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The School Readiness of Six-Year-Old and Seven-Year-Old Children as Measured by Intelligence and Development Scales (IDS) and Subjective Assessment of Mothers

Abstract: The presented study aimed at determining the school readiness of first-grade pupils by scores of standardised competence tests and the subjective assessment of mothers, checking possibilities to differentiate the results of preschoolers and pupils and correlations of both measurement methods. *The Intelligence and Development Scales* (IDS) and the *Questionnaire of Subjective School Readiness Assessment by Parents* (KGSD-R), with subscales analogous to those of IDS, were used. The three studied groups involved 36 first-grade pupils, 34 older pre-schoolers, and 34 younger pre-schoolers. The average scores of the pupils on all the IDS subscales point to their sufficient school readiness. Objective (IDS) and subjective results (KGSD-R) differentiated the children's results into high and low, however, the correlations for the pre-schoolers were few and low, and for pupils – not statistically significant.

Keywords: school readiness, children's competences, mothers' assessments, six-year-old children, seven-year-old children, IDS

Słowa kluczowe: gotowość szkolna, kompetencje dzieci, oceny matek, dzieci sześćioletnie, dzieci siedmioletnie, IDS

INTRODUCTION

Currently, children in Poland start school education when they are seven years old, as obligatory education for 6-year-old children has been abolished¹ Younger children may go to school only after completing a one-year pre-school preparation program or being assessed as ready to pursue education by psychological and pedagogical counselling. Currently, in psychological practice, emphasis is placed on determining the child's

school readiness as a profile, which means that different abilities and skills condition the success in implementation of school tasks. The identification of strengths and weaknesses allows for taking into account certain deficits with the possibility of their compensation using competences from different spheres of the child's functioning (Fecenec, Matczak, 2017). This profile analysis allows the use of the IDS Intelligence and Development Scales for the diagnosis of school readiness of children, including the assessment

of the social, emotional and motivational as well as cognitive abilities. So, what is the definition of school readiness and how is it understood in the literature?

Based on the literature review, it can be concluded that the concept of school readiness is defined in various ways and covers many areas of the child's functioning, his/her family and institution (see Brzezińska, Czub, 2015). **School readiness** means that the child has reached a level of physical, social, and mental development which makes him or her receptive to school education (cf. Kołodziejczyk, 2012). Therefore, a child ready for school should be able to cope with the requirements of starting school education independently or with the support of other people (e.g. Brzezińska, 2000). In achieving school readiness, Klim-Klimaszewska (2006) emphasizes the importance of the child's adapting to the conditions and requirements of the new environment in a way that allows him/her to cope with difficulties, meet his/her own needs, enter new roles and enjoy them. Okoń (2001) defines readiness as an appropriate level of mental, emotional, social and physical development that would allow the implementation of the curriculum content proposed by the school. Jarosz and Wysocka (2006) present school readiness dynamically, considering it to be a process that results from developmental changes which allow children to meet school requirements. Attending school (i.e. the institution) also entails changes in the functioning of the child, his/her family and people associated (Brzezińska, Czub, 2015). The changes entail such aspects of the child's functioning as the daily routine, adaptation to a new environment, longer periods of separation from parents, and the fulfillment of education-related obligations. Children should "switch" from activities based solely on play to task-based activities, and make a transition from specific to abstract thinking. They are also tasked with controlling their cognitive processes by initiating metacognitive processes.

In own research, the definition of school readiness used in psychological practice was adopted, which is most often understood as achieving such a degree of mental, emotional, social and physical development that it will en-

able a child to participate in school life and take a satisfying role of a student (Brzezińska, Appelt, Ziółkowska, 2016). Readiness understood in this way includes the assessment of three areas: psychomotor, emotional-motivational and dictionary-conceptual readiness. These above dimensions of school readiness were included by the authors in the IDS. The area of psychomotor readiness includes the ability of visual analysis and graphomotor efficiency. The dimension of emotional-motivational readiness consists in emotional maturity as well as task-oriented and learning motivation. On the other hand, dictionary-conceptual readiness is created by mathematical and linguistic competences (Fecenec, Matczak, 2017). Being aware of the dynamics of developmental changes in preschool and early school period, it should be remembered that child development does not always occur harmoniously in all spheres, so the degree of school readiness in the above-described areas may differ in one child (Kołodziejczyk, 2012).

A slightly different approach to the issue of school readiness is presented by Błażej Smykowski (2015), who advances the theory that it should be treated as the ability to assimilate and follow new rules for intellectual functioning. According to this author, school readiness is manifested in the child's susceptibility to direction and willingness to be guided by other people. Smykowski (2005) claims that a child who is about to start school should be able to recognize situations when he/she loses control over something and then act efficiently (e.g. ask for adult help or increase self-control). According to the author, this skill will support the teacher's instruction and upbringing at school and predict the child's school success. Currently, researchers postulate not to consider the issue of readiness solely from the point of view of separate elements, i.e. the level of competence development, teacher qualifications or school equipment (Brzezińska, Czub, 2015), because school readiness depends on many mutually influencing factors. The issue of the child's earlier development, his/her interactions with the environment, the functioning of the family and institutions the child has attended (nursery,

kindergarten) is not without significance. This means that research in this area requires a skillful combination of these elements, which is possible thanks to the adoption of the so-called **interactive approach** in psychological research on school readiness (Brzezińska, 2014).

