Summary of Ph.D dissertation

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A Study of Social Interest Realisation, Emotional and Social Problem Solving Abilities in Children between 4 and 18 years of age

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Subject and structure of the dissertation

Modelling social competence has been the subject of international psychological and educational research for nearly fifty years., This primarily involved research on modelling the psychic condition system of social behaviour, the change of system components, the effect psychic and environment factors have on each other and the possibilities of its development in public education. Studies relying on various theoretical models and on different methodological procedures (e.g. *Mott* and *Krane*, 2006; *Gresham* and *Elliot,* 1993; *Hartup,* 1980; *Asher, Oden and Gottman,* 1977) have proven that the developmental level of this condition system and its positive change (development) have a great influence on success in personal life, on psychic health (*Bremer* and *Smith,* 2004), on academic and professional success, (*Van der Zee, Thijs* and *Schakel,* 2002) and on the functioning of different social groups and society (*Fiske*, 2006).

International researches have enabled the design of numerous experiments and developmental programs in kindergartens and schools (e.g. *Anderson,* 2000; *Scott* and *Nelson,* 1998; *Schneider and Byrne,* 1985; *Schmuck* and *Schmuck,* 1974) for many decades. These days the most widespread conception is the integrative developmental conception (*Chen,* 2006). It can be characterized by a years-long development of the different components of social competence together with other competence elements. Moreover, proponents of the approach make extensive use of curricular content, often apply direct development; and take the characteristics of the environmental background (family, kindergarten and school) widely into consideration. Impact assessments of these programs (e.g. *Fox, Dunlap* and *Powell*, 2002) prove unequivocally the necessity for conscious and planned help, which is also verified by the results of other sciences like cognitive neurology (e.g. *Chugani*, *Behen*, *Muzik*, *Juhász*, *Nagy* and *Chugani*, 2001).

Recognised insufficiencies of Hungarian public education (e.g. *Nagy*, 2000), of the changes occurring in family upbringing and mainly in its functions (e.g. *Bagdy*, 2004), and the growing number of international research resulted in an increased scientific interest in the development and the developmental level of the components of social competence in the last two decades. In spite of this, there are very few reliable empirical data on these components. However, these types of data are the most important prerequisites of the construction of developmental programs and experiments. On the other hand, there is an increase in the number of programs that have a disputable theoretical background or the efficiency of which has not been tested. Because of cultural differences the success of simply applying programs from abroad is often doubtful as well.

In the empirical research presented in this dissertation I explored the functioning of a component of social competence, that of social interest realisation abilities (cooperation, help, competition, leadership), and its relationship with other psychic and environmental factors among children at the age of 4, 8, 12, 15 and 18. The aim of the research was to collect data which can form the basis of a future integrative development program. In the dissertation I summarized the different approaches of sociology, natural sciences and philology on the individual as a social being (Chapter 1) and the most important theoretical models and R&D conceptions of sociality and social competence (Chapter 2). The different definitions of the studied psychic components and the most important research results were presented in Chapter 3; along with the conceptions, questions and hypotheses of the empirical study (Chapter 4); and its methods (Chapter 5). The chapters from 6 to 11 contain the results of the empirical analysis, Chapter 12 contains the summary and further research questions.

The theoretical framework and conception of the empirical study

In the middle of the XXth century the spread of the notion of competence in psychology fundamentally changed the thinking about social behaviour which was characterized by a mainly behavioristic approach up to that point. This paradigmatic shift made possible the modelling and the survey of the psychic condition system of behaviour, i.e. social competence (*Nagy*, 2007; *Nagy* and *Zsolnai*, 2001). Theoretical models can be divided into four groups: (1) behaviour-oriented approach; (2) approaches focusing on cognitive processes; (3) approaches emphasizing the role of emotions in behaviour; and finally (4) integrative approaches (*Kasik*, 2007).

The models of the 1960s, broke with the dominant behaviourist approach, but at the same time they relied heavily on observable behaviour patterns and their frequency of occurrence. The characteristics of the individual's way of thinking and those of their emotions were not taken into account (e.g. *White, Kaban, Marmor* and *Shapiro,* 1972). From the late 1970s it became possible to handle the different variables of social competence together. This was enabled by the theory of hypothetic constructs (*Cronbach* and *Meehl,* 1955) and the techniques of verifying convergent and discriminant validity (*Campbell* and *Fiske,* 1959). Models empirically validated at this time shed light not only on the characteristics of behaviour but also on the processes and structures of thought (e.g. *D'Zurilla* and *Nezu,* 1999; *Shepherd,* 1983; *Meichenbaum, Butler* and *Gruson,* 1981; *D'Zurilla* and *Goldfried,* 1971) and to a lower extent, on the behaviour regulation role of emotions (e.g. *Meichenbaum* et al. 1981).

It was in the 1980s that models (e.g. *Spence*, 1983; *Rinn* and *Markle*, 1979) containing emotional components (*Saarni,* 1999) were formed by making use of the results of neurobiological research. Since the 1990s, there has been an agreement among researchers that both emotions and cognitive factors play an important role within social competence. Thus, social competence can only be studied comprehensively if social, emotional and cognitive components, their interrelations and their relations to other competences and components are examined simultaneously. This approach became the basis of the integrative development conception of social competence (*Chen,* 2006).

Because of their integrative approach *Rose-Krasnor's* (1997) and primarily *Nagy's* (2007; 2000) models were chosen as theoretical frameworks for the empirical research. Social competence is an internal condition system of an individual's social activity which can be divided into two systems (the motive system and the knowledge system), and these subsystems can be divided into social emotional and social cognitive subsystems. The parts of the knowledge system are abilities which realise social activity by following inherited, learned and implicit (unconsciously realised) and explicit (intentionally realised) basic rules. Rules serve as bases for comparison and as realisation programs as well: they provide the sub-functions of abilities, the interpretation of which is possible across dimensions. In my research, cooperation, help, competition and leadership abilities and abilities responsible for recognizing, expressing, understanding and regulating emotions were considered as the social and emotional subsystem components of the knowledge system. Social problem solving ability was considered as the component of the social cognitive subsystem.

