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ПСИХОЛОГИЯ РАЗВИТИЯ | DEVELOPMENTAL PSYCHOLOGY

Understanding the Communicative Intentions of the Speaker and Popularity with Peers Among Children of Primary School Age

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The aim of this study was to explore the role of the theory of mind – the ability to attribute mental states to other people in order to explain their behavior – in popularity with peers and in the social competence of children of primary school age. The participants were 92 children aged 9-12 years (M=9,97; SD=0,80; 47 girls). We used the F. Happé "Strange Stories" test, used to study children's understanding of the speaker's communicative intentions in situations of ambiguously understood social interactions, to assess theory of mind. The popularity of children in the group was studied using a sociometric method. For an external evaluation teachers assessed the social behavior of children and adolescents using a specially designed questionnaire. The results obtained testify to the relationship of children's theory of mind with both their popularity with peers, and with their social competence as a whole. The understanding of communicative intentions in difficult social situations by children is related with both peer preference for socializing and perceived popularity among peers. An external assessment of social competence among primary school age children by teachers has shown that children who are more successful in understanding the communicative intentions of other people are rated by adults as more popular among their peers, while the less successful ones are those who more often become the object of ridicule and often fall under the negative influence of others.

Keywords: theory of mind; social competence; popularity in a group; sociometric indices; primary school age.

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Понимание коммуникативных намерений говорящего и популярность среди сверстников у детей младшего школьного возраста

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Работа посвящена изучению роли модели психического - способности приписывать ментальные состояния другим людям для объяснения их поведения – в популярности среди сверстников и социальной компетентности детей младшего школьного возраста. В исследовании приняли участие 92 ребенка 9-12 лет (M=9,97; SD=0,80; 47 девочек). Для оценки модели психического использовались задания теста Франчески Аппе «Удивительные истории», направленные на изучение понимания детьми коммуникативных намерений говорящего в ситуациях неоднозначно понимаемых социальных взаимодействий. Популярность в кругу сверстников оценивалась с помощью социометрического метода. Для внешней оценки социальной компетентности использовалась разработанная для учителей анкета о социальном поведении детей и подростков. Полученные результаты свидетельствуют о взаимосвязи модели психического детей младшего школьного возраста как с их популярностью в кругу сверстников, так и с социальной компетентностью в целом. Понимание коммуникативных намерений в сложных социальных ситуациях детьми связано как с предпочтительностью сверстниками для общения, так и с воспринимаемой популярностью. Внешняя оценка социальной компетентности детей младшего школьного возраста педагогами показала, что дети, более успешные в понимании коммуникативных намерений других людей, оцениваются педагогами как более популярные среди ровесников, в то время как менее успешные - как те, кто чаще становится объектом насмешек и чаще подвержен негативному влиянию других.

Ключевые слова: модель психического; социальная компетентность; популярность в группе; социометрические индексы; младший школьный возраст.

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Introduction

Theory of mind - the ability to understand the mental states of others to explain and predict their behavior – has been widely studied in preschool children for several decades, including studies that demonstrate the impact of this ability on children's social behavior and social competence [14; 18]. Much less is known about how theory of mind relates to children's social success in primary school and through adolescence. To be sure, there are extensive studies of theory of mind development in children beyond preschool [6; 10; 11; 16; 19], but examining the implications of developing social cognitive skills for children's social lives remains relevant.

If in preschool and early childhood the quality of interaction with the child's immediate circle has a great influence on the development of theory of mind [4; 12], primary school age children expand their social circle, immerse themselves in a new social environment that challenges them to make new friendships, communicate effectively, and resolve conflicts in a group [1; 15]. Consequently, for researchers, one of the issues of interest of social cognition is the question of the relationship between individual differences in the ability of theory of mind with the social success of children in a group of peers, i.e. sociometric status and the popularity of children and their social competence.

The results of previous studies on the level of theory of mind development and peer group status suggest that the relationship between these variables is unstable. Most studies have found positive relationships between theory of mind development and peer group popularity [6; 17; 22], but some studies have found these indicators to be unrelated [24]. The results of a meta-analysis of theory of mind development and popularity in a group showed that primary school children who are more competent in understanding the mental state of others show more effective social behavior, which leads to their popularity among peers, while children with lower levels of theory if mind do not enjoy such popularity [25]. Differences in social competence scores have also been found between children who were liked by peers (popularity was assessed using sociometry) and those who were perceived as popular (popularity was assessed using a direct peer survey) [13; 25]. However, children's correct performance on theory of mind development tasks accounted for only about 4% of the variance in popularity among peers.

Research on the influence of the developing ability of theory of mind on children's social competence is not limited only to the assessment of their popularity among peers, but also necessarily includes an external assessment of social competence by parents and/or teachers [25; 27]. Our previous studies have found reliable but fragmented relationships between parent/teacher evaluations of social competence in children of 7 to 9 years old and adolescents of 12 to 15 years old and the theory of mind [2; 3]. In the present study, we wanted to investigate the role of theory of mind of primary school children not only in social competence assessed by adults, but also in children's peer group acceptance.

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Considering the results of previous studies, the *purpose of the study* is to examine the relationship between theory of mind and the popularity among peers of primary school children.

Hypothesis of the study: the success of theory of mind assessment tasks will be related to children's sociometric indicators and teachers' assessment of popularity among peers.

Research Program

Participants of the study. The study involved 92 children aged 9 to 12 (M=9.97; SD=0.80; 47 girls) studying in 3rd-4th grade in a comprehensive school in the Moscow region.

Methods. To assess theory of mind, we used the tasks of Francesca Happé's "Strange Stories" test [8], aimed at studying children's understanding of the speaker's communicative intentions in situations of ambiguously understood social interactions. Five stories were presented sequentially, including descriptions of the characters' interactions in situations of: "white lies", bluffing, blackmail, irony, and figures of speech. After reading the story, the child had to answer questions by writing about the truthfulness of one of the characters' statements and the motives for that statement.

Examples of stories. Blackmail: "Zhenya wanted to buy a kitten, so she went to Alla Ivanovna. Alla Ivanovna had many kittens and she loved them very much, although she could not keep them all at her place. When Zhenya came to Alla Ivanovna, she wasn't sure if she wanted any of the kittens, because they were all boys and she wanted a girl. But Alla Ivanovna said: "If you don't buy any of the kittens, I'll have to throw them out on the street!". Questions: Is what Alla Ivanovna said true? Why did Alla Ivanovna say that?".

Points were awarded for each correct answer to both questions: 2 points for using mental states to justify the speaker's motives, 1 point for explaining the speaker's motives by his desire to achieve a result. Example in the "blackmail" task: 2 points were given for an answer that implied the character's desire to manipulate the feelings of another, an attempt to evoke guilt or pity ("she lied to her", "she said this so that Zhenya felt sorry for them and took them"); 1 point was given for an answer that implied a simple reference to the result of what the character said ("so that Zhenya bought a kitten", "so that she has fewer kittens", "to earn money"). In situations of irony and bluffing, a 4-point scoring system was used, which also included a simple explanation of motives that did not take irony/bluff into account. This assessment tool is not standardized, so "raw" scores were used - the number of correct answers, which were summed up into an integral indicator – the understanding of the speaker's communicative intentions in situations of ambiguously understood social interactions (from 0 to 12 points).

The assessment of children's social competence included an assessment of their popularity in class using the sociometric method and a survey of class teachers about the social behavior of each participant of the study. To assess peer popularity, participants were asked to choose three classmates in four different situations: "Who would you like to invite to your birthday party?", "Who would you definitely not want to invite?", "If you were moving to a new school and you had the opportunity, who would you invite with you from your classmates?", "Who would you definitely not invite?". To assess perceived popularity, direct questions were asked: "Who do you think is the most/least popular in the class?". Sociometric indices were calculated for each participant of the study by the total number of choices and by the sum of choices for each question.