In the interactive approach, it is assumed that the child's readiness for school is not only the result of the natural process of development but the result of the interaction of biological, psychological and social factors. It is believed that the child's level of readiness reflects the quality of educational interactions undertaken by the family, nursery, kindergarten and even neighborhood. In this approach, links are sought between: (1) the child's life history and his/her functioning, thanks to which it is possible to determine the conditions of the child's current level of development in particular areas of functioning; (2) elements of the functioning of family and local environment and the functioning of the child, so that an answer can be found to the question about the current conditions of success and difficulties experienced by the child, as well as factors supporting the child's development and compensating for any deficits. Interactive school readiness consists of four interrelated components, namely: the readiness of the child, family, school and local environment. The child's readiness consists of the child's current development and current level of functioning. Important factors to consider include: the child's age and gender, type of nervous system and temperamental traits, level of development (physical, emotional-motivational, social, cognitive, language). Family readiness means a family-specific type of support provided to the child, in other words, how the family cares for the child and supports his/her development. The quality of this support may result from the economic and social resources of the family, but also from the personal competences of parents and other close family members. The readiness of the school consists in taking into account and satisfying the child's individual development and educational needs, which translates into the support at the moment of school start and preparing the child to function in the social environment. From the perspective

of the child's adaptation, the most important is the use of the individual approach to education, cooperation with parents and the involvement of school staff in organizing child-friendly learning conditions. The readiness of the local environment concerns formal, i.e. institutionalized, and informal sources of support. These include institutions and places offering meetings and support for parents, and allowing children to participate in extra-curricular activities (e.g. clubs, centers, "cafes", parks, playgrounds and other places allowing for informal meetings). Based on the above description, it can be concluded that school readiness is the effect of a combination of school and child properties, taking into account the impact of the social environment on the child, and is the result of four interconnected components. The interactive approach described above takes into account all the important elements that make up school readiness and is used in the diagnostic practice of children whose aim is to distinguish factors that hinder or may hinder the child's school start and to search for corresponding factors supporting or able to support the school start (see Brzezińska, 2014). They can also be successfully used in the area of scientific research on children's school readiness. Concerning the presented own research, however, it should be emphasized that the focus was on the first component, i.e. child readiness, and partly on the second component, family readiness, in order to answer the question about the existence of convergence between mothers' assessments in terms of children's readiness with the results obtained in the IDS Scale measurement (see Problem). That is why the other two components were not included in the research design. Before discussing the issues of the research, a general review of research on school readiness conducted in recent years will be made, which will allow us to determine the current state of knowledge in this area.

The present **research of school readiness** concerns the search for factors positively correlated with high results in school-readiness tests (e.g. Umek et al., 2008; Röthlisberger et al., 2012; Lee et al., 2014). Given the subject of the research, the focus was also placed on the discussion involving the evaluation of school

readiness of children by their parents. Based on a review of research in this regard, a general conclusion can be drawn that the family factor, and not only the level of parents' education, plays an important role in the development of the child's school readiness. Jaime Puccioni (2015) demonstrated that parents' positive convictions that the child would cope with the school situation, as well as their involvement in the process of the child's transition from pre-school to school environment were positively correlated with school readiness and scoring highly in school-readiness tests. Annie Bernier et al. (Bernier, Perrier, McMahon, 2017) indicated that family socioeconomic status (SES), which includes parents' education level and the annual income of the family, directly impacts on the level of school readiness. Unfortunately, little is known about parents' evaluations of school readiness in the process of the child leaving pre-school and going to school. The few studies on this subject suggest that the parental concept of school readiness significantly affects the child's early education (see Barbarin et al., 2008; Diamond, Reagan, Bandyk, 2000). For example, research on the degree of parents' involvement in the child's education process at school indicates that it plays an important role in the successes achieved by the child at school (Matejczuk, Nowotnik, Rękosiewicz, 2013). Researchers indicate the importance of certain family factors in shaping the child's school readiness, such as: sensitivity to his/her needs, active attitude towards the process of acquiring knowledge and supporting his/her autonomy (Sheridan et al., 2008). Studies involving the parents of six-year-olds in Poland indicate that the key factors for determining the child's school readiness include the ability to establish relations with adults and children, and not the level of cognitive development (Czub, Matejczuk, 2014). Based on the research, four major elements important for parents when determining their children's school readiness were identified. These included: cognitive curiosity, self-regulation, social development level and health.

The above considerations about the nature of school readiness prompted us to undertake

research in the field of objectified measurement of school competences using the Scales of Intelligence and Development (IDS) in a group of children leaving kindergarten and starting school. The question about the level of school competence of children in these development periods is particularly important due to the arrival of the important moment of school start. Its quality is largely determined by the level of school readiness achieved by the child (Brzezińska, Appelt, Ziółkowska, 2016). These first educational experiences of the child are, in turn, relevant to further stages of learning, conditioning success or failure, and shaping the child's self-esteem and level of functioning at further stages of development. Consequently, the quality of school start may be related to the quality of life in adulthood, because education is one of its determinants (Szreder, 2013). Importantly, the reduced level of school readiness can be a significant risk factor for the child's school failure, which in turn may cause increased difficulties in functioning (including Wiliński, 2005). A child who does not meet the school's requirements needs the earliest possible recognition. It is also necessary to identify quickly the factors causing the difficulties, and then to provide help and support to the child. This requires the knowledge on the part of not only teachers but also parents, who should be sensitized to this type of situation. This issue is connected with another problem addressed in the present research regarding the subjective assessment of school competences of these children by mothers. As mentioned in the introduction, the family factor is related to the child's level of school readiness. Unfortunately, the review of research published in the literature leads to the conclusion that there is a gap in the knowledge about subjective assessments of children's school competences by parents. It is particularly noticeable when it comes to the correlation of these assessments with the indicators of psychological tests measuring school readiness, which are an accurate and reliable diagnostic method in examining children. Striving to answer the above questions, two research problems were formulated, which are presented in detail in the next part of the article.

PROBLEM

The article presents two main research objectives. The specific objective was to determine whether children with above- and below-average scores in school readiness could be distinguished in every age group – of younger and older preschoolers and pupils. Additional goals were to determine: (1) The level of children's competences composing school readiness in the subjective assessment of their mothers; (2) Whether children with above- and below-average scores in the subjective measurement of school readiness could be distinguished in every age group; (3).. Whether there is a convergence between objective measurement (IDS tests) and subjective measurement (assessment of mothers) of school readiness of children in every age group and whether it depends on the children's age.

Due to the inharmonious development of children in the studied developmental periods, as mentioned earlier, the hypothesis as to which age group of children will achieve better or worse results in terms of school readiness was abandoned (see Brzezińska, Appelt, Ziółkowska, 2016). It should be noted that the essence of school age is a large diversity of children in terms of their level of development (Nowotnik, 2014). The author notes that the functioning of children starting school more resembles the functioning of preschoolers than students, and only as a result of experience related to taking on new social roles and with the development of the central nervous system will there be significant qualitative changes. Moreover, the authors of the IDS test emphasize that competences taken into account when assessing school readiness may develop unevenly, and their weight for assessing school readiness may be different, therefore a profile assessment of this heterogeneous construct was proposed (Jaworowska, Matczak, Fecenec, 2012). Due to the insufficient level of knowledge in the field of school readiness assessments made by the parents of children, no assumptions were made regarding the assessment of the mothers tested and their convergence with the results obtained in the test.

IDS is recommended by the authors for the diagnosis of school readiness with the assumption that it is a heterogeneous construct and when determining the school readiness of a child, the results of individual subscales should be considered separately (see Jaworowska, Matczak, Fecenec, 2012, pp. 183–184). The theoretical accuracy of measuring children's school readiness in the assessment of mothers was based on the definitions of the IDS subscales and the tests contained therein. It was assumed that it should differentiate the school readiness of children, and its results should be correlated with IDS results.

METHOD

Sample. The sample of the studied children composed of primary-school first-graders and preschoolers, and their mothers. In total there were 36 school pupils (18 girls and 18 boys). The youngest was 6 years 4 months old, and there were four other children younger than seven. The five oldest pupils were eight years old. All the pupils lived in cities with populations exceeding 100,000. The group of preschoolers included 68 children (34 girls and 34 boys) aged from 6 to 6 years 11 months. 35 children lived in cities with populations exceeding 100,000.26 in cities less populous than 100,000, and 7 in rural areas.

Measurement. The Intelligence and Development Scales (IDS) by Alexander Grob, Christine S. Meyer and Priska Hagmann-von Arx in their Polish adaptation by Aleksandra Jaworowska, Anna Matczak and Diana Fecenec (2012), recommended by specialists in diagnosing school readiness in practice (Fecenec, Matczak, 2017; Jaworowska, 2017), were used to measure the school readiness of the children. 11 out of 19 subscales of the entire test were used:

- Auditory memory and Phonological memory – testing the intentional and long-term memory of the child, needed for effective learning;
- Active speech and Passive speech – measuring the child's communication ability based on the understanding of others, and formulating statements independently;

- Social strategies and Emotions regulation – reflecting the child’s ability to cope with negative emotions and social situations, i.e. the abilities comprising emotional maturity;
- Logical and mathematical reasoning – measuring the child’s mathematical skills, which reflect the ability to understand tasks based on quantitative and spatial relations;
- Visual and motor coordination – evaluating the graphomotor and visual analysis skills necessary to learn how to write;
- Achievement satisfaction – expressing the child’s motivation to learn and gain knowledge of the world;
- Selective attention and Perseverance – concerning the child’s ability to focus on the task and the readiness to overcome obstacles in its completion.

Each of the subscales consists of tasks for whose correct performance the child is awarded points. An analysis of the difficulty of the tasks (see Jaworowska, Matczak, Fecenec, 2012) determined that in the Logical and mathematical reasoning subscale the maximum for 6 year-old children is 12 points, for 7 year-olds – 13 points, and for 8 year-olds – 15 points. In the remaining subscales, children aged 6–8 can score maximum points regardless of their age. The raw results are referred to as norms for a given age. The calculated results include a 19-point scale with an average of 10 and a standard deviation of 3, and the average result lies within the range of 7–13.

The IDS results correlate highly with the WISC-R scale results (around .8), and the reliability of the subscales used to diagnose school readiness is in the range of .66–.96 (rtt below .7 for the Visual and motor coordination subscales – rtt = .66, and Social strategies subscale – rtt = .68). The IDS results are a good predictor of school grades, allowing to predict school achievements (see Jaworowska, Matczak, Fecenec, 2012, pp. 57–67) – only the results of the Motorics, Social strategies and Emotions regulation subscales are not related to school achievements.

The *Questionnaire of Subjective School Readiness Assessment by Parents* (KGSD-R – the abbreviation comes from the Polish full-name: *Kwestionariusz Subiektywnej Oceny Got-*

owości Szkolnej Dziecka przez Rodziców) developed by Magdalena Kowynia in collaboration with Janusz Trempała was used to measure the subjective evaluation of school readiness as perceived by mothers. In the first version of the questionnaire (used to survey the mothers of preschoolers), the parents used the nominal scale YES/NO/I DON’T KNOW to answer 28 questions comprising the 11 subscales corresponding in terms of their content to the IDS subscales. Individual items of KGSD-R were created on the basis of the tasks that make up the IDS subscales. In the second version of the questionnaire (used to survey the pupils), the parent could select their answer based on 5 options: yes, rather yes, rather no, no, and I don’t know. The Cronbach’s α coefficient of reliability for the subscales of KGSD-R which included more than one item was .71–.78 (except for the Auditory memory subscale: $\alpha = .17$), while the rtt split-half reliability for every other item for the entire measurement was .78.

Socio-demographic data, in the form of personal data, were also obtained from the mothers of the studied children.

Procedure. The research was conducted in two stages as parts of research projects carried out by students attending the Master’s seminar conducted under the direction of J. Trempała. The group of preschoolers was studied by Kowynia and Walkowiak, and the group of students by Zawadzka. A cross-sectional research model was adopted. The group of preschool children was examined in the period from April to July 2017. The seven-year-old children participated in the study from January to March 2018. The selection was based on the “door to door” method – in three facilities (two kindergartens and an elementary school) known to researchers, mothers of children were invited to take part with their children in the readiness tests. Participation in the study was voluntary and anonymous. The mothers of the children declared their willingness to participate in the studies after becoming acquainted with their objectives and methods, by giving a written consent. The time for the children to complete the tasks comprising the IDS was from 45 minutes to 1.5 hours. The children’s mothers completed the personal data

section and KGSD-R. The detailed results for the pre-school group were presented in an article entitled *The school readiness of pre-school children: are six-year-old-children ready for education?* (Michalska, Szymanik-Kostrzewska, Trempała, 2018).

RESULTS

The Statistica 13 from StatSoft was used for the analysis.

For comparing school readiness, analyzed using standardized IDS tests, the studied children were divided into three groups equal in terms of gender: a group of younger preschoolers ($n = 34$; age: $M = 6.16$; $SD = .1$), a group of older preschoolers ($n = 34$; age: $M = 6.59$; $SD = .23$) and a group of first graders ($n = 36$; age: $M = 7.39$; $SD = .47$). The average raw results of IDS tests for individual groups are presented in Table 1. The standardized overall

result was obtained by reducing the raw results of individual subscales to a common denominator and recalculating the average result.

For determining the school readiness of the first-grade primary-school pupils, the average scores obtained by them on the individual subscales of IDS were compared with the standards for their peers in the Polish population, with a probability of 95%. The 7–13 range of scores obtained by the studied children (from 9 to 12.4), means that the scores were averaged for the 19-point subscales of IDS (see Figure 1).

The analysis of normalized results showed that generally in all three age groups there were children achieving results above or below the average in individual IDS subscales. However, in the case of below-average results, they were always a minority (a χ^2 test with effect size determined by the ϕ^2 factor was used to compare the numbers; the highest difference in results for the Achievement satisfaction subscale for younger preschoolers: $\chi^2 = 11.53$; $p < .001$; $\phi^2 = .17$),

Table 1. The mean scores on the IDS subscales for the school pupils and the younger and older preschoolers

IDS subscales	Pupils		Younger preschoolers		Older preschoolers	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
1. Auditory memory	26.17	4.71	22.18	5.33	27.12	6.38
2. Selective attention	39.06	8.23	28.79	9.91	32.97	15.48
3. Phonological memory	5.83	.94	4.85	1.83	6.24	1.88
4. Visual and motor coordination	10.47	2.05	7.24	2.22	9.35	3.18
5. Emotions regulation	10.25	3.94	7.94	2.73	8.82	2.79
6. Social strategies	9.56	1.65	7.18	1.75	8.03	2.19
7. Logical and mathematical reasoning	8.17	1.36	5.03	1.59	6.68	2.27
8. Active speech	6.39	2	5.76	1.74	7.65	2.33
9. Passive speech	8.4	1.68	5.76	2.21	8.56	2.41
10. Perseverance	12.44	2.02	10.59	2.64	11.12	3.24
11. Achievement satisfaction	11.92	2.21	10.32	2.73	10.41	3.06
Standardised overall score	67.39	5.97	52.09	5.97	62.81	10.00

Source: own work.

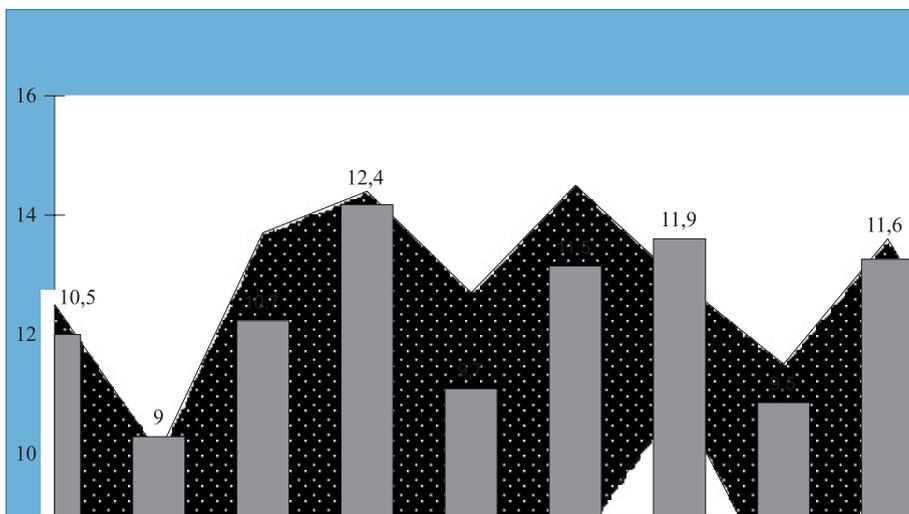


Figure 1. The IDS subscales scores for the studied pupils in relation to the standards for the Polish population (the scores at a confidence interval of 95%)

Source: own work.

and in the case of the above results – it could even equal the number of children with average results (the highest difference in results for Passive speech for older preschoolers: $\chi^2 = .94$; $p = .33$; $\varphi^2 = .1$) (see Table 2). In addition, the group of pupils with above-average results was larger than the group with below-average results three times, namely: in the Visual and motor coordination subscale, in which 13 pupils obtained above-average scores, and one below-average score ($\chi^2 = 8.78$; $p = .003$; $\varphi^2 = .1$), in the Active speech subscale – 8 above-average scores, one below-average score ($\chi^2 = 4.88$; $p = .03$; $\varphi^2 = .06$) and in the Passive speech subscale – also 8 above-average scores, one below-average score ($\chi^2 = 4.88$; $p = .03$; $\varphi^2 = .06$).

The results in terms of school readiness in the subjective assessment of children's mothers are presented in Table 3.

In research on preschoolers, the 0–1 scale (assumed average .5) was used, for pupils – the 0–3 scale (assumed average 1.5). Providing the answer consisted of either confirming or denying the child's competences, so because of the lack of a middle answer the interpretation of the results could be based only on scores below and above the average. The "I don't know" answer was not

included in the analysis. School readiness in the subjective assessment of mothers in the group of younger preschoolers was generally above the average for all subscales except Phonological memory, Logical and mathematical reasoning and Perseverance and Achievement satisfaction, whereas in the group of older preschoolers – for all subscales except Logical and mathematical reasoning. In the group of pupils, school readiness in the assessment of mothers was above the average for all subscales.

The results for individual children in the age groups showed that KGSD-R differentiated the results of children into higher and lower than the average in all subscales in all age groups (see Table 4). Also, generally there were more children with scores above the average in all age groups than children with scores below the average in all subscales, except for:

- Logical and mathematical reasoning in the group of younger preschoolers (significantly more children with below-average scores; $\chi^2 = 20.86$; $p < .001$; $\varphi^2 = .31$) and in the group of older preschoolers (no significant difference in the number of groups with scores above and below the average; $\chi^2 = .25$; $p = .62$; $\varphi^2 = .004$);

- Active speech in the group of younger preschoolers (no significant difference in the number of groups with scores above and below the average; $\chi^2 = 2.15$; $p = .14$; $\varphi^2 = .03$);
 - Perseverance in the group of younger preschoolers and in the group of pupils (no significant difference in the number of groups with scores above and below the average in both cases; respectively: $\chi^2 = .94$; $p = .33$; $\varphi^2 = .01$ and $\chi^2 = 2$; $p = .16$; $\varphi^2 = .03$);
 - Achievement satisfaction in the group of younger preschoolers (no significant difference in the number of groups with scores above and below the average – equal groups).
- For determining the relations between the results of IDS and KGSD_R, a complementary correlation analysis was conducted (due to the variables on the ordinal scale, Spearman’s nonparametric correlation was used) for the scores on IDS subscales and the corresponding

Table 2. The IDS subscales standardised scores in the school pupils, the younger and older preschooler groups

IDS subscales	Younger preschoolers’ results (N = 34)			Older preschoolers’ results (N = 34)			Pupils’ results (N = 36)		
	below-average (n)	average (n)	above-average (n)	below-average (n)	average (n)	above-average (n)	below-average (n)	average (n)	above-average (n)
1. Auditory memory	0	31	3	0	23	11	2	33	1
2. Selective attention	9	25	0	9	21	4	3	33	0
3. Phonological memory	8	20	6	0	22	12	0	32	4
4. Visual and motor coordination	6	25	3	0	17	17	1	22	13
5. Emotions regulation	8	26	0	3	31	0	5	26	5
6. Social strategies	4	29	1	0	32	2	1	32	3
7. Logical and mathematical reasoning	8	22	4	3	16	15	2	26	8
8. Active speech	2	30	2	1	18	15	4	28	4
9. Passive speech	4	22	2	0	15	19	1	27	8
10. Perseverance	9	24	1	8	24	2	5	30	1
11. Achievement satisfaction	10	24	0	8	25	1	5	31	0

Legend:
Results: below-average – <7; average – 7–13; above-average: >13 (1–19 scale; M = 9; SD = 3)

Source: own work.

Table 3. KGSD-R subscales results for the school pupils and the younger and older preschoolers

KGSD-R subscales	Younger preschoolers		Older preschoolers		Pupils	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
1. Auditory memory	.71	.28	.90	.21	2.79	.37
2. Selective attention	.97	.17	.94	.24	2.86	.35
3. Phonological memory	.41	.50	.68	.47	2.27	.53
4. Visual and motor coordination	.71	.46	.71	.46	2.46	.51
5. Emotions regulation	.97	.13	.76	.35	2.19	.54
6. Social strategies	.82	.39	.85	.36	2.31	.45
7. Logical and mathematical reasoning	.38	.13	.48	.18	1.84	.39
8. Active speech	.59	.47	.69	.39	2.72	.42
9. Passive speech	.94	.24	.88	.33	2.44	.72
10. Perseverance	.5	.51	.71	.46	1.77	.57
11. Achievement satisfaction	.44	.5	.68	.47	2.17	.75
Overall scores	.56	.11	.63	.15	2.35	.29

Legend:

Scale of answers options for pupils: 0–3 (mean of scale 1.5); for preschoolers: 0–1 (mean of scale .5)

Source: own work.

KGSD-R subscales, as well as the overall scores of pupils and younger and older preschoolers (see Table 5). In the group of younger preschoolers three significant, moderate correlations were observed, and in the group of older preschoolers – four. In the group of pupils, no significant correlation was observed. However, the general results for IDS and KGSD-R correlated with each other in all groups and the test of differences between two correlation coefficients showed no statistically significant differences in their amount ($p > .05$).

DISCUSSION

In the discussion on the outcomes, attention must be drawn to several major results. First, it can be concluded from the studies that the pupils' school readiness was satisfactory. The scores obtained by the studied pupils were largely average – according to the IDS authors' assumptions (see Jaworowska, Matczak, Fecenec, 2012), which

was enough to indicate that the studied children had reached the education age appropriate to successfully start school learning. Furthermore, on three subscales there were more above-average results than below-average ones; however, the differences were rather insignificant. This points to the studied children's tendency to the very effective use of graphomotor skills, visual analysis, and understanding of speech and communication, rather than to displaying any difficulties. Due to the large diversity of children in terms of their development level, which was mentioned in the introduction, the varied results in the scope of subscales obtained by the examined children are not surprising and confirm the assumptions about the occurrence of normative developmental disharmony of pre-school and early school children (see Brzezińska, Appelt, Ziółkowska, 2016). Secondly, IDS allowed for the differentiation of children's results in all age groups above and below the average, in almost all subscales, and the lack of low scores on some scales in groups of younger and older

Table 4. The KGSD-R subscales standardised scores in the school pupils, the younger and older preschooler groups

KGSD-R subscales	Younger preschoolers' results (N = 34)			Older preschoolers' results (N = 34)			Pupils' results (N = 36)		
	below-average (n)	average (n)	above-average (n)	below-average (n)	average (n)	above-average (n)	below-average (n)	average (n)	above-average (n)
1. Auditory memory	1	18	15	0	7	27	1	0	35
2. Selective attention	1	0	33	2	0	32	1	0	35
3. Phonological memory	1	0	33	2	0	32	11	0	25
4. Visual and motor coordination	10	0	24	10	0	24	1	0	35
5. Emotions regulation	1	0	33	7	0	27	8	0	20
6. Social strategies	6	0	28	5	0	29	3	0	33
7. Logical and mathematical reasoning	21	10	3	14	8	12	3	7	26
8. Active speech	12	4	18	6	9	19	0	1	35
9. Passive speech	2	0	32	4	0	30	6	0	30
10. Perseverance	19	0	15	11	0	23	15	0	21
11. Achievement satisfaction	17	0	17	10	0	24	8	0	28

Legend:

Results: below-average for preschoolers – < .5; for pupils – <1.5; above-average for preschoolers – > .5; for pupils – >1.5

Source: own work.

preschoolers can be associated with the specific character of a given study group, not necessarily with the weakness of the method.

The level of competence constituting the school readiness of pupils and preschoolers in the subjective assessment of children's mothers was generally rated above the average. In the group of preschoolers, the average chil-

dren's results in terms of logical and mathematical skills were below the average for the scale, with a small standard deviation indicating a small variation in the level of the children's skill. Both in the group of younger and older preschoolers, there were more children with scores below than above the average for the KGSD-R Logical-mathematical reasoning

Table 5. The correlations between the scores on the IDS subscales and the analogous KGSD-R subscales for the school pupils and the younger and older preschoolers

IDS & KGSD-R subscales	Younger preschoolers (<i>r</i>)	Older preschoolers (<i>r</i>)	Pupils (<i>r</i>)
1. Auditory memory	.38*	.30	.2
2. Selective attention	.16	.11	.27
3. Phonological memory	.53***	.35*	.08
4. Visual and motor coordination	.28	.36*	.05
5. Emotions regulation	.14	.07	.05
6. Social strategies	.2	-.02	.22
7. Logical and mathematical reasoning	.5**	.45**	.23
8. Active speech	.29	.27	.22
9. Passive speech	-.07	.1	.22
10. Perseverance	.26	.35*	.04
11. Achievement satisfaction	.28	.26	.26
Overall scores	.69***	.51**	.39*

Legend: * $p < .05$; ** $p < .01$; *** $p < .001$

Source: own work.

subscale. This result may reflect the real skills of the children – the IDS creators showed that 6-year-old children do not perform the most difficult mathematical tasks, and the most difficult of the twelve is only performed by a small percentage of 6-year-old children – 1–9% (see Jaworowska, Matczak, Fecenec, 2012, p. 36). The average results in mothers' assessments for older pupils can be explained in a similar way: the 7-year-olds performed only 1 task more than the 6-year-olds, while again the most difficult tasks were performed by just a small percentage of children (1–8%) (see Jaworowska, Matczak, Fecenec, 2012, p. 36). The result in the scope of logical and mathematical abilities corresponds with previous reports presented above in the introduction, as Czub and Matejczuk (2014) pointed out that social skills are more important for determining the school readiness of children than cognitive competences.

It is also worth paying attention to the group of younger preschoolers in terms of the results of the KGSD-R Active speech subscales – the

number of children with scores above the average was comparable to those with scores below the average. This trend was not observed when measuring the IDS. The tasks testing this skill consisted of naming objects in drawings and arranging sentences containing their names in such a way that they were not only exchanged (see Jaworowska, Matczak, Fecenec, 2012) but also connected. This task is of a "school" nature – it is possible that it was not performed by children at home and mothers had limited knowledge about the possibilities of its implementation, hence underestimating the competences of the children (Kurcz, 2005).

The comparable numbers of children in the groups with scores above and below the average also applied to younger preschoolers and pupils in the field of Perseverance and to younger preschoolers in the field of Achievement satisfaction. This tendency was not marked in the case of objective measurement, and according to the test results of the test authors the age of the children did not matter for Perseverance or

Satisfaction with achievements: correlations irrelevant for both these variables concerned the groups of 5, 6 and 7-year-olds (see Jaworowska, Matczak, Fecenec, 2012, p. 21). Probably the type of tasks is important here, the approach to which was assessed by mothers of the examined children and researchers using IDS – in the case of test tasks, in a created research situation, the degree of Perseverance and Satisfaction with achievements can be high in most children due to high motivation because IDS tests are recognized by children as interesting. The motivation of children to perform tasks at home may be lower and translate into the results of the mothers' observations.

The results obtained for school readiness correspond to the previously obtained outcomes involving six-year-olds (cf. Michalska, Szymanik-Kostrzewska, Trempała, 2018). The average scores on the IDS subscales can be regarded as optimistic. They mean that the studied children were at a development level which made it possible for them to participate in school life, and to take up and satisfactorily fulfill the role of pupils. Reaching school readiness guarantees the good quality of the school start, and is of key importance for their successful education, which impacts on the quality of life at subsequent development levels (Brzezińska, Appelt, Ziółkowska, 2016). It should be emphasized that the reduced level of school readiness may be a significant risk factor for a child's school failures, which in turn may cause increasing difficulties in the functioning of the child in the school class (see Wiliński, 2005), which was emphasized in the introduction to the article.

KGSD-R allowed differentiating the children's results into higher and lower than the average (for a given subscale) within all subscales both in the group of younger and older preschoolers and in the group of students. However, the results obtained in the measurement using the IDS and the KGSD-R method in the group of preschool- and schoolchildren do not fully correspond to each other, as indicated by the few, low or moderate correlations of the IDS and KGSD-R results in individual subscales and only moderate correlations of overall results. This result is close to the results

described in our previous article, in which we note that the assessment of school readiness is relative, i.e. it depends on how it was measured (cf. Michalska, Szymanik-Kostrzewska, Trempała, 2018). A small number of correlations between the subscales (27–36%, i.e. 304 out of 11 subscales), in comparison with the number of correlations of the IDS subscales with individual KGSD-R items (57%, i.e. 16 out of 28 items) in the group of preschoolers suggests the need for correction as regards the KGSD-R construction. At the same time, the results obtained convince us that – from the point of view of a standard method for measuring school readiness – subjective judgments of mothers on this subject have a rather low accuracy and should be approached with caution.

The results of the study showed that in the preschool group, in contrast to the group of pupils, significant correlations were observed between certain IDS and KGSD-R subscales, which can be interpreted as a greater convergence of the results of the objective and subjective measurement. While explaining this result, we point to two issues, i.e. the weak discriminatory quality of the questions put to the older children, and the necessity to improve the questionnaire. For improving this measurement device, the matching of KGSD-R items with the relevant tasks of the IDS in terms of content and structure should be made closer. We have recently made such modifications and started studies using the modified method, which will make it possible for mothers to make subjective evaluations of school readiness based on the criterion of external relevance, which will be both the content of tasks for the IDS subscales and a general description of the skills that make up the results of the subscales.

The results obtained have some limitations. First of all, the measurement was cross-sectional, which does not allow forecasting children's progress in school readiness. The results of school pupils were not controlled, so it was impossible to relate the results of IDS or KGSD-R to other criteria for assessing competences that make up school readiness, and thus assess the usefulness of both methods to predict school success. The selection of respondents was limi-

ted to only three institutions, with all students residing in a large city, which significantly limits the possibility of generalizing the results obtained to a wider population. The groups of preschoolers and pupils were not analogous to each other, and the control of mother's education allowed to detect differences in its significance for the children's results in individual IDS subscales, therefore inter-group comparisons were abandoned. Due to the need for better control of the variability field, we will try to lift the above limitations in subsequent research projects on school readiness. As other studies showed (Bernier, Perrier, McMahon, 2017), one of the factors related to school readiness is the socio-economic status of the family, and therefore this variable should be included in the study.

Despite the above limitations, the obtained results indicate that the surveyed first-graders are ready to start their primary school education and that both IDS and KGSD-R are useful in differentiating children with scores above and below the average. Furthermore, they lead to the conclusion that the subjective evaluation by mothers does not fully correspond to the objective measurement of school readiness in terms of individual competences, especially for pupils. In our opinion, this would

indicate the limitations of the method used to measure the mothers' subjective evaluation of the child's school readiness rather than their actual ability to make the assessment. At the same time, it confirms that school readiness, taken from different perspectives (objective and subjective measurement), does not have to constitute the same construct. The problem of school readiness should be considered from an interactive perspective, which was mentioned in the introduction. The present study focused only on the component of child readiness and partly on the aspect of family readiness. Referring to the assumptions of the interactive approach, it is worth to consider in future research the other two components, especially the readiness of the school, because factors related to school functioning are considered one of the important reasons for school failure (Wiliński, 2005). School failures are difficult to see at first, which makes them grow faster and have a lasting character, thus blocking the child's ability to participate in the classroom in terms of learning. A child starting education will not seek help in this regard. For this, he/she needs a parent or teacher conscious of the problem, who will recognize the situation as difficult and will quickly take an appropriate response.

NOTE

¹ *The Education Law Act of 14.12.2016, Chapter 2, Article 35.2 states "The obligatory education of a child shall start with the beginning of the school year in the calendar year in which the child reaches the age of 7, and shall end with secondary school completion, lasting, however, no longer than until the reaching of the age of 18". Article 36.1 says "When requested so by the parents, a child who reaches the age of 6 in a given calendar year may also start primary school education."*

REFERENCES

- Barbarin O.A., Early D., Clifford R., Bryant D., Frome P., Burchinal M., Howes C.R., Pianta R. (2008), Parental conceptions of school readiness: Relation to ethnicity, socioeconomic status, and children's skills. *Early Education and Development*, 19, 671–701.
- Bernier A., Perrier R., McMahon C. (2017), Maternal mind-mindedness and children's school readiness: A longitudinal study of developmental processes. *Developmental Psychology*, 53, 2, 210–221.
- Brzezińska A. (2000), *Spoleczna psychologia rozwoju* [Social developmental psychology]. Warszawa: Wydawnictwo Naukowe Scholar.
- Brzezińska A.I. (2014), Gotowość dziecka do szkoły i gotowość szkoły do przyjęcia dziecka. Interakcyjne ujęcie gotowości szkolnej [Readiness of the child for school and readiness of the school to accept the child:

- Interactive approach to school readiness]. In: A. I. Brzezińska, J. Matejczuk, P. Jankowski, M. Rękosiewicz (eds), *Sześciolatki w szkole. Rozwój i wspomaganie rozwoju* [6-year-olds at school. Development and development support], 225–241. Poznań: Wydawnictwo Fundacji Humaniora.
- Brzezińska A.I., Czub M. (2015), Dziecko w systemie edukacji. Podejście systemowo-transakcyjne [A child in the education system: A systemic and transactional approach]. *Kultura i Edukacja*, 1(107), 11–33. DOI: 10.15804/kie.2015.01.01
- Brzezińska A., Appelt K., Ziółkowska B. (2016), *Psychologia rozwoju człowieka* [Human developmental psychology]. Sopot: Gdańskie Wydawnictwo Psychologiczne.
- Czub M., Matejczuk J. (2014), Sześciolatki do szkoły – rozterki rodziców [Six-year-olds going to school – the parents’ dilemmas]. *Psychologia w Szkole*, 3(44), 57–64.
- Diamond K.E., Reagan A., Bandyk J. (2000), Parents’ conceptions of kindergarten readiness: Relationships with race, ethnicity, and development. *Journal of Educational Research*, 94, 93–100.
- Fecenec D., Matczak A. (2017), Analiza gotowości szkolnej pięcioletnich i sześciolatków [An analysis of the school readiness of five- and six-year-olds]. In: D. Fecenec (ed.), *IDS w praktyce psychologicznej* [IDS in psychological practice], 19–33. Warszawa: Pracownia Testów Psychologicznych PTP.
- Jarosz E., Wysocka E. (2006), *Diagnoza psychopedagogiczna. Podstawowe problemy i rozwiązania* [Psychopedagogical diagnosis. Basic problems and solutions]. Warszawa: Wydawnictwo Akademickie „Żak”.
- Jaworowska A., Matczak A., Fecenec D. (2012), *Skale Inteligencji i Rozwoju dla Dzieci w wieku 5–10 lat* [Intelligence and Development Scales for Children aged 5–10]. Warszawa: Pracownia Testów Psychologicznych PTP.
- Jaworowska A. (2017), IDS w praktyce psychologicznej – wyniki ankiety [IDS in psychological practice – survey results]. In: D. Fecenec (ed.), *IDS w praktyce psychologicznej* [IDS in psychological practice], 7–18. Warszawa: Pracownia Testów Psychologicznych PTP.
- Klim-Klimaszewska A. (2006), *Adaptacja dziecka do środowiska przedszkolnego* [Adaptation of a child to a pre-school environment]. Siedlce: Wydawnictwo Akademii Podlaskiej.
- Kołodziejczyk A. (2012), Późne dzieciństwo – młodszy wiek szkolny [Late childhood – early school age]. In: J. Trempała (ed.), *Psychologia rozwoju człowieka* [Psychology of human development], 234–258. Warszawa: Wydawnictwo Naukowe PWN.
- Kurcz I. (2005), *Psychologia języka i komunikacji* [Psychology of language and communication]. Warszawa: Wydawnictwo Naukowe PWN.
- Lee R., Brooks-Gunn J., Waldfogel J., Zhai F., Han W. (2014), Head start participation and school readiness: Evidence from early childhood longitudinal study-birth cohort. *Developmental Psychology*, 50(1), 201–215.
- Matejczuk J. (2014), *Środowisko rozwoju dziecka w wieku przedszkolnym. Potrzeby dziecka a jakość rodzinnej i pozarodzinnej oferty edukacyjnej* [Pre-school child development environment: The child’s needs and the quality of family and non-family educational offer]. In: A. I. Brzezińska, J. Matejczuk, P. Jankowski, M. Rękosiewicz (eds), *Sześciolatki w szkole. Rozwój i wspomaganie rozwoju* [6-year-olds at school: Development and development support], 39–61. Poznań: Wydawnictwo Fundacji Humaniora.
- Matejczuk J., Nowotnik A., Rękosiewicz M. (2013), *6-latek jako pierwszoklasista w szkole. Zróżnicowanie kodów językowych dziecka, rodziny i szkoły – dla kogo szansa, dla kogo zagrożenie?* [6-year-old as a first-year student at school. Differentiation of language codes of the child, family and school – who is it a chance, and who is it a threat to?]. *Studia Edukacyjne*, 27, 129–142.
- Michalska P., Szymanik-Kostrzewska A., Trempała J. (2018), School readiness of preschool children: Are six-year-old children ready for education? *Polskie Forum Psychologiczne*, 23(1), 78–101.
- Nowotnik A. (2014), Środowisko rozwoju dziecka w okresie szkolnym. Potrzeby dziecka a jakość rodzinnej i pozarodzinnej oferty edukacyjnej [The child’s development environment during the school period: The child’s needs and the quality of family and non-family educational offer]. In: A.I. Brzezińska, J. Matejczuk, P. Jankowski, M. Rękosiewicz (eds), *6-latki w szkole. Rozwój i wspomaganie rozwoju* [6-year-olds at school. Development and development support], 63–77. Poznań: Wydawnictwo Fundacji Humaniora.
- Okoń W. (2001), *Nowy słownik pedagogiczny* [New pedagogical dictionary]. Warszawa: Wydawnictwo Akademickie „Żak”.
- Puccioni J. (2015), Parents’ conceptions of school readiness, transition practices, and children’s academic achievement trajectories. *Journal of Educational Research*, 108, 130–147.

- Röthlisberger M., Neuenschwander R., Cimeli P., Michel E., Roebbers C.M. (2012), Improving executive functions in 5- and 6-year-olds: Evaluation of a small group intervention in prekindergarten and kindergarten children. *Infant and Child Development*, 21, 411–429.
- Sheridan S.M., Marvin C., Knoche L., Edwards C.P. (2008), Getting Ready: Promoting school readiness through a relationship-based partnership model. *Early Childhood Services, Special Issue on Young Children's Relationships*, 2(3), 149–172.
- Smykowski B. (2005), Wiek przedszkolny. Jak rozpoznać potencjał dziecka? [Pre-school age. How to recognize a child's potential?]. In: A.I. Brzezińska (ed.), *Psychologiczne portrety człowieka. Praktyczna psychologia rozwojowa* [Psychological portraits of man. Practical developmental psychology], 165–205. Gdańsk: Gdańskie Wydawnictwo Psychologiczne.
- Smykowski B. (2015), Zmiana sposobu funkcjonowania dziecka a gotowość szkolna. Analiza w kontekście koncepcji Lwa S. Wygotskiego [The changes in child's functioning and school readiness: An analysis of the L.S. Wygotski approach]. *Teraźniejszość – Człowiek – Edukacja*, 18(3), 39–58.
- Umek L.M., Kranjc S., Fekonja U., Bajc K. (2008), The effect of preschool on children's school readiness. *Early Child Development Care*, 178, 569–588.
- Wilgocka-Okoń B. (2003), *Gotowość szkolna dzieci sześciolletnich* [School readiness of six-year-old children]. Warszawa: Wydawnictwo Akademickie „Żak”.
- Wiliński P. (2005), Wiek szkolny. Jak rozpoznać ryzyko i jak pomagać? [School age: How to recognize the risk and how to help?]. In: A. I. Brzezińska (ed.), *Psychologiczne portrety człowieka. Praktyczna psychologia rozwojowa* [Psychological portraits of man. Practical developmental psychology], 303–343. Gdańsk: Gdańskie Wydawnictwo Psychologiczne.