The functioning of social interest realisation abilities was analysed by my own model, which is based on *Nagy* (2000), *Fülöp* (2003, 2007) and *Fiske* (2006). The abilities were divided into major and minor dimensions. The theoretical background of the research on emotional abilities was provided by *Halberstadt*, *Denham* and *Dunsmore* (2001), *Saarni* (1999), and by *Eibl-Eibesfeldt's* (1989) model, which organizes basic emotions and their degrees of intensity into a system. The theoretical basis of the assessment of social problem solving abilities was the model provided by *Chang*, *D'Zurilla* and *Sanna* (2004). Although international research shows that different social motives are closely related to abilities (*Fiske*, 2006), motives were not examined in the present research because of lack of space and instruments.

Problem background and aims of the empirical study

The cooperation, help, competition and leadership abilities, called social interest realisation abilities by *József Nagy* (2000), determine four basic aims and modes of social activity: cooperation ability defines that of sharing, help that of support, competition that of acquisition and defence, leadership that of distribution (*Fiske*, 1991). International and Hungarian surveys (e.g. *Fiske,* 2006, *Fülöp*, 2003; *Zsolnai*, 1999; *Johnson* and *Norem-Hebeisen,* 1977) showed that the functioning of abilities and their relation to each another have a large impact on personal and professional success and influence the quality of mental and physiological health on the long run.

Although the Hungarian National Curriculum (Nemzeti alaptanterv, 2007: 16) describes the development of these abilities as a fundamental task because it contributes to preparing children for adult life, Nagy (2000) is of the opinion that public education is not capable of accomplishing this task efficiently. This is well proven by some research results about cooperation and competition abilities (e.g. *Ross*, *Fülöp* and *Pergar Kuscer*, 2006; *Kasik*, 2006; *Zsolnai*, 1999). In addition, there are very few research results on the age-related characteristics of leadership and help abilities (*Nagy* and

Zsolnai, 2001). *The primary aim of our empirical research was to explore the functioning of these abilities by age, gender and school type.*

Abilities responsible for recognising, expressing, understanding and regulating emotions have a fundamental role in managing and shaping social interactions, and they determine the realisation and planning of one's interpersonal behaviour (*Forgács*, 2003), influence the mode of processing information (*Saarni*, 1999); however, they are not really researched in Hungary in educational sciences. Similarly, no research has been done in Hungary on the specificities of social problem solving abilities (*Chang*, *D'Zurilla* and *Sanna*, 2004), which is a psychic component regulating the resolution of different social problems. *In addition to the analysis of these abilities, correlation analyses between social problem solving abilities and emotional and social interest realisation abilities were carried out.* This was justified by the latest international research results, which show that both social problem solving and emotional abilities have a considerable influence on the functioning of social interest realisation abilities and *vice versa* (e.g. *Chang*, *D'Zurilla* and *Sanna*, 2004; *Saarni,* 1999). Moreover, this influence increases with age.

International research (e.g. *Mott* and *Krane*, 2006; *Hoffman*, 1983) showed that induction has a very important role in the development of social behaviour, and that the success of specific social activities depends largely on this form of learning and acquisition. *Consequently, the relationship between inductive thinking ability (Csapó, 1999) and social interest realisation, emotional and social problem solving abilities was analysed, too.*

Both international and Hungarian research emphasize that social activity largely depends on the characteristics of family upbringing (e.g. *Nagy*, 2000; *Schneider*, 1993). According to *Grusec* and *Hastings* (2007) opinions about parental resources (financial, intellectual and relation resources) are very important when applying educational techniques that have a vital influence on the thinking and behaviour of children. *On the basis of these research results and the integrative developmental conception, parents' opinions about financial, intellectual and relational resources related to children's social interest realisation behaviour were analysed. Data about family background (e.g. level of education, family type, financial characteristics) made possible the realisation of further correlation analyses.*

Sample and instruments of the research

A cross sectional study was carried out among children of 4, 8, 12, 15 and 18 years of age (N=945) in 2010. Teachers (N=36, all women) and parents (only mothers) participated in the research, too: teachers were always raters, parents were raters (N=888) and in two cases (emotion recognition ability, parental resources) they assessed themselves (N=872). The whole sample is representative the mothers' highest educational qualification, and the subsample of 15- and 18-year old children is also representative for school type (high school, technical school, vocational school).

Of the questionnaires and tests used in the investigation, three questionnaires were developed by myself. These are as follows: (a) Social interest realisation abilities questionnaire: children's self assessment version, a teacher, and a parent version – *Kasik*, 2008a; (b) Emotional abilities test with pictures: children's self assessment version, and parent self-assessment version for emotion recognition abilities – *Kasik* and *Zsolnai*, 2009; and (c) Parental resources and social interest realisation abilities: parent self-assessment version – *Tóth* and *Kasik*, 2009).

A further questionnaire was adapted from *Chang*, *D'Zurilla* and *Sanna* (Social problem solving abilities questionnaire, children's self-assessment version, teacher and parent version – *Kasik*, *Nagy* and *Fűzy*, 2010). We also applied a test that had been used in several previous studies (Inductive thinking test, children version – *Csapó*, 1999) was applied. The form containing questions on background variables is part of the Parental resources and social interest realisation abilities questionnaire (Family background).

Research questions, hypotheses and main results

The empirical study can be considered as basic research. Research questions were divided into four groups (1 to 4). On the basis of the questions, 17 hypotheses (H_1-H_{17}) were formulated: each one will be presented before the relevant result. The four groups of questions are as follows:

(1) *Method:* To what extent are the applied instruments adequate to estimate the functioning of psychic components? What role do the different raters play in the analysis of the results? How can the abilities and their dimension be interpreted? (H_1– H_{11})
(2) *Ability functioning*: How age, gender and school type influence the functioning of the nine abilities of social competence studied here (social interest realisation abilities: cooperation, help, competition, leadership; emotional abilities: recognition, expression, understanding, regulation; social problem solving abilities)? (H_{12}–H_{14})
(3) *Correlation system (internal):* How can the relations between the analysed psychic components be characterized? (H_{15})
(4) *Correlation system (external)*: How can the relations between the measured psychic and environment variables be characterized? (H_{16}–H_{17})

Method: reliability of instruments

We hypothesized that the functioning of social interest realisation and social problem solving abilities can be reliably estimated with questionnaires (H_1) across different age-groups, gender and school-type. The first questionnaire was adapted to different age groups by the modification of its structure and language, and the adapted one was translated from English to Hungarian in the same vein. The questionnaires were found adequate to analyse the characteristics of the functioning of abilities and ability dimensions (factors). Both the factor analysis (validity control) and the results of reliability analysis indicate that they are appropriate to assess psychic components and can give a good estimate of age-, gender- and school type-related differences.

On the basis of international research, it was hypothesised that human faces representing different emotions are adequate to characterise the change of emotion recognition abilities (H_2). Another assumption was that the functioning of emotion expression and emotion regulation ability can reliably be assessed by questionnaires, and that the functioning of emotion understanding ability can reliably be assessed by stories (H_3). Psychometric properties of the test indicate that the whole instrument and its components are reliable.

Reliability was tested by repeated data collection – 14 to 16 days after the first assessment, but only among the children. The obtained data indicate that the actual emotional state of the subjects at the time of the data collection influences the various factors of the questionnaire to a different degree. There is a considerable difference between the reliability indices of expression and regulation abilities: expression and regulation are more strongly influenced by the actual emotional state of the subject than recognition and understanding. However, on the basis our results, it cannot be stated that the nearly consistent patterns we arrived at are basic emotion patterns or emotional traits as claimed by e.g. *Izard* (1971). As a conclusion, we can propose that a particular emotional state has a stronger influence on how the individual approaches a certain situation than on the success of recognizing others' emotions and understanding their emotional states. It is also important to note that the recognition of emotions always takes place in a given context (*Forgács*, 2003) but in our study their identification was assessed in isolation. The identification of characters' emotions in a story and the understanding of their emotional responses were also analysed without any personal involvement, which happens by fundamentally different assessment methods (*Ito* and *Cacioppo*, 2003). We should also emphasize that the different abilities function in an interplay in everyday life: recognition determines understanding, which has an effect on regulation and both regulation and understanding influence emotion expression. All these change not only with time but also with the system of emotional abilities (*Ito* and *Cacioppo*, 2003).

It was also presupposed on the basis of previous research that questionnaires are adequate means of exploring parents' opinions (only those of mothers in the present research) on parental re-

sources (H_4). It was because of the excellent reliability indices of the Csapó-type test (H_5) that the functioning of inductive thinking abilities was decided to be explored by this test. The results of the test were to be compared to the functioning of social emotional and social cognitive components. Psychometric indices show that both the questionnaire and the test assess the studied areas reliably. The inductive thinking test was found adequate to be involved in the correlation analysis as well. Although the questionnaire exploring parent' opinions is of good reliability, it will have to be complemented with other methods in the future. In spite of the fact that instructions were given to ensure that parents interpret the concept of norm appropriately and understand what behaviours correspond to what abilities, we had to be prepared for the possibility that parents would neglect the instructions. This is understandable because they had to give opinions about different situations and their methods of upbringing by evoking their own experiences in relation to education. Moreover, it was supposed that they would evaluate themselves and their children more favourably, which would modify test results.

Method: analysis according to ability dimensions

Some Hungarian researchers make a methodological mistake when they draw conclusions about the functioning of the entire construct of social competence after assessing only some ability dimensions. In the present study, social interest realisation, social problem solving and emotional abilities were analysed across several behaviour dimensions and, the results were interpreted only for these aspects of behaviour.

The functioning of social interest realisation (cooperation, help, competition, leadership) abilities were analysed relying on a theoretical model which was formed on the basis of *Fiske* (2006), *Fülöp* (2003) and *Nagy* (2000, 2007). Questionnaire items were designed to fit the dimensions of this model. It was hypothesised that the results of the factor analysis and the structure of factors verify the theoretical model of the study (H_8). This hypothesis was only partially confirmed by the results: the theoretical model contains separate dimensions by abilities; however, on the basis of factor analysis the items of these dimensions were restructured significantly: the questionnaire items assigned to the four social interest realisation abilities were grouped in six factors. This restructuring reflects the general model of *Damasio* (1994) on social behaviour. Results demonstrate the comprehensive nature of social activity: an individual's behaviour in a certain situation is influenced by the situation itself (Situation, expectation), by the individual's attitude to the others in the situation and to the situation (Relationship and role; the relationship between contribution and participation; Time and winner), by the individual's interest (Interest), and by the his/her interest appraisal and possible conflict of interests (Equal opportunity, Conflict of interests, exclusion).

However, the results of the factor analysis support *Nagy's* (2000) and *Fülöp's* (2003) claim that these abilities and the dimensions of these abilities are closely interrelated. When planning development programs we must bear in mind that only three factors of the six contain items related solely to one ability of the original model (leadership: Approach and role; competition: Time and winner; cooperation: Relationship between contribution and participation). The other three factors include four or two items that belong to separate dimensions in the original model: Interest (cooperation, help, competition, leadership); Situation, expectation (help, competition); Equal opportunity, conflict of interests, exclusion (cooperation, competition).

The questionnaire for social problem solving abilities can be used to assess the functioning of abilities across dimensions (factors), too. Our hypothesis that the obtained factor structure corresponds to the original factor structure (H_9) was confirmed: the questionnaire assesses the functioning of components reliably; our study replicated the factor structure of the original questionnaire. As a result, we are of the opinion that the questionnaire is appropriate for further use in Hungarian research.

Nevertheless, the factore structure is in slight contradiction with the concept of ability we accepted. The concept of social ability was interpreted on the basis of the competence model of *Nagy* (2007), according to which two (Positive problem orientation, negative problem orientation) out of the five factors were part of the system of motives. Each further factor forms part of the knowledge system, and within that system, they are part of operating knowledge. At the same time, they represent various sub-systems of operating knowledge. I propose that Avoidance should be treated as a skill, Rationality as internal knowledge, and Impulsivity as expression. This does not completely contradict

the our concept of ability since they are all components of these abilities. (A similar problem arises in connection with the functioning of social interest realisation abilities – see the section on results).

As for emotion recognition ability, it was hypothesised that the results of the factor analysis would correspond to *Eibl-Eibesfeldt's* (1989) system containing basic emotions and their degrees of intensity (H_{10}). Factor analysis only partially verified this hypothesis in children between 4 and 18 since the emotions that were supposed to be in the Wonder factor could not be separated from the other item. However, the factore structure of the present study was completely identical with the original one in the case of mothers.

