

Information Behavior of Gifted Children in the Pre-literate Stage – Qualitative Study

Iva Burešová^{1*}, Jana Marie Havigerová²

¹Department of Psychology, Faculty of Arts, Masaryk University, Arna Nováka, Brno, Czech Republic

²Department of Primary and Preprimary Education, University of Hradec Králové, Rokitanského, Hradec Králové, Czech Republic

*Corresponding author: buresova@phil.muni.cz

Received December 05, 2014; Revised January 22, 2015; Accepted February 04, 2015

Abstract The presented qualitative study is part of a broader research aim dealing with select contexts of everyday information behavior of exceptionally gifted children at the pre-literate age. The primary goal of this study was to examine if and how information behavior of exceptionally gifted pre-literate children is reflected in the manner and formulation of their questions, and whether this behavior differs from the behavior of children with average intellectual abilities. The following aim was subsequently based on the assumption that the giftedness of children of this age is reflected in the way they process information. In order to meet the pre-literacy condition, participants were chosen from children starting their first year of school (aged 5 to 7). The research sample consisted of 12 participants (6 in the experimental group and 6 in the control group). Questions generated by both groups, as a response to the selected neutral stimulus, were examined and compared by frequency and content analysis. The subjective evaluation of the information behavior was compared from the point of view of the children and their parents as well. The results indicate that information behavior of the exceptionally gifted children is different in specific directions from information seeking behavior of children with average intellectual abilities.

Keywords: *information behavior, giftedness, children, question skill, content analysis*

Cite This Article: Iva Burešová, and Jana Marie Havigerová, “Information Behavior of Gifted Children in the Pre-literate Stage – Qualitative Study.” *American Journal of Educational Research*, vol. 3, no. 2 (2015): 159-165. doi: 10.12691/education-3-2-8.

1. Introduction

Identifying a talent in pre-school children is not always easy. Special awareness of the parents and a comparison of children with their peers are often enough to recognize the uniqueness of a child, which can subsequently be confirmed by professional staff. Often, however, an exceptional talent can be hidden from usual observation for a long time and its detection requires a more specific guidance. The aim of this paper is to explore whether the way exceptionally gifted children ask questions can be included as part of these guidelines. In the broader spectrum, this study focuses on select contexts of information behavior, particularly the specifics of information literacy of gifted children. The term is usually defined as the ability “to recognize when information is needed” and “to locate, evaluate, and use [it] effectively” (ACRL, 2000, p. 1). Information literacy is expressed in the form of information behavior (IB), i.e. behavior exhibited with the purpose of gaining information (Brockmann, Roper, & Naguib, 2011). Information behavior can either take place inside the human mind in the form of thoughts (‘internal behavior’), or as externally exhibited verbal behavior involving other people or information media. In both cases, IB is activated by questions (asking oneself, others, or an internet browser).

Questions direct us to information resources, i.e. places where the answers can be found. The objective of this study was to explore IB in pre-literate children (e.g. James & Engelhardt, 2012; Hesketh, Dima & Nelson, 2007). The expression ‘pre-literate’ describes individuals who have not yet entered formal education, i.e. a population which bridges the invisible gap between oral culture and the culture of letters and signs. The change represented by the development of literacy in the individual can also be viewed as a reflection of an overall cultural shift from orality to information culture (compare McLuhan, 1991). By entering the information culture, the child her/himself undergoes transformation, as people living in the oral culture use completely different mental operations than those whose thinking is shaped by writing (Fatková, 2013). As Ong (2012, p. 54-55) pointed out, “an oral culture simply does not deal in such items as geometrical figures, abstract categorization, formally logical reasoning processes, definitions, or even comprehensive descriptions, or articulated self-analysis, all of which derive not simply from thought itself but from text-formed thought”. If our assumption that gifted children ask substantially different questions compared to typical children with average intellectual abilities is confirmed, then a focus on the ways of asking questions can help professionals and parents in identifying talent in such predisposed individuals, because identification is crucial for the development of exceptional abilities of gifted students (Průcha, 2011).

2. Materials and Methods

The theory is based on a cognitive approach to the study of talent, or Sternbergs' theory of intelligence (Hřibková, 2009), which includes three parts, representing an individual's relationship with the internal world, with experience and with the external world (Sternberg, 2002). For our research project, the first part of the intelligence theory, which deals with information processing, is pivotal. Specifically, it is the component of knowledge acquisition that supports the learning process and problem-solving and it is used when individual meets with new topics.

2.1. Research Aims

The research objective was to observe and understand the differences between the information behavior of exceptionally gifted children and children with average intellectual abilities in the pre-literacy period of development. The main research aim was, therefore, to find a difference in the preparedness and readiness of gifted children to ask questions, particularly what type of questions they ask, and determine the number of questions generated. A qualitative research design was chosen, because it offers the opportunity to explore the aspects and directions in which questions of the exceptionally gifted children differ from those of the children with average intellectual abilities. Our primary research goals were to determine whether there are specific features of information behavior of exceptionally gifted children, which differ from children with average intelligence, to see how parents perceive the information behavior of their children, how the children themselves perceive their own behavior, and whether the perception of the parents and their children is in agreement or not.

2.2. Research Methods

In the presented study the following methods were used Wechsler Intelligence Scale for Children, Information Behavior Questionnaire for Parents and Behavior Questionnaire for Children.

2.2.1. Wechsler Intelligence Scale for Children

Wechsler Intelligence Scale for Children (WISC-III, Czech version: D. Krejčířová, P. Boschek, J. Dan, 2002) represents an objective method used to identify giftedness. The method was used in order to select the experimental and the control groups because some of the subtests of this test have been expanded by items at the extreme edges of the scale. This improves the ability of the method to differentiate between younger children and exceptionally gifted children (Svoboda, Krejčířová & Vágnerová, 2009).



Figure 1. Pictures for manipulation scaling – people

2. Introducing the topic: “What are you interested in?” “What do you know a lot about?” etc.

2.2.2. Information Behavior Questionnaire for Parents

The Information Behavior Questionnaire for Parents (Havigerová, et al., 2013) is designed for parents to evaluate information behavior of their child. The parents' answers reveal, for example, whether their child seeks information actively, passively or not at all, from where and how s/he obtains information, and how often s/he uses these resources. In the framework of this method, the parents divided 12 points among the so-called human sources (father, mother, grandparents, siblings, etc.) and 12 points among the so-called technical sources (books, magazines, internet, etc.). The last part of the questionnaire inquires about the type of questions the child most often asks, by supplying the parents with various types of questions from which they can chose. In the questionnaire's conclusion, the parents state an interesting question their child has recently posed to them.

2.2.3. Information Behavior Questionnaire for Children

The Information Behavior Questionnaire for Children (Havigerová, 2011) comprises two parts, which are filled out by the administrator on the basis of an interview with the child. A new method was developed for the measurement of different aspects of IB. The IBQ-CH method is based on children's self-reports (a parallel version IBQ-P is completed in paper-and-pencil form by the parents). With respect to the respondents' age, it is administered individually, and the scales are completed by the interviewer. The data is collected through a structured interview in which children answer questions using physical manipulation rating (selecting from 12 building blocks).

In the first part, the children talk about their interests and the topics about which they know more than the other children. Subsequently, they assess how much they know about a given topic on a scale of 1 to 12, and then by using blocks they indicate where they have learned about the topic. The interviewer shows the children pictures of people (father, mother, sibling, etc.) and non-human sources ('media' in McLuhan's conception, 1991), such as books, TV, computer, etc.). They are then instructed to put one block on the picture of the source of their information on a specific topic and to continue to divide the blocks among the pictures of people and media (maximum of 3 blocks per picture), depending on the amount of information gained from the individual source. The most frequent sources were processed into picture materials for physical manipulation self-report rating (see Figure 1 and Figure 2).