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For the external assessment of children's social competence, teachers had to answer 9 questions about social behavior (about the expression of aggressive and prosocial behavior, about the child's popularity in class, about his/her ability to persuade peers and his/her susceptibility to their influence, about the child's ability to use humor in interaction with peers and adults, and others), one question about academic achievement and one about self-regulation. The assessment was made on a scale from 1 to 10, where 1 point corresponded to the minimal degree of expression of the studied parameter, and 10 - to the maximum. Each of the 4th grade teachers filled in a written questionnaire for the students of their class participating in the study.

The results of the study were processed using the SPSS 23.0 statistical package. To test for age differences, differences in social competence scores and sociometric indices, the Kruskal-Wallis ranks test was used, depending on the success of the completion of individual tasks of the "Strange Stories" test. To analyze the relationships between the integral index of success in solving "Strange Stories" test tasks, sociometric indices, and assessments of children's social competence, the Spearman correlation coefficient was used.

Results of the Study

Descriptive statistics of the success rate of individual task completion for understanding speaker's intentions in situations of ambiguously understood social interactions are presented below (Table 1). The absence of age differences between children 9-12 years old on the generalized indicator of understanding communicative intentions allowed us to consider the study participants as a single group (Kruskal-Wallis test H=3.926, p=0.140).

Table 1

Descriptive Statistics of the Completion of Individual Tasks of F. Happé's "Strange Stories"

Test

	Min	Max	M	Sd	Number of children who received the maximum score (%)
"White lies"	0	2	1,65	0,71	79,3
Irony	0	3	0,70	0,89	6,5
Bluffing	0	3	1,26	1,16	15,9
Blackmail	0	2	0,66	0,57	5,4
Figure of speech	0	2	1,60	0,69	73,2
Generalized indicator	0	11	5,66	2,33	-

The results of the study showed that children of 9-12 years old poorly understood the motives of the speaker in the situation of irony and blackmail, when it was necessary to explain the motive of the character who made an ironic or manipulative statement by the desire to influence the mental states of the interlocutor by changing his/her behavior. Thus, in the situation of irony, Anya's mother, in response to being ignored and not being thanked by her daughter for cooking her favorite dishes, says that "this is the kind of behavior called polite". Most children aged 9 to 12 refused to explain the reasons for this statement or explained it by simply repeating the text ("because Anya's mother tried

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hard and cooked her favorite dishes for a long time, and Anya did not even look at her mother"). Similarly, in the blackmail situation, most children explained threats to throw the kittens out into the street not by Alla Ivanovna's desire to cause pity in the girl so that she would buy the kittens, but by the desire to get money or by explaining that Alla Ivanovna could not keep the kittens.

By estimating the percentage of children who received the highest score for each task, we can conclude that the complexity of understanding intentions may vary for different social situations presented in the test. It is likely that the tasks on understanding the speaker's intentions in situations of irony and blackmail were more difficult to perform compared to situations of "white lies" and understanding of a figurative meaning (figure of speech).

To test the hypothesis about the relationship between the success of understanding the speaker's motives in various situations and children's popularity among a peer group, a correlation analysis of sociometric indices with the integral index of the "Strange Stories" test was conducted (Table 2). The results of the correlation analysis showed that the understanding of other people's motives in complex social situations is positively related in the primary school age to the preference of peers for socialization ("Who would you invite to your birthday party?" r=0.217, p=0.038) and negatively - to the choice of children who would definitely not be invited to a birthday party by their classmates (r=0.230, p=0.027).