It was hypothesised that the dimensional nature of emotion expression, emotion understanding and emotion regulation abilities can be ensured by constructing a questionnaire that is in harmony with the dimensions of social interest realisation abilities. The aim was to enable comparison with social interest realisation abilities (H_{11}). Although it became possible to explore the association between social interest realisation and these three abilities, the generalise ability of the results became restricted because of this procedure. Therefore, only emotion recognition ability was included in the analysis of the relation of psychic components.

In my previous research, it were children who filled in most of the questionnaire on background variables; however, in this research, it were mothers who provided the data. The facts that mothers are more reliable data providers (e.g. it had turned out previously that children do not always know their parents' highest educational qualifications) and that privacy and personality rights could be protected more efficiently justify this decision. .

Method: the role of raters in the assessment of social components

Zsolnai and *Józsa* (2002) claim that at least three raters (children, parents, teachers) are needed in order to evaluate social components. It is also useful to know how parents and teachers perceive the functioning of children's abilities when we construct development programs. In accordance, the functioning of social interest realisation and social problem solving abilities were assessed not only by the children themselves, but by teachers and parents, too. All the three groups filled in the same questionnaire, so I had three judgements about each psychic component, which made possible the creation of contracted variables. While constructing the questionnaire, I made efforts to form statements that are as general as possible. Nevertheless, it is unavoidable that adults rate kindergarten, school and family experiences subjectively during the assessment.

It was assumed that raters' opinions about the functioning of abilities are very divergent; and that the child's and the parents' ratings of the child's social competence are more closely related than either the child's and the teachers' ratings or the teachers' and the parents' ratings (H_6). In line with this hypothesis, the correlations between children's and parents' ratings are the strongest, and hardly any change can be demonstrated as a function of age. The most divergent evaluations of the functioning of components were given by teachers and parents. The need for involving more raters is also supported by the fact that the combined indicators computed from the three different ratings are similar to previous research results.

International research (e.g. *Saarni*, 1999) suggests that it is vital to involve another person in the assessment of emotion recognition ability, and that this person should be a mother, as a self-assessor because of the nature of this ability. It was hypothesised that the characteristics of the chosen emotional system can be interpreted more precisely in this way (H_7). The results confirmed our hypothesis: parental emotion recognition is a later stage of children's emotion recognition in the process of emotion recognition.
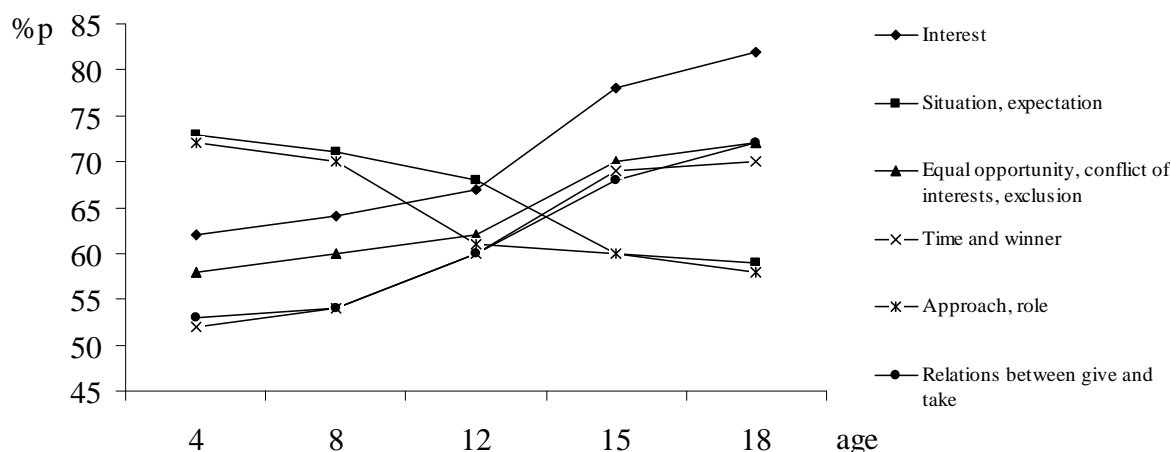
The functioning of abilities

On the basis of our previous research (e.g. *Kasik*, 2008b; *Zsolnai*, *Kasik* and *Lesznyák*, 2008; *Kasik*, 2006) and other similar international surveys (e.g. *Saarni*, 1999), we hypothesised that significant differences due to age could be identified between the functioning of the examined nine abilities, and it is mainly the 4 and 8-year-old children and the 12 and 18 year old children that differ the most (H_{12}). It was hypothesised that there are significant gender differences even among the youngest children, and that these differences change considerably while children get older (H_{13}). It was hypothesised that

significant differences can be identified among children of different school types (high school, technical school, vocational school). We assumed that in most cases students of vocational schools differ from students of high and technical schools, or that it is high school students who show significantly different results than the two other groups (H_{14}).

Social interest realisation abilities: characteristics according to age, school type and gender

In the case of social interest realisation abilities, the hypothesis about age was only partially confirmed because significant differences were found between children of 4-12 of age and children between 15 and 18. Age-related changes of the cumulated index based on the six factors are shown in Figure 1 (the distribution of the points of assessment is not in an equal distance, as a result, curves only approximately represent the hypothesised changes.)

Figure 1
The functioning of social interest realisation abilities
between the ages of 4 and 18 (cumulated indices)

On the basis of the data, self-interest determines more often the acceptance of the roles of leadership and of being led, the mutuality of giving and asking for help, the direction of competition and cooperative work in group (Interest) during high school years. Also, 15- and 18-year-old children are less likely to take into consideration parents', teachers' and peers' expectations while asking for and giving help and while respecting competition rules (Situation, expectation). Children of 15 and 18 take into consideration more often others' chances when they compete, i.e. that competitors should also have the biggest chance possible to win and it is also more frequent among them to exclude someone from groups (Equal opportunity, conflict of interests, exclusion.) High school age students choose more often situations when only one person has a chance to win, consider more often peers as adversaries even after the competition has ended, and they think more often that competitions do not have time limits (Time and winner). Children between 4 and 12 are more characterised by the acceptance of the leader and of the given task and the two older groups are characterised more often by the expectation of the respect of instructions (Approach, role). 15- and 18-old children are characterised the least and 4- and 8-year old children the most by rewards independent of contribution (Relations between give and take).

The curves representing the hypothesised change draw attention to two dilemmas concerning the nature of abilities and the interpretation of development. In the case of four factors, the curve representing the change of the assessed components corresponds to one phase of a logistic curve (the initial phase of growth is slow, then it is fast, and finally growth slows again). However, in the case of two factors (Situation, expectation; Approach and role), the hypothesised change with age does not show this direction. These two factors (Situation, expectation: how help and competition are influ-

enced by peers', teachers' and parents' expectations, and by the norms communicated by them, and by social situation; Approach and role: what is the basis for choosing the role of leadership and being led) change in the opposite direction than the other factors. Nevertheless, this cannot be considered as a negative change since both cases allude to children's growing independence in social activities.

However, results can be interpreted in another way as well but this does not contradict the first interpretation: these two curves do not represent the functioning of *abilities*, but the assessed components are rather behavioural habits (they are bound to special actions, situations and events) as defined by the applied competence model (*Nagy*, 2007). Nevertheless, results show that expectations of the environment determine less and less the social activity of children between 4 and 18 for both factors. This can be interpreted as an increase in the degree of freedom, and this should be taken into account when defining development aims and methods.

The content of the individual factors and their hypothesised developmental curve raise the question again: what can be considered, in the case of social abilities, as development, positive change and what is the point of reference on the basis of which it can be judged? In the case of Situation, expectation and Approach and role it cannot be clearly stated that there is a negative change (there is no development). Nevertheless, in the case of the other four factors, the increasing values with age cannot always be interpreted as a positive change (development) either. For example, our results show that the dominance of private interests increases with age in all abilities – can it be interpreted as a positive change? Another example: in group work children in the two youngest age groups take less into consideration the degree of participation when it comes to receiving rewards. The older children are the more stress they lay on the quantity of work done, i.e. proportional rewarding determines more and more their behaviour. The rating of this change depends also on many factors, e.g. the expectations, the norms accepted, expected and sanctioned by a given community and the values assigned to a specific behaviour.

All these draw attention to the fact that in future pedagogical research the psychic components determining social activity should be studied in a more context-bounded way. In addition, questionnaires should be combined with other methods, particularly with observation. The results of the different methods should be then compared and contrasted. It is also worth exploring the value system of kindergartens and schools and not only that of families and considering those as a point of reference to interpret the results. I think that the results of each ability analysis can be completed with important information by a sociometric analysis: social relations and situations may reflect similarities and differences with the explored phenomena.

20 items from the 51 of the questionnaire show significant gender differences. It was assumed that there are significant differences even among the youngest children; however, our results indicate that differences are more common among children between 12 and 18, and that differences observed at an early stage can be identified at later stages as well. Raters's opinions diverge to a large extent not only in evaluating the social abilities of children of different age groups but in evaluating that of boys and girls, too, Divergences in inter-rater agreement can be demonstrated according to abilities as well. The rating of questionnaire items measuring cooperation, help and leadership abilities is nearly identical among the raters; however those belonging to competition ability are rated either differently by teachers or there is no significant difference between the two genders on the basis of their ratings.

When interpreting gender differences it is vital to take into consideration the differences related to maturing and the effect of the characteristics of social environments, and those of social expectations related to gender roles. Female children mature earlier than males, which leads to an advantage of females at the end of primary school and throughout high school years (*Csapó*, 2000). Moreover, gender differences can be considered as social constructs that results in different treatments and role expectations that may be very different in different societies and cultures. Nevertheless, *Vajda* (2001) states that there are few characteristics in which the pressure from parents, peers and the social environment would be so coherent as in the case of behaviour expected from female and male children.

The hypothesis concerning the differences related to school types could be verified. The differences between students learning in high schools, technical and vocations schools were significant for 15 item. The raters have very different opinions about the functioning of abilities. Most of the differences can be identified between children's self-assessment and teachers' ratings. parents and children

differ only at some items of Interest and Situation, and of expectation factor. and to parents' and teachers' opinions are at a contradiction in each case. Children and teacher assessments are nearly always identical: in most cases, it is high school students who can be distinguished from technical school and vocational school students. These results show that raters' judgements differ the least according to age and the most according to school types, and that teachers' opinions differ significantly from those of parents' and children'. According to *Anderson* (2000), this phenomenon influences fundamentally and usually negatively the effectiveness of development programs in kindergartens and schools.

Emotional abilities: characteristics according to age, school type and gender

When assessing emotion recognition ability, mothers' emotion recognition was also evaluated since international research shows (e.g. *Saarni*, 1999) that the relation between parents' (mainly mothers') and children's emotion recognition is strong. Figure 2 demonstrates the change of basic emotions and their degrees of intensity with age. The results confirmed my hypothesis only partially: the older one gets the more reliable is the recognition of emotions in each factor. Parents' emotion recognition can be interpreted as a further stage of this process. Nevertheless, children between 15 and 18 were the most successful at recognizing emotions, and not children between 12 and 18. The two general statements of *Oatley* and *Jenkins* (2001) were also verified: (1) emotion recognition differentiates gradually as one gets older; however, precise boundaries are very difficult to be determined, especially in the recognition of the degrees of intensity, and (2) differentiation is hugely influenced by social experiences (the age of parents was considered as the indicator of experience in this survey.)
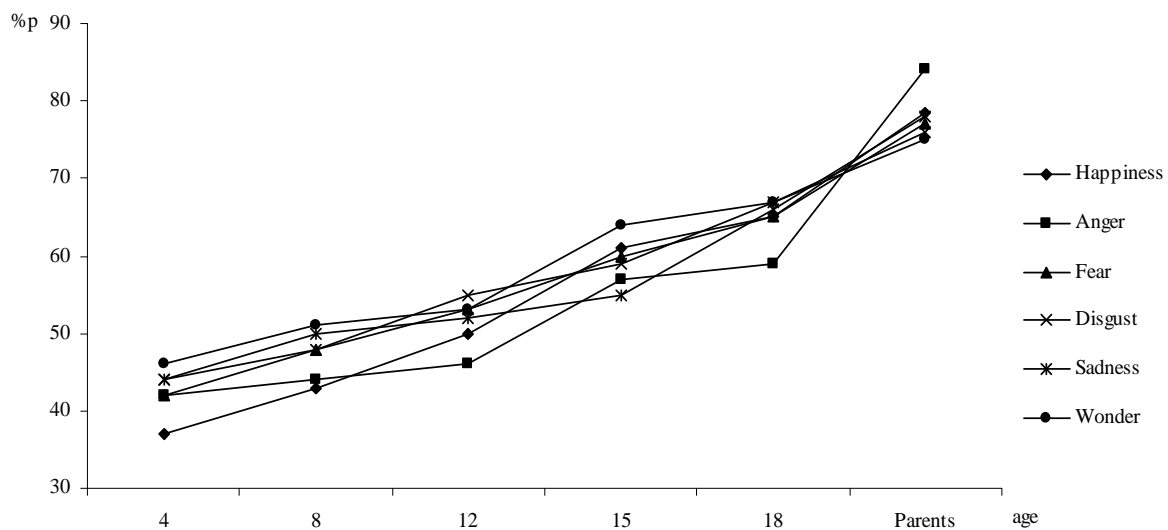