The interview had 6 parts:

1. Establishing contact with the child

3. Self-assessment of intrinsic motivation through manipulation rating: “Use these ten blocks to show me how much you're interested in [the topic].”

4. Self-report on human information sources (manipulation rating): “Where have you learned all these things?” (Children added blocks to schematic drawings of various people like the mother, brother/sister, teacher, etc.)

5. Self-report on non-human sources (similar task with drawings representing a book, computer, landscape, etc.)

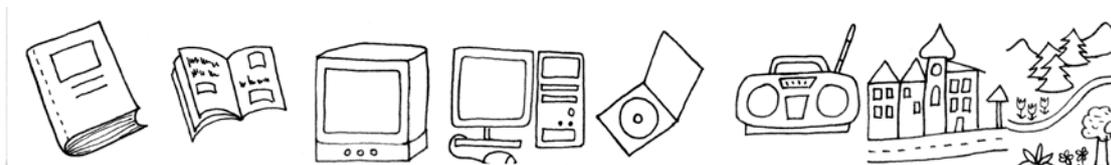


Figure 2. Pictures for manipulation scaling – media

The second part of the questionnaire pertains to presenting a neutral stimulus, which should elicit the child’s need for information. The children get to choose between three pictures of an unknown object and then the interviewer asks them to spontaneously generate questions about this neutral stimulus. The interviewer can motivate the child by asking the following types of questions:

What should we find out about this?

And what would you like to know about this?

What else are you interested in?

What else would you need to know if you wanted to talk about this to the other children?

What would be of interest to someone else?

What do you think your mom, dad or the teacher would want to know about this?

What would be the most interesting question?

What could we call that?

The following step involved linguistic prompting of questions, where the interviewer motivated the child to generate the greatest possible number of questions beginning with a suggested initial word. During the interview, the individual questions were written down on paper as well as recorded using a dictaphone.

2.3. Procedure

First, the evaluation of the performance on the Wechsler Intelligence Scale for Children (hereinafter as the WISC-III) selected suitable subjects, which were subsequently divided into two groups: children with average intelligence (up to IQ values of 130) and exceptionally gifted children (IQ above 130). Then the legal guardians of those selected children were presented with The Information Behavior Questionnaire for Parents, in which they were supposed to subjectively rate their child’s information behavior. Subsequently, The Information Behavior Questionnaire for Children was administered to all of the selected children. As part of this questionnaire, the administrator showed a neutral stimulus to the child in order to elicit information. Children received a choice of three images of unknown objects. After choosing one of the pictures, they were asked to spontaneously generate questions, which come into their minds in connection with this neutral stimulus. In the last phase of the research, the Individual Structured Interview, focusing on information behavior, was carried out with individual children.

2.4. Research Sample

In order to meet the pre-literacy condition, research participants were chosen from children starting first grade

6. Comparisons: “You have told me how much you have learned from all of these people and these media. What do you think, from which of these have you learned more things?” Children indicate which of the two source types (human or non-human) represent a richer information resource as a whole.

(aged 5-7 years). This study analyzes and compares questions generated by the experimental group, consisting of six exceptionally gifted children (IQ>130), boys aged 6.0 to 6.9 and one girl aged 6.2 years. The control group comprised six children with average intellectual abilities (IQ from 95 to 123), boys aged 6.3 to 7.1 and one girl aged 6.1 years.

2.5. Data Processing Method

For this part of the broad research project, we selected an exploratory type of research for the data processing, implemented according to the procedures of qualitative methodology, especially content and frequency analyses. Within these analyses, all the questions generated by the experimental group were compared to the questions generated by the control group, according to the predefined categories and rules. The basic category was the number of questions generated, which shows how prepared the children are to ask questions. The frequency analysis recorded and compared the frequency of occurrence of each question in both groups. The content analysis explored the relevance of the questions generated regarding the selected neutral image and task. The frequency analysis then recorded differences in the generality of the questions between the two groups, as manifested in the use of close-ended or open-ended questions. Furthermore, typology of individual questions was performed under the thematic analysis, resulting in subsequent grouping according to the category association and relevance of the given topics. The generated groups of topics were then compared for the two groups. Responses of parents about the information behavior of their children were processed by the frequency analysis, and the results of the analysis were subsequently interpreted. The same method was used to process the responses of children concerning their own information behavior. The results from both samples were then compared and provided the opportunity for further interpretation.

