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Child-Adult Interaction: Orientation of Children's Initiative

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The purpose of our work was to establish diagnostic criteria for assessing how the child interprets the proposed form of interaction in a situation where an adult sets an intellectual task and offers help. In this case study, we described two productive children's strategies for redefining the situation of interaction. Some children prefer to act independently of their partner putting forward and testing their own assumptions about the way to solve the task, whereas others consider the offer for help as an effective way to find out through questioning the missing conditions of action. Nevertheless, our diagnostics showed that in today's school, the proactive actions of children (targeted primarily at the content of the task and / or at the partner) are registered in less than a half of the 3—4 graders. We believe that one of the goals of activity-based education is to expand the proactive repertoire of each student in a situation of an intellectual task and to alleviate the tendency to discard his own initiative by lingering instead on ready-made answers and instructions by the adult and by yielding at the first failure. This goal will be met more successfully when the teacher takes into account that the children who come to school have already developed their favored attitudes for interaction when an adult sets a new task.

Keywords: child-adult interaction, children's initiative, orientation of the child's action on the content and on the partner, double stimulation method, junior schoolchildren.

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Детско-взрослое взаимодействие: направленность детской инициативы

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Цель нашего исследования — выделить диагностические критерии, по которым можно судить о том, как ребенок интерпретирует предложенную взрослым форму взаимодействия в ситуации, когда взрослый ставит интеллектуальную задачу и предлагает любую помощь. Методом клинического анализа исследованы две продуктивные стратегии детского доопределения ