – Szényei Gábor (2002): Komplex pszichológiai felkészítés és tanácsadás válogatott teniszcsapat számára. In: Lénárt Ágota (ed.): *Téthelyzetben. Sportpszichológiáról edzőknek és versenyzőknek*. Országos Sportegészségügyi Intézet, Budapest. 109-112.
- Balogh László (2006): *Pedagógiai pszichológia az iskolai gyakorlatban*. Urbis Könyvkiadó, Budapest.
- Dallos, R. – Procter, H. (s. a.): A családi folyamatok interakcionális szemlélete. In: Bíró Sándor – Komlósi Piroska (eds.): *Családtérapiás olvasókönyv. I. kötet*. 7-52.
- <http://www.fernevtan.hu/Rolunktolunk/cikkek/hiszenezjatek.htm> (last visit: 31 October 2008)
- Lénárt Ágota – Berczik Krisztina (2002): Női ifjúsági válogatott kajakozók sportpszichológiai felkészítő és önismereti kiscsoportja. In: Lénárt Ágota (ed.): *Téthelyzetben. Sportpszichológiáról edzőknek és versenyzőknek*. Országos Sportegészségügyi Intézet, Budapest. 97-99.
- Mező Ferenc (2004): *A tehetség tanácsadás kézikönyve*. Tehetségvadász Stúdió – Kocka Kör Tehetséggondozó Kulturális Egyesület, Debrecen.
- Mező Ferenc (2008): *Tehetségdiagnosztika (Talent diagnostics)*. Tehetségvadász Stúdió – Kocka Kör Tehetséggondozó Kulturális Egyesület, Debrecen.
- Mönks, F. J. – Boxtel, H. W. (1996): A Renzulli-modell kiterjesztése és alkalmazása serdülőkorban. In: Balogh László – Herskovits Mária – Tóth László (eds.): *A tehetségfejlesztés pszichológiája. Szöveggyűjtemény*. Kossuth Egyetemi Kiadó, Debrecen. 67-80.
- Renzulli, J. (1986): The three-ring conception of giftedness: a developmental model for creative productivity. In: Sternberg, R. J. – Davidson, J. E. (eds.): *Conceptions of Giftedness*. Cambridge University Press, Cambridge.
- Serényi János – Harmat László (1987): *A testből edzett fegyver*. Private publishing, Budapest.
- Smoll, F. L. (2001): Coach-Parent Relationships in Youth Sports: Increasing Harmony and Minimizing Hassle. In: Williams, J. M. (ed.): *Applied Sport Psychology. Personal Growth to Peak Performance*. Mayfield Publishing Company, Mountain View, California. 150-161.
- Sternberg Horn, T. – Lox, C.L. – Labrador, F. (2001): The Self-Fulfilling Prophecy Theory: When Coaches' Expectations Become Reality. In: Williams, J. M. (ed.): *Applied Sport Psychology. Personal Growth to Peak Performance*. Mayfield Publishing Company, Mountain View, California. 63-81.
- Tóth László (2000): *Pszichológia a tanításban*. Pedellus Tankönyvkiadó, Debrecen.
- van Rossum, J. H. A. (2001): Talented in Dance: the Bloom Stage Model revisited in the personal histories of dance students. In: *High Ability Studies*, Volume 12, Number 2, 1 December 2001, 181-197.
- Weinberg, R. S. – Williams, J. M. (2001): Integrating and Implementing a Psychological Skills Training Program. In: Williams, J. M. (ed.): *Applied Sport Psychology. Personal Growth to Peak Performance*. Mayfield Publishing Company, Mountain View, California. 347-377.

## BEYOND PHYSICAL DEVELOPING. SPORT-TALENT DEVELOPING FROM PSYCHOLOGICAL ASPECTS

Róbert OROSZ\* – Noémi KERÉKES\*\* – Gabriella Szabó\*\*\*

(\*University of Debrecen, Department of Educational Psychology,

\*\*University of Debrecen, Department of Sociology and Social Policy

\*\*\*Educational Counseling of Balatonalmádi)

E-mail: orro@freemail.hu

*The Competere Training is a Psychological Group-Program Developing Sport-Giftedness. The expression 'competition' in English has the Latin origin: competere; one of which meanings is: striving for reaching something together with others. The aims of the training can be summed in the following main headings: 1) Developing psychic background abilities needed for unfolding sport-giftedness, rather than sport-specific psychological factors. 2) Founding self-knowledge needed for solving achievement-situations as successful as possible. 3) Forming mature sport-men's junior-society. 4) Building psychological culture into the sport-men's society's common knowledge.*

**Keywords:** sport-talent developing, complex program

### **The Importance of Developing Sport-Giftedness beyond Perfecting Physical Characteristics**

The importance of developing sport-giftedness beyond perfecting physical characteristics can be explained from many points of view. The modern multidimensional giftedness-conceptions overshadowed the earlier theories focusing on a single component (such as intelligence, creativity, specific abilities of good quality). Researchers have recognized that the unfolding of giftedness is influenced by the interaction of numerous factors. In his model Czeizel (cit. Balogh, 2006) claims that in unfolding of giftedness intrapersonal factors (general intellectual aptitude, specific mental aptitude, creativity, and motivation), social-environmental factors (family, school, peer-relations, and society), and the unpredictable (irrational) factor 'fate' is determinant. As the system-approach has become general it is obvious that developmental processes are not determined by linear causal rules, instead of them we have to take interactions into account. So intra- and interpersonal, rational and irrational factors are in a steady dynamic interaction with each other that influence the unfolding of giftedness. Finally practical experiences supporting the previous show that physical characteristics are determined by other (e.g. emotional, social, etc.) factors. Both international (Weinberg – Williams, 2001) and Hungarian (Lénárt - Berczik, 2002) experiences show that sport-psychological preparing programs (which are not the same as the development of physical characteristics) have a favorable impact on development and achievement.

### **Competere Training: a Psychological Group-Program Developing Sport-Giftedness**

Competere Training is a structured, thematic, group-method for developing sport-giftedness, which is directed toward the development of emotional (affective) and cognitive component needed for unfolding sport-giftedness as totally as possible; it is based upon the

psychic characteristics of sport-men's age-groups. In organizing of this program we put a great emphasis on interpersonal influences.

In the theoretical and methodological background of the program the knowledge of transpersonal psychology, system-approach, and group-psychology is blended with the method of applied sport-psychology, different techniques of relaxation and symbol-therapy.

The holistic-approach training emphasizes the principle, that competing is a possibility in the sport-man/woman's life for developing his/her abilities for higher and higher levels inspired by competitor-peers, and so he/she can fulfill more and more serious aims. The name of the program stems from this principle. The expression 'competition' in English has the Latin origin: *competere*; one of which meanings is: striving for reaching something together with others.

The aims of the trainings are summed in the following main headings:

1. Developing psychic background abilities needed for unfolding sport-giftedness, rather than sport-specific psychological factors.
2. Founding self-knowledge needed for solving achievement-situations as successful as possible.
3. Forming mature sport-men's junior-society.
4. Building psychological culture into the sport-men's society's common knowledge.

In the test training program, which was connected with the assessment of efficiency, 11 sport-men of the Hungarian Athletic League's Heracles Program took part, supported financially by the National Junior-nurturing Institute.

The training started in 2004 December with an introduction lecture and psychological tests. This first occasion was followed by 13 sessions 3 hours every other week, up to 2005 June. The program was finished with an after-testing in 2005 September.

In the training the following fields were involved:

- Disclosure of motivation and making participants understand it; discussing the relation toward sport; developing the right cognitive relation toward top-sport.
- Setting concrete short-, middle- and long-term aims, differentiation between result-aims and achievement-aims. Learning how to set aims with favorable impacts on development and achievement.
- Taking strong and weak points into consideration, and becoming aware of them.
- Strengthening attention-concentration; letting disturbing thoughts go.
- Reframing failure-situations and non-favourable events; reaching positive attitude.
- Relaxation, breath-control in order to relax physically and mentally.
- Decreasing anxiety/tense with cognitive techniques, and techniques of relaxation and imagination.
- Setting inner resources free; recalling/fixing positive emotional states.
- Developing consciousness (muscle-consciousness; improving movement-image with mental techniques, imaging training- and competitions-situations; developing meta-cognitive consciousness, reaching more intense mental presence at trainings).
- The relation toward the important other party (family, trainer, peers) and social impact influencing sport-career.

The themes of the sessions following each other was determined by the next principle: starting with sport-specific topics needing less personal involvement (motivation, concentration, consciousness, relaxation), followed by building society and developing public spirit, then developing social abilities and discussing self-knowledge topics needing deeper

involvement. Finally in the last period of the training sport-specific topics re-emerged: preparing the participants for applying the techniques on their own, acquiring them in a more proper way.

### **Examining the Efficiency of Competere Training**

Assessing objectively a training-process always raises numerous problems. Also indices seeming to be objective such as competition-results, or measurable results (e.g. how many centimeters did somebody improve his/her throwing) raise the question: what would have happened if the given person had not taken part in psychological developing? Because of such and similar methodological reasons it is impossible to get a totally objective picture about the impact of any training. The most we can do is that we form an overall view, based on numerous objective and subjective indices. In our examination we took the next six indices into consideration as assessing the training:

#### 1. Taking part

The sport-men took part in the 82% of the sessions. This ratio is evaluated to be good if we take into consideration that the sport-men undertook taking part in the training beyond big stress, at the weekends, every two week, in many cases supporting financially the travel to the training by him/herself. Altogether there were two bigger absences. Once in winter: because of snow-obstacles, in the other case at the time of school-finishing exams.

#### 2. The results of psychological questionnaires

When explaining the results of psychological questionnaires it is important to know that in the case of a sample of so few people we cannot speak about objective indices at all. The examination should be done with a lot more sport-men in order that psychological indices are objective. Our long-term aim is that it comes true. In any case we can speak about two tendencies:

On one hand it was observable that the values of self-reliance and anxiety were near to an average, optimal level: the extreme high values (which can stem from the lack of self-knowledge or overcompensation) decreased, however lower values increased.