3. Results

For transparency reasons, we have divided the main results of the presented pilot study into several areas, which map our basic findings onto the above-mentioned primary aims. We are presenting a selection from the facts, which we consider to be most relevant to further research on this topic. The most striking differences between our selected data, concerning the manner of questioning, appeared in the rate of general form of questions.

3.1. Spontaneously Generated Questions

The exceptionally gifted children generated open-ended questions more often than children with average intellectual abilities, and the number of spontaneously generated questions was the same for both groups. We did not find the expected increased preparedness and readiness, on the part of the gifted children, to generate questions to a greater degree than the children with average intelligence. This fact may be indicating that the main difference between spontaneous information behavior of children in the pre-literate stage, with respect to the intellect level, is not associated with quantity but rather with quality of the generated questions.

Table 1. Type and Number of Spontaneously Generated Questions

	Number of open-ended questions otázek otázek	Number of close-ended questions	Total
Gifted children	26	9	35
Average children	11	21	33

Gifted children generated open-ended questions more often than close-ended ones. This way, they prompted the interviewer to give them more complex and comprehensive answers. Thus, they received more information than they would if they had asked close-ended questions. On the other hand, children from the control group asked questions which usually gave them a ,yes' or ,no' answer, since close-ended questions do not require a more complex information. Therefore, these children received less comprehensive information.

3.2. Typology of Spontaneously Generated Questions

We present here the basic results of thematic analysis, which deals with individual questions generated, based on the neutral stimulus, by both groups of participants. There has been no other similar research done so far, which could serve as a methodological basis, and that is why this thematic analysis is focused on this specific case only. All questions generated underwent an analysis on the basis of which the following eight categories by thematic areas were created:

- 1) appearance (questions about shape, color, individual parts or size of the presented stimulus),
- 2) characteristics (questions used by the child to find out about the skills, activities and properties of the stimulus – most common questions are about speed, general behavior, ability to fly or swim, etc.),
- 3) species (the children either suggested themselves what animal or thing is pictured and they asked to get their guess confirmed, or they asked in general about the animal species or a type of object),
- 4) general origin (questions in this category generally focused on the origin of the stimulus and the children expected a concrete answer),
- 5) location (by asking these questions the children tried to find out where the stimulus is from and where it occurs),
- 6) means of sustenance (if the children thought that the neutral stimulus is a type of animal, they asked questions about how and what the animal eats),
- 7) secondary and a follow-up level (this category included a follow-up question to the preceding question;

some questions were associated with the presented picture but they did not pertain just to the stimulus itself because they went beyond the scope of it – e.g.: “Who was at this place“ or “What kind of a doggie house does it have?“. The category ‘follow-up’ included only one question, which we were not able to place in any other thematic area. It was a question connected with the preceding one indicating another reasoning level of the participant, who was able to generate and discuss a follow-up thought).

The results revealed a number of interesting findings. We mention only the ones, which we consider to be the most substantial in reference to the primary research aim. We found a significantly increased trend in the number of questions with linguistic instruction. For example, gifted children generated approximately twice as many questions as children with average intellectual abilities.

3.2.1. Questions Concerning Appearance

The category concerning appearance was the largest and included a total of 20 questions, of which 12 were generated by the gifted group and 8 by the control group. Once again, we identified a difference between the two groups in the number of open- and close-ended questions. The majority of the gifted children’s questions were open-ended, only one was generated as a close-ended question. The children from the control group asked about appearance using mostly close-ended questions, only two were open-ended.

3.2.2. Secondary Topics

This category is represented by a total number of four questions, all of which were generated by the gifted children. It is worth mentioning that the control group did not generate a single question concerning secondary topic. This can be due to a tendency toward a quick satisfaction of curiosity on the part of the children with average intellectual abilities.

3.2.3. Follow-Up Level

The last category is represented by only two questions generated only by the exceptionally gifted group. This category, which includes a deeper quality of information behavior, is not represented by the control group. The total number of questions generated with linguistic instruction was significantly higher for the gifted children (125 questions) than for the children with average intellectual abilities (64 – almost 50% fewer questions).

3.3. Information Behavior Evaluation

Among other things, the results of this study give an answer to the questions concerning the most common sources of information for pre-literate children, how often they are in contact with these sources, whether this experience is mediated by another person, or whether they independently seek information. Examining the responses on the questionnaires given to the children and their parents evaluating information behavior has revealed interesting knowledge concerning the manner of information seeking of the two groups of children participating in our research. According to the parents, to obtain information the children most often utilize their toys. That is true for both groups, the exceptionally gifted as well as children with average intellectual abilities. Of

the other sources of information, the most commonly stated were a computer, TV and books, and less common were magazines, radio and educational CDs. It is interesting, that book as a source of information appears at the same position, according to the parents of children from both groups. That means that it is not preferred by gifted children, as would have been expected. A difference between these two groups does not appear until we look at the extent of the frequency of use of these sources and how actively the children approach these sources of information. According to the parents of the gifted children, books (most commonly in the form of an encyclopedia) along with magazines, computer and toys are the most frequently and actively independently utilized sources of information. On the other hand, parents of children with average abilities reported that their children approach books and other sources of information more passively. There is another interesting finding, which involves some topics, on which both the parents and children agree, but where the sources of information on these topics are stated to be different. For example, few children claimed their mother as a source of information, in spite of the fact that the mother considered herself to be one.

3.4. Limits

The main limit of this study lies in its method of collecting data by means of a questionnaire as well as the data collection from the children themselves. Both can result in a certain distortion of the results. Children of this age can be affected by the interviewer as well as the test situation, which can cause nervousness accompanied by other phenomena, affecting the responses of the children. The results of the study can also have been influenced by the education level of the parents and their upbringing methods, or their communication with their children. Our results can also have been influenced by the educational and discipline style of the children's pre-school facilities.

4. Discussion

Our study deals with a subject, which has previously not been researched. To date, information behavior of pre-literate children has been studied by a number of authors, particularly in the context of these children's information behavior in libraries (McKechnie, 2000; Cooper, 2002; Mansor, 2002), mainly with the aim of improving the services of these institutions. Other research in this subject area is focused particularly on the utilization of electronic resources (e.g., Bilal, 2000; Dresang, 2005; Kao, Lei & Sun, 2008). Non-specifically focused information behavior of pre-school children and possible corresponding qualitative or quantitative differences in this area between children with average intellectual abilities and exceptionally gifted children have, however, not been researched as of now.

The results of the presented pilot study yielded a number of interesting findings that can be an inspiration for further research in this area. Since children with an IQ over 130 tend to behave differently from other children (Threshold Theory, e.g. Weiner & Freedheim, 2003), we focused especially on specific features of information behavior in this group, particularly, on the possible

differences in information behavior of exceptionally gifted children and children with average intellectual abilities, both of pre-school age. Based on these results, we believe that the ability of exceptionally gifted children to work with open-ended questions allows them to obtain comprehensive responses within information behavior, and, therefore, greater amounts of information with which they can continue to operate. The open-endedness of questions may be related to the child's increased interest in knowing something because s/he expects a complex response. We can interpret the increased interest in finding out more information, consistent with the findings of other authors (Mansor, 2002), by assuming that exceptionally gifted children are looking for information and are not content with a simple explanation. This pilot study does not provide the possibility to determine where the experience of exceptionally gifted children in the use of open-ended questions comes from. We can assume that one of the main reasons is the different way of communication on the part of the parents of exceptionally gifted children, among themselves and between them and the child. Other options are that the children choose to use different sources of information or different access to the resources. But these are just presumptions that should be explored further. There is room for further research in this area, which would attempt to clarify the ability of exceptionally gifted children to ask open-ended questions to a greater extent than close-ended ones.

A deeper analysis of spontaneously generated questions shows interesting results, which did not show an increased readiness and preparedness of exceptionally gifted children to ask questions. However, we found a significantly increased trend in the number of questions with linguistic instruction. Gifted children generated approximately twice as many questions as children with average intellectual abilities. This fact can be explained by a link with the above-observed phenomenon that exceptionally intellectually gifted children are able to generate more open-ended questions. Linguistic guidance consisted of words introducing only open-ended questions. If in the previous study, we observed an increased number of open-ended questions in exceptionally gifted children, then we can assume that they are able to work better with these questions and they are, therefore, more responsive in their question generation than children with average intellectual ability.

We have also considered it beneficial to identify some differences in the thematic focus of both spontaneous and linguistically prompted questions, which has been discussed by a number of other authors (e.g. Cooper, 2002). Although among the spontaneous questions of the control group there was not even one question concerning the location of the neutral stimulus, the linguistically prompted questions of the same group did contain these types of questions. We also noted that in the category of secondary topics, the control group only generated questions during the question prompting session. The only category that was not filled by the control group questions, neither during spontaneous nor prompted questions generation, was the follow-up level. Here we believe, possibly, that exceptionally gifted children show increased interest in further identifying information associated with the given topic, and are not content just with the given stimulus. Their talent apparently allows them to be aware

of the broader context and to want to learn more about it. In the pre-school period of development, questions of "why" and "how" begin to appear. Children enrich their knowledge and develop the correct expressions. They learn to understand complex object relationships and improve their understanding of the multiple meanings of words (Vagnerová, 2005). Increased number of questions in each topical category, in case of the prompted questions generation, can be simply explained by the increased total number of prompted questions and by the already mentioned improved skills of exceptionally gifted children to work with open-ended questions.

Examining the statements in the questionnaires for children and parents has brought some interesting findings on how children from our selected groups obtain information. Hall et al. (2013, p. 2017) argue that "children frequently acquire information about the world through firsthand experience. Under some circumstances, young children may even privilege what they have directly perceived or experienced over what trusted adults tell or show them." In the study, the most commonly cited human information resources were teachers and parents. The most frequently named non-human resources (media) were books, television, computer and CDs/DVDs (educational or instructional media, fairytales). It turned out that the gifted children obtained significantly more information on the preferred topic from computer and Internet than other children did. Computer use in the gifted typically begins early in life and increases rapidly. Calvert et al. (2005) found that as much as 77% of preschool children are independent computer users (they can turn the computer on, point and click the mouse, load a CD-ROM, and surf the internet). Most of this information seeking is either learned or random. According to parents, children use mostly toys to gather information. Children's play and other activities are typically motivated by contextual factors (Malone & Tranter, 2003). This is the case with exceptionally gifted children as well as children with average intellect. This fact corresponds with research from Developmental psychology, which found that play is a way of gaining experience during both pre-school and early school age. Parents of children gave board games as an example of play, which corresponds to the focus of children at this age, who already prefer games with more complex rules (Langmeier & Krejčířová, 2006). Among other resources, most often mentioned were a computer, television and books. Less frequently mentioned were magazines, radio and educational CDs. Interestingly, according to parents, a book appears as a source of information in both groups at approximately the same level, i.e. it is not particularly preferred by intellectually gifted children, as would have been expected. An observable difference between the groups is the frequency of use and the rate of activity involved in seeking sources of information by the children. According to parents of exceptionally gifted children, books along with magazines, computers and toys are the most actively independently used sources of information. Parents of children with average intellectual abilities, however, identified the access of their children to books as more passive. At this point, we can again identify the link between the increased need for knowledge and information retrieval on the part of exceptionally gifted children. It would be appropriate to verify these findings

by further investigating the method of using different sources of information.

Some interesting facts were also provided by the analysis of information sources identified by parents and children. For example, children rarely mentioned their mother as a source of information even though the mother regarded herself as the source. Here we offer another possible interpretation, associated with a child's perception of his/her mother. Undoubtedly, exchange of information occurs on various topics of interest between mother and child. A child at this age, however, realizes many other motherly functions, more often associated with daily care, affection and love. A child's perception of mother as a source of information can thus take a backseat. Again, this topic seems to us to be very inspiring for further research work in this area.

5. Conclusions

Giftedness is manifested by many more or less visible differences, and it is, therefore, possible to assume that these differences are reflected in the way individuals obtain information. Information behavior can either take place inside the human mind in the form of thoughts (internal behavior), or as externally exhibited verbal behavior involving other people or information media. In both cases, IB is activated by questions (asking oneself, others, or, for example, an internet browser). Questions direct us to information sources, i.e. places where the answers can be found. The present study is focused specifically on information sources and explores current information reality of pre-school children, especially the relationship between intelligence and children's everyday IB. The results of this pilot study clarify what kind of information behavior gifted children probably engage in during experimental situations, where information need is activated. In addition, the study reveals the possibility of a connection between the readiness to ask questions and the level of intellectual ability, and whether this readiness could be a good predictor of information behavior. Based on the analysis of the data obtained, we can assume that information behavior of exceptionally gifted children does, in some areas, differ from IB of children with average intelligence, since certain specific traits did appear in their information behavior. The exploration and comparison of the questions and answers of all the participants revealed interesting data, concerning the ability of exceptionally gifted children to generate predominantly open-ended questions as well as their tendency to focus on broader thematic associations within the framework of fulfilling a given task. It is true that in case of spontaneously generated questions, exceptionally gifted children did not pose a greater number of questions than children of average intelligence and, therefore, the number of posed questions alone cannot be used to identify giftedness. However, it can be assumed that exceptionally gifted children ask questions in a somewhat different manner. They can better manipulate open-ended questions, and thus give the interviewer a broader opportunity to answer, which results in more information gain for them on the subject of their interest. Based on these differences revealed by our research results, we can assume that this specific way of posing questions can be considered as one

of the leads in determining exceptional giftedness in some children.

The examination of the parents' reports about their children's information behavior revealed interesting data concerning the area of active utilization of information sources. Here too, our study results showed certain differences, which however, will need to be further examined in subsequent research. Differences were also found between the parents' and children's statements, most often in naming the children's main subject of interest. It would be suitable to further examine the above mentioned differences in future research focused on either confirming or refuting our interpretations, because the results of the current study (due to the number of participants) cannot be used to make any generally valid conclusions. According to parents, children most often use toys to obtain information, and that is true for exceptionally gifted children as well as children with average intelligence. Other types of media most often given as examples of information sources were computer, TV, or books. Magazines, radio and educational CDs were mentioned less often. It is interesting that according to the parents, a book as a source of information is placed at the same preference level for both groups of participating children, which means that exceptionally gifted children do not prefer books as sources of information to the extent generally expected. A difference between the two groups is first apparent in the measure of activity used by the children to approach given sources of information. According to the parents of exceptionally gifted children, books along with magazines, computer and toys are the most actively independently used sources of information. On the other hand, parents of children with average intelligence stated that their children's approach to books was rather passive.

Identifying giftedness in pre-school children is often not easy. Sometimes, observant parents and a comparison with peers is enough to reveal giftedness of a child, which can subsequently be confirmed by professionals. However, giftedness can often be hidden from common observers and it can be revealed by other more specific leads. It seems that the manner in which exceptionally gifted children generate questions can be considered as one of these leads. The knowledge of the results of this study can assist professionals as well as parents in detecting giftedness early, which is a key component in making it possible for gifted children to adequately develop their exceptional abilities.

Acknowledgements

This paper presents partial results of the project supported by the Czech Science Foundation, ref. no. GAP407/11/0426 "Ready to ask?" Information behaviour of gifted children in pre-literate stage.

List of Abbreviations

IB: information behavior

IBQ-CH Information Behavior Questionnaire for Children

IBQ-P Information Behavior Questionnaire for Parents

WISC-III Wechsler Intelligence Scale for Children 3rd revision.

References

- [1] ACRL – Association of College & Research Libraries. (2000). *Information literacy competency standards for higher education*. Retrieved from: <http://www.ala.org/ala/mgrps/divs/acrl/standards/informationliteracycompetency.cfm>.
- [2] Bilal, D. (2000). Children's use of the Yahoo! search engine: I. Cognitive, physical, and affective behaviors of fact-based search tasks. *Journal of the American Society for Information Science*, 51(7), 646-665.
- [3] Brockmann, J. H., Roper, T.J., & Naguib, M. (2011). *Advances in study of behavior*, Vol. 38. Amsterdam: Elsevier.
- [4] Cooper, L. Z. (2002). A case study of information-seeking Behavior in 7-year-old children in a semistructured situation. *Journal of the American Society for Information Science and Technology*, 53 (11), 904-922.
- [5] Dresang, E. T. (2005). The information-seeking behavior of youth in the digital environment. *Library Trends*, 54(2), 178-196.
- [6] Fatková, G. (2013). Limity antropologie dětství. Případ „dětství“ v sociálně vyloučené lokalitě. *Lidé města/Urban people*, 15(1), 27-48.
- [7] Havigerová, J. M., et al. (2013). Projevy dětské zvědavosti: získávání informací a kladení otázek od předškolního věku v kontextu intelektového nadání. Praha, CZ: Grada.
- [8] Hesketh, A., Dima, E., & Nelson, V. (2007). Teaching phoneme awareness to pre-literate children with speech disorder: a randomized controlled trial. *International Journal of Language & Communication Disorders*, 42(3), 251-271.
- [9] Hříbková, L. (2009). *Nadání a nadání*. Praha: Grada.
- [10] James K. H., & Engelhardt, L. (2012). The effects of handwriting experience on functional brain development in pre-literate children. *Trends in Neuroscience and Education*, 1(1), 32-42.
- [11] Kao, G. Y. - M., Lei, P. - L. & Sun, Ch. - T. (2008). Thinking style impacts on web search strategies. *Computers in Human Behavior*, 24(4), 1330-1341.
- [12] Langmeier, J. & Krejčířová, D. (2006). *Vývojová psychologie*. Praha: Grada Publishing, a.s.
- [13] Malone, K., & Tranter, P. (2003). Children's environmental learning and the use, design and management of schoolgrounds. *Children, Youth and Environments*, 13(2), 87-137.
- [14] Mansor, Y. (2002). Research in children's information seeking Behavior. *International Association of School Librarianship*, 99-110.
- [15] McKechnie, L. (2000). Ethnographic observation of preschool children. *Library & Information Science Research*, 22(1), 61-76.
- [16] McLuhan, M.: *Jak rozumět médiím: Extenze člověka*. Odeon, Praha 1991.
- [17] Ong, W.J. (2012). *Orality and literacy: The technologizing of the word* (30th anniversary ed.). London: Routledge.
- [18] Průcha, J. (2011). Dětská řeč a komunikace. Poznatky vývojové psycholingvistiky. Praha: Grada Publishing, a.s.
- [19] Sternberg, R. J. (2002). *Kognitivní psychologie*. Praha: Portál.
- [20] Svoboda, M. (Ed.), Krejčířová, D. & Vágnerová, M. (2009). *Psychodiagnostika dětí a dospívajících*. Praha: Portál.
- [21] Vágnerová, M. (2005). *Vývojová psychologie I. dětství a dospívání*. Praha: Karolinum.
- [22] Wechsler, D., Krejčířová, D., Boschek, P., & J. Dan (2002). *WISC-III Wechslerova inteligence škála pro děti*. Praha: Testcentrum.
- [23] Weiner, I. B., & Freedman, D. K. (2003) (Eds.). *Handbook of psychology, Vol. IV Experimental psychology*. Hoboken: John Wiley & Sons.