These results are also confirmed by the results of analyzing the differences in sociometric index scores in connection with the success in answering questions in individual tasks for understanding communicative intentions (Kruskal-Wallis test). The results demonstrated that those who failed the tasks on understanding intentions in situations of "white lies", bluffing and figures of speech were reliably more often among those whom classmates would not invite to their birthday ("white lie": H=6.691, p=0.035; figure of speech: H=6.001, p=0.05) and would not be invited to a new school ("white lie": H=7.104, p=0.029; bluffing: H=8.494, p=0.037). Analysis of children's answers in the blackmail situation has shown that children who better understand the character's intentions in this story are perceived by their classmates as more popular (H=5.991, p=0.05), and those who fail in this task are perceived as the least popular in class (H=6.371, p=0.041).

Thus, understanding communicative intentions in difficult social situations is found to be related to both sociometric position and perceived popularity at the primary school age.

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Table 2 Correlations Between Mental Model Scores, Teacher Survey Scores and Sociometric Indices (N=80)

(14-60)	G 11 17 11 4 A
Sociometric Indicators	Generalized Indicator of Understanding Communicative Intentions
1. Who would you invite to your birthday party?	0,217*
2. Who would you definitely not invite to your birthday party?	-0,230*
3. Who would you invite to your new school?	0,122
4. Who would you definitely not call to your new school?	-0,186
5. "Popularity" rating	0,189
6. Rating of "unpopularity"	-0,096
Assessments of Social Competence by Teachers	Generalized Indicator of Understanding Communicative Intentions
To what extent is the child doing well in the curriculum?	0,299**
2. To what extent is the child's aggressive behavior inherent?	-0,114
3. To what extent is the child characterized by friendly, helping behavior?	0,079
4. How popular is the child with peers?	0,387**
5. How often do other children approach the child?	0,259*
6. How easy is it for the child to get other children to do something?	0,225*
7. How much does the child succumb to other people's influence?	-0,160
8. Does the child often become the object of jokes, ridicule from classmates?	-0,198
9. How successfully does the child use humor in communication?	-0,044
10. How often does the child cheat to benefit from his/her behavior?	0,030
11.How capable is the child of regulating his/her behavior?	-0,009
37	

Note. * $- p \le 0.05$, ** $- p \le 0.01$.

Considering the theory of mind as one of the mechanisms of social competence in primary school children, we looked at the correlations between the integral index of the "Strange Stories" test and the assessment of children's social behavior by their teachers (Table 2). Significant positive correlations were found between the success in understanding communicative intentions in complex social situations and the assessments of children's popularity among classmates (r=0.387, p=0.000), the

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frequency of classmates approaching the child (to invite him/her to a game, etc.) (r=0.259, p=0.015), and persuasiveness in interacting with peers (r=0.225, p=0.036). In addition, children who scored high on the test of communicative intent were rated by teachers as doing better on the curriculum (r=0.225, p=0.001).

The results of the study also revealed reliable differences in teachers' assessments of social competence depending on the success of completing individual tasks of the "Strange Stories" test (Kruskal-Wallis test). Thus, children who better understood the intentions of ironic statements and threats in a blackmail situation were, according to teachers' assessments, of better performance in the curriculum (irony: H=10.437, p=0.015; blackmail: H=13.715, p=0.001), more popular among classmates (irony: H=8.759, p=0.033; blackmail: H=11.656, p=0.003) and those more often approached by peers with invitations to games and other activities (irony: H=10.906, p=0.012; blackmail: H=9.024, p=0.011). While children who had a poorer understanding of the speaker's intentions in the blackmail situation, according to teachers, were more likely to be influenced by peers (H=7.877, p=0.019) and more likely to be the object of ridicule (H=8.579, p=0.014).