Figure 2
Development of children's and parents' emotion recognition (contracted variables)

In all age groups, correlations between self-assessments of recognizing basic emotions are stronger than that of recognizing the degrees of emotions, which is in line with previous research results (e.g. *Saarni*, 1999). Correlations are the strongest at the emotions belonging to the Happiness and Anger factors, and the weakest at those belonging to the Wonder factor – the data verify the results of similar research as well (e.g. *Fabes*, *Leonard*, *Kupanoff* and *Martin*, 2001). Research exploring the relationship between mothers' and their children's emotion recognition suggest that non-family members and mechanisms of the wider social context (peers, teachers, media) play an increasing role in emotion recognition as children get older. Part of these influences have an effect on children's social activity, especially on their emotion recognition, through parents' emotion expression. In addition to parents' self-assessment and parents' age two further factors (level of education, with whom s/he

brings up his/her child) from the background factors were chosen for further analysis. Regression analysis was performed with children's self-assessment as a dependent variable, and with the four variables mentioned above as independent variables.

In all age groups, mothers' self-assessment and family type (who brings up the child) provides more than 50% of the explained variance, these are the two factors that have the most important role. While the effect of mothers' emotion recognition is of the same size in all age groups, the effect of family type shows an increase in our sample. This result is in line with the results of *Fridlund* (1994) who states that the structure of the family influences emotion recognition to a considerable degree. Mothers' level of education is also a determinant in each subsample, it has the third strongest explanation effect and, contrary to family type, its effect has a decreasing tendency with age. Mothers' age contributes less to the explained variance in all age groups.

The results of expressing basic emotions and the differences between the different age-groups at some items correspond to the age-related differences of the factors of social interest realisation abilities. This validates the strong relationship between emotions and the judgement of different situations. The same conclusion can be drawn from the results related to gender- and school type-differences. Although only small differences could be identified in both cases, differences appear solely at the items as those of the social interest realisation abilities questionnaire. Despite the fact that the instrument is appropriate for assessing the expression of basic emotions, results also indicated that in the age group of 15 to 18, basic emotions do not give reliable estimates for 25% of the items. The primary reason for this is that the emotional system is more and more differentiated, which strengthens the relationship between recognition and expression. Further investigations should be made on the expression of the degree of intensity of these emotions.

The ability of understanding basic emotions was assessed by a story: subjects had to evaluate the emotional reactions of characters. During data collection it turned out that basic emotions are not sufficient to cover all the emotions represented in some situations of the story. However, the results serve as a starting point for further research: they designated emotion groups that have to be represented with higher differentiation when assessing the understanding of emotional reactions shown in specific social situations. Understanding the degrees of intensity of wonder and anger can be considered as the most important variables. In all age groups, there are only few significant differences for gender and school type, which can probably be explained by a more precise recognition of basic emotions. Presumably, more substantial and significant gender differences could be identified for the degrees of intensity. Further research is needed to confirm this hypothesis.

Results on the regulation of basic emotions support previous research results (e.g. *Halberstadt, Denham* and *Dunsmore*, 2001), as more children between 12 and 18 feel that experiencing a frustrating social situation is a daunting experience. Gender differences are the most pronounced between the ages of 15 and 18 (it is more frustrating for girls); and it is only among the 18-year-olds that some significant differences can be identified on the basis of school type (it is more frustrating for vocational school students).

Outcomes of our research on emotional abilities suggest that differences according to age, gender and school types are significant among children between 4 and 12 and those between 15 and 18, and this is true for social interest realisation abilities as well. The most important message of the results is that adolescence can be considered as a very important period from the point of view of development, and this is accentuated by numerous other research efforts (e.g. *Halberstadt, Denham* and *Dunsmore*, 2001) as well. However, the role of early development is also enormous since only very little change can be identified before adolescence in the functioning of emotional abilities, and it is vital to know the family background thoroughly when constructing a development program.

Social problem solving ability: characteristics according to age, school type and gender

The results on social problem solving ability partially confirmed our hypothesis: significant age-related changes can be identified but again, only two groups can be clearly distinguished on the basis of age: the group of children between 8 and 12 and that between 15 and 18 . The curves representing the characteristics of the functioning of ability dimensions, as in the case of two social factors, question the ability aspect of components. Figure 3 shows the change of the five components with age as expressed by a cumulated index calculated from raters' judgements.
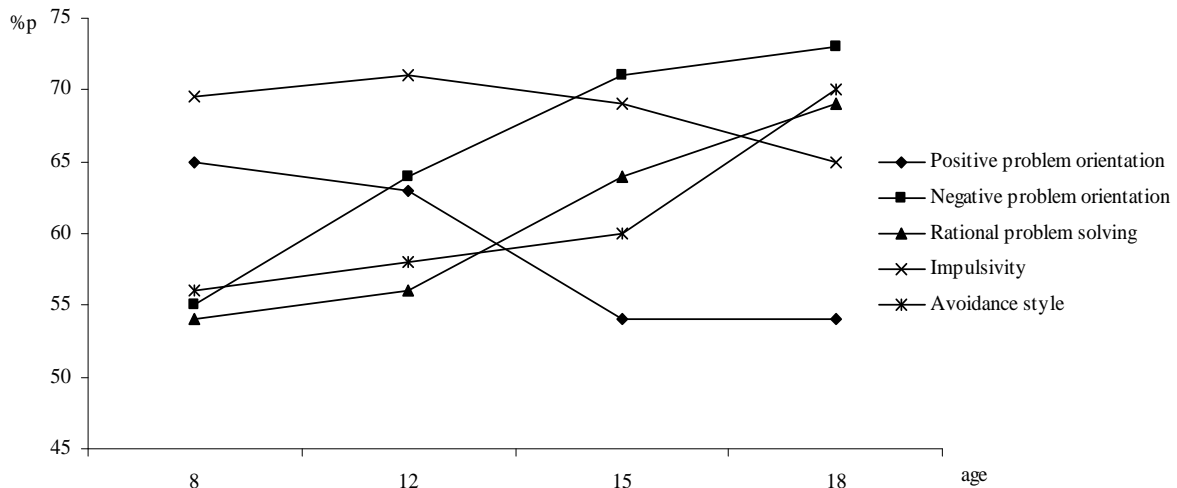
Figure 3
Development of social problem solving ability (factors)
between the age of 8 and 18 (contracted variables)

Our results show a high resemblance to those of some previous researches (e.g. *D'Zurilla*, *Nezu* and *Maydeu-Olivares*, 2002; *McMurran*, *Egan*, *Blair* and *Richardson*, 2001). The positive approach to social problems (Positive problem orientation) is more typical of 8- and 12-year-old children than of 15- and 18-year old children. On the other hand, a negative view of the relations and situations problematic for the self (Negative problem orientation) is most typical of the two older groups. It is less frequently among 12-year-olds and least frequent among 8-year-olds.

Students in the two older age groups show a higher tendency to define problems, to act rationally when making decisions and realizing solutions, to interpret situations from several aspects , and to consider more solution possibilities (Rational problem solving). Decisions and problem solving based on emotions (Impulsivity) are characteristic of the 12-year-old children, and there is no significant difference between the eight, 15-, and 18-year-olds. Problem avoidance and postponement of solution (Avoidance style) is more frequent among the 18-year-olds than among younger children among who there is no significant difference.

Significant difference can be identified for gender in the case of 10 items of the 25, and for school-type in the case of seven items. In contrast to our hypothesis, there are more differences between males and females in the two older age groups. Children's and teachers' ratings differentiate between high school, technical school and vocational school students in the age group of 15 to 18. There is considerable agreement among the three raters in rating the functioning of the abilities of females and males. The interrater agreement is larger than in the case of social interest realisation abilities but the evaluators' opinions are highly divergent when assessing children from different school types.

A critique of the questionnaire can also be formulated, although it has already been raised by the authors of the questionnaire (*D'Zurilla*, *Nezu* and *Maydeu-Olivares*, 2002) as well. Subjects are instructed to think of any social problem or situation and anyone (family member, peer, etc.) when forming their answers. I suppose that if this instrument is to be used in Hungary in the future it will be worth making different questionnaire versions focusing on specific persons and situations (e.g. a version concentrating only on problems with peers). This may help us in yielding more accurate data on problems related to specific persons and on their solution.

The results of the analysis related to parental resources

International research results indicate that parents' opinions about specific social activities, and education principles and techniques influenced by them strongly determine the development of sociality (*Grusec* and *Hastings*, 2007). The aim of our study was to explore what mothers think about the quantity and the frequency of financial, intellectual and relational resources in connection with children's social interest realisation (cooperation, help, competition, leadership) behaviour. It was also hypothesised that age, financial status and highest educational qualifications influence parents' opinions about behaviours representing social interest realisation ability. We also assumed that the functioning of abilities is largely effected by parents' opinions about their intellectual resources and much less by relational resources and the least about financial resources (H_{16}). The results confirmed the hypotheses (some details can be found in the chapter presenting the results of the correlation analysis).

The results clearly support international research results that family factors must be paid more attention to in the future when elaborating a specific development program. The parents in our study strongly distinguish between the four behaviour forms: they think that their children's cooperative and helping behaviour depends mostly on family education while competition and leadership should be acquired in schools. This approach has an effect on children's attitudes to these behaviour forms and on the acquisition and application of knowledge related to behaviour forms. Another essential phenomenon that probably influences children is that money is used as means of reward and reinforcement even with the youngest children.

Competition is strongly rejected by parents, it is considered to be a really negative behaviour form. This opinion was characteristic for every parent no matter how old the child was. We must note here that respondents were mothers and numerous surveys show that women are less inclined to competitive behaviour, which is largely explained by gender-related social expectations (*Fülöp*, 2007). Parents of 15- and 18-year-old children assign a smaller role to themselves in the development of behaviour forms, e.g. the frequency of asking for help decreases with age and parents of older students consider less important the fact that children should see an appropriate example for asking for help in their environment.

In families where more money is spent on children, behaviour forms are more likely to be rewarded by money; however, there is no significant correlation between the sum of money given and the behaviour form rewarded by the money. It can be supposed that the fact of rewarding is primarily influenced by the financial status of the families. However, the sum of money spent on children has little effect on the rewarded domains (behaviour, school grades, etc.). This is considerably more effected by other characteristics of parents not related to financial status (e.g. their opinion about the form and time of rewards).

In accordance with international data (e.g. *Grusec* and *Davidov*, 2007) it is very important for mothers independently of age to talk about behaviour forms and to model behaviour (the two forms of intellectual resources); however, parents of 15- and 18-year-old children more often think that their influence is smaller than that of peers and the media at this point. They think that children see examples for cooperation and help in the family, but not for competition and leadership. The analysis of relational resources shows that parents uniformly avoid asking for help from anyone in creating situations where children have more possibilities to cooperate, to help, to ask for help, to compete and to accomplish roles of leadership and to be led more effectively.

The main results of internal and external correlation analyses

The primary aim of complex development programs is to contribute to the positive change of specific psychic components, taking into account the relationships of the latter with other components. The relationship between social interest realisation, social problem solving, emotion recognition, inductive thinking ability, parents' opinions and some background variables were analysed with respect to this.

On the basis of our previous research (*Kasik*, 2006), it was hypothesised that the relations between factors of social interest realisation abilities become stronger with age. This tendency characterises the relationship between these factors and emotional, social problem solving and inductive thinking abilities. The association between social interest realisation abilities and emotional and social

problem solving abilities is stronger than that between social interest realization ability and inductive thinking ability (H_{15}). The set of background variables was also selected on the basis of previous research. It was hypothesised that the effect of parents' highest educational qualification decreases with age, and just as the role of financial background. In contrast, we assumed that the impact of family type increases with age (H_{17}).