The second characteristic tendency is that the scale measuring the ability to control anxiety changed into a favorable direction.

#### 3. Competition-results

Many of the training-groups members won the championship or reached 2<sup>nd</sup> or 3<sup>rd</sup> places in the Junior and Senior National Championships. In the Junior European Championships three 2<sup>nd</sup> and two 4<sup>th</sup> places was taken. But evaluating these results belongs to the competence of the professional leadership.

#### 4. Numerical individual results

Comparing the person's latest results to his/her former results can be an index too: 6 persons improved their individual records, 2 persons fell behind their last year results, 3 competitors did not have reference-results because of former injuries or other reasons.

#### 5. Fulfilling of individually set aims

9 among 11 competitors could reach their aims set at the beginning of the process.

#### 6. The persons' taking part in the training subjective reports

Although it is the less objective index, taking the sport-men's experiences into consideration is very informative. To disclose these experiences we applied the so called Competitors' Questionnaire containing 6 questions that are the following:

1. Did experiences of the training contribute to your more conscious and effective training work? The answerers to this question mentioned breathing exercises, the greater consciousness, the more effective solving of returning problems (e.g. racing over the hurdles) as helping factors.
2. Did training-experiences contribute to reaching a more adequate competition-state? In the answers the increase of concentration and reaching a more relaxed state got emphasis.
3. In your opinion what kind of extras can give such training to a sport-man's preparing, competing? In the answers the following factors were mentioned: supporting mental preparing, improving self-confidence, the psychological training can give force to the sport-training and competing; strengthening concentration, correcting returning problems, profit of discussions, the training makes the society, getting known each other's problems.
4. May help training-experiences fulfill your later on aims? Answers showed that the training may help not only in sport. The competitors mentioned the usefulness of "exercises influencing mind" (e.g. relaxation). It served us as a pleasure that answers showed: the sport-men acquired the approach, that *physical training is not the only important factor in development, mental training is also important, and some other factors, such as adequate nutriment, too.*
5. If the training would be continued, would you take part in it? The answer was unanimously: yes, but some people set given conditions, such as solving the problem with traveling, or the continuity of the society.
6. Would you suggest also others the training? The answer was unanimously: yes, again.

#### **Assessing competere training**

Altogether we assess that Competere Training's aims set previously came true. That is the program contributed to the developing of psychic background-abilities, and non-sport specific psychological factors needed for unfolding of sport-giftedness, to founding the sport-men's better self-knowledge, to organizing a more mature junior sport-men's society, and to ingraining the psychological culture into the sport-men society's common knowledge.

The question still remains: to what extent did the training contribute to theses results?

Such training can be only the base that in a given case might start the sport-man on a way. Knowledge acquired in the training can be deepened further individually or in group.

The disadvantages of such training are being time-consuming, emerging traveling-problems, and the difficulty of objective assessment.

At the same time the enormous time- and financial costs have many advantages, as well. Such an advantage can be the continuous contact with the participants, due to which the sport-psychologist can have a look at the background of successes and failures, and can explain the results of the tests in a more real way. And Competere Training is explicitly a basic program. It founds the appliance of suggested mental techniques similarly as strengthening adequate



muscles found the appliance of competition-techniques. In the training the base are self-knowledge and communal experience, which strengthen the sport-men emotionally.

The leaders of the training observed the competitors also in competitions-situations. We ensured trainers of consultation in cases of individual needs. The complexity of the program would have been increase by a mutual meeting with the trainers. The captain's of the junior national league coordination-work and the possibility of professional consultation were outraging positive.

### **The perspectives of competere training**

We think that it is worth doing further examinations with Competere Training and similar methods from both scientific and practical points of view. Further research can result realizations and practical profits being important both for sport-psychology and the Hungarian sport-life.

On one hand involving as many gifted juniors as possible into the programs and examinations would make possible to present richer and richer, and more and more objective research results. On the other hand would the holistic giftedness-developing and the competere approach expand widely, the result could be more health-centered attitude toward top-sports in the long run, and it could offer a qualitative plus to preparation.

Trainings of higher level building upon basic groups would make longitudinal examination-series possible beyond further psychological support for sport-men; these examinations would search the long-term influences of the trainings, since psychological training-experiences often show their impacts only later on.

### **References**

- Balogh László (2006): *Pedagógiai pszichológia az iskolai gyakorlatban*. Urbis Könyvkiadó, Budapest.
- Lénárt Ágota – Berczik Krisztina (2002): Női ifjúsági válogatott kajakozók sportpszichológiai felkészítő és önismereti kiscsoportja. In: Lénárt Ágota (ed.): *Téthelyzetben. Sportpszichológiáról edzőknek és versenyzőknek*. Országos Sportegészségügyi Intézet, Budapest. 97-99.
- Weinberg, R. S. – Williams, J. M. (2001): Integrating and Implementing a Psychological Skills Training Program. In: Williams, J. M. (ed.): *Applied Sport Psychology. Personal Growth to Peak Performance*. Mayfield Publishing Company, Mountain View, California. 347-377.