Discussion of Results

The identified variations in the success rate of completing tasks on understanding the communicative intentions of the speaker in complex social situations by primary school age children support the thesis that the theory of mind continues its development beyond the preschool age. However, these results raise several questions. Although F. Happé's "Strange Stories" test is one of the most commonly used tests for assessing the theory of mind after the preschool age, according to a recent systematic review [21], analyzing the success rate of each test task has hardly been analyzed in research. Most studies analyzed an overall integral score on an arbitrarily chosen number of test tasks [20]. Our results, which indicate the difficulty of understanding people's intentions in situations of irony, blackmail, and bluffing at the primary school age, require confirmation in further research. Nevertheless, we can conclude that the age line of development for understanding such complex social interactions between people as bluffing or blackmail differs from the development of understanding "white lies". We can assume the influence of social experience on success in individual tasks: it is likely that the "white lie" situation (a child who received an uninteresting gift from his/her parents, but has to thank them because he/she does not want to offend them) is more characteristic of the everyday life of primary school children than the situation of blackmail or bluffing (where a soldier needs to tell the truth about the location of tanks, because his opponents expect him to lie to them).

Success on completing tasks assessing the understanding of communicative intentions in difficult social situations in primary school age children was found to be related to sociometric status and to perceived popularity among peers, as assessed by both peers and teachers. These results are consistent with the findings of colleagues [17; 22; 25]: children who are more successful in understanding the motives of others in difficult social situations are more popular in class, are more often asked for help and invited to various activities, and they are more persuasive than their peers. Peers themselves also prefer to maintain friendships with classmates who better understand the intentions of others in social interactions. The results of a recent study involving children of 6 to 12 years old showed significant correlations between understanding the communicative intentions of the speaker in socially ambiguous situations and positive social behavior as assessed by teachers and parents [28].

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The detected fragmentary differences in teachers' assessments of the ease with which a child succumbs to negative influence and the frequency with which he or she becomes an object of ridicule between children successful and unsuccessful in understanding intentions suggest the role of the theory of mind in both the preference and rejection by peers [3; 9; 26]. Primary school children who were worse at understanding the character's intentions in the blackmail situation, as assessed by their teachers, were more likely to be influenced by others and to be the object of jokes and ridicule among their classmates. A study involving 8–13-year-old children [6] also found negative correlations between the success in understanding the mental states of others and peer rejection.

Unfortunately, correlation analysis does not allow us to understand the directionality of this relationship, since the lack of friendly contacts and isolation in a group can also negatively affect the development of social cognition skills, just as a low level of theory of mind can affect the sociometric position in a peer group [23]. Apparently, longitudinal studies of the relationship between earlier social cognition abilities and possible changes in the child's social status in a group, may, in the future, shed light on the causal relationship between the development of theory of mind and popularity in a peer group.

The revealed relationship between teachers' subjective assessment of children's academic performance and the level of the theory of mind assessed in tasks for understanding the communicative intentions of others is consistent with the results of recent studies involving primary school children [5; 7]. Not only do the studies show an association of theory of mind with overall academic achievement, but they also suggest a causal explanation for this association: the development of theory of mind abilities leads to a better understanding of characters' thoughts, behavioral motives, and emotions, which in turn improves reading comprehension [7]. To test these results, we plan to compare the success of theory of mind tasks with school subject grades of primary school children in future studies.

Conclusion

The obtained results indicate a close relationship between the theory of mind of primary school children and their social competence, including popularity among peers. Summarizing the results, we can draw the following conclusions:

- 1. Theory of mind is related to the sociometric position in a peer group at the primary school age: understanding communicative intentions in difficult social situations is related to both peer preference for socializing and perceived popularity among peers.
- 2. An external evaluation of social competence of primary school age children by teachers revealed that children who are more successful in understanding the communicative intentions of others are rated by teachers as more popular among peers, while those who are less successful are those who are more likely to be the object of ridicule and are more likely to be negatively influenced by others.

The limitations of this study include the way in which the group of study participants was formed (all participants attended the same school), and the impossibility of testing the consistency of teachers' assessments of children's social competence to control for subjectivity.

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The prospects for further research in this area are to study in detail the relationship between theory of mind and social competence using not only form-based but also experimental methods, and to examine the contribution of academic achievement to popularity and social competence in primary school children.

The findings may be of interest to school psychologists and teachers for assessing the risk of rejection and group isolation in primary school children.

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