Results of regression analysis are summarized in Figure 4, which shows the effects of components on the factors of Social Interest Realisation Abilities for the whole sample. Environment variables are presented above the arrow, and psychic components are under it. The nearer a component is to the factors of social interest realisation abilities (SIRA), the larger the effect it has on the factors. The explained variances increases with age for all variables – this holds true even when one takes into consideration the fact that the set of independent variables is smaller in the case of 4-year-old children because of the lack of data on their social problem solving and inductive thinking abilities. The extent of change is the biggest in the case of Interest, and Time and Winner and the Relationship between contribution and participation, and is the smallest at the factor of Situation, expectation.
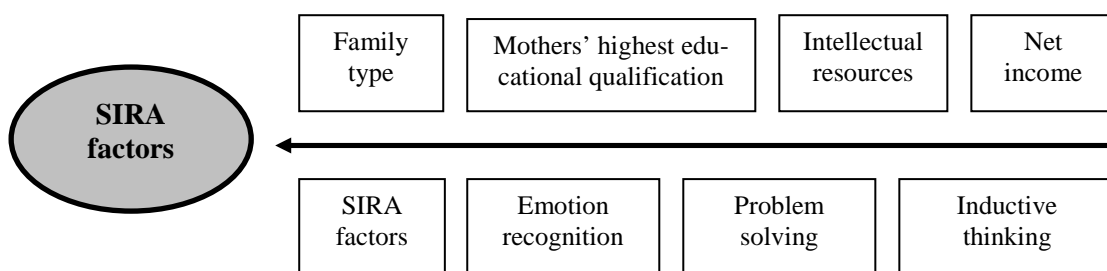

Figure 4
The effect of components on SIRA factors

For all factors, a considerable proportion of explained variance is accounted for by other social interest realisation factors, and this can be observed at all age-groups. This proportion of explained variance is about one half or one third, which implicates a strong association between abilities. All of the factors of social problem solving ability influence the SIRA components; however, their effects are smaller than expected on the basis of international research. This may be explained by the fact that one of the instruments assesses skills whereas the other one measures abilities. Previous research (*Kasik*, 2006) has shown that the relations between abilities and skills are different than between two abilities or two skills. Both parents' and children's emotion recognition have an important effect in all age groups, mostly for 'Interest' and 'Time and winner' factors but no tendency can be identified.

The results of the correlation analysis between inductive thinking and social abilities indicate an obvious relation between the two domains, but its strength is smaller than expected. Inductive thinking ability's relations with factors that are connected to the situation and possibility evaluation element of *Damasio's behaviour model* (1994) strengthen with age. *Meichenbaum* et al. (1981) claim that the cognitive components of social competence are of special importance at this phase of social activity. Their opinion supports the conclusion drawn from our results: creating rules, drawing conclusions from experiences, and creating models are very important as social activity changes with age. The nature of experiences function as a baseline for comparison for the change of social activity. This leads us to a further conclusion which is also supported by numerous research results: early social experiences play a fundamental role in social development.

Mothers' highest educational qualification, family type and parents' opinions about intellectual resources are the environmental factors that exert the strongest influence on the development of social components. However, the nature of their effects varies from factor to factor, and they are nearly of the same extent at a given factor in the age groups. Data about net income reflect previous research results (e.g. *Kasik*, 2006; *Zsolnai*, 1999): this is the environment variable that has the smallest effect on the studied components of social competence.

The importance of our empirical research and possibilities for further research

The effectiveness and the success of social education depends largely on how much we know (a) about the functioning of the psychic components which we would like to develop, on the one hand; and (b) about the role environment variables play in the development of these components. The significance of the empirical study lies in the fact that it explored the characteristics of psychic components by age, gender and school type in detail. The reliable investigation of these components has been scarce until now. A more precise image was obtained about the internal system of social-emotional, and social-cognitive components, and also about their relations with some psychic and environment factors, and about their effect on each other. The results support many previous, mostly international research results, and stimulate rethinking our knowledge about the functioning of abilities and about the possibilities of their development. They also provide an adequate basis to design a complex program promoting the development of abilities of children between 4 and 18. Complexity means here that the program involves direct, indirect and context-embedded tasks. These results point to further research possibilities and tasks, too.

It would be worth doing a longitudinal analysis of this ability group in the future, the results of which would also contribute to the elaboration of the content of the program and to the selection of its methods and instruments. It would also be useful to explore the relationship of for example deductive thinking ability (*Vidákovich*, 2002) or social motives (*Forgas*, *Williams* and *Lahan*, 2005) with the examined abilities, and to extend the set of environment variables (e.g. social values communicated by schools, teachers' social competence). It is important to do the correlation analyses on which stress is laid by international research (e.g. the correlation between personality traits and abilities; correlation between sociometric status and abilities).

We also have the longer version of the questionnaire used to examine social problem solving ability. It consists of 52 statements and it gives a more accurate assessment of the abilities measured by the shorter version. In addition to the adaptation of this, it is necessary to elaborate a reliable instrument for four-year-old children similar to the adapted questionnaires. Two research projects on social problem solving are in progress. In the spring of 2010, we started to investigate social problem solving among children between 4 and 18 using other criteria: children have to list problems, complete unfinished stories and evaluate the actions of characters in the story (*Kasik*, 2010). Videos are being recorded in which situations containing different types of social problems are depicted, and children have to make judgments about these.

According to the multidimensional integrative model of behaviour analysis (*Cacioppo* and *Berston,* 1992), different science areas can be interpreted as interpretation levels in the analysis of a specific phenomenon. The aim of the analysis done in this way is to collect information from an interpretation level, to specify it and to provide a comprehensive and complex frame on the basis of the results obtained from another interpretation level. Based on this model, we analyse the correlations between social interest realisation abilities and implicit learning assessed by a computerised neuropsychological test. This analysis will be done in Fall 2010 in collaboration with the Institute of Physiology of the University of Szeged (with Gábor Braunitzer). The computerised Fish-face neuropsychological test (*Myers*, *Shohamy*, *Gluck*, *Grossman*, *Kluger*, *Ferris*, *Golomb*, *Schnirman* and *Schwartz*, 2003) examines the association of pairs in a playful manner. This association plays a fundamental role in learning (i.e. constant change in the psyche). Moreover, implicit rule acquisition and the application of acquired rules in new situations are also measured by the test: according to neuropsychological analyses these processes have an important role in social activity (*Kéri*, 2008). The results of this study obviously enrich our research data on the correlations between inductive thinking and social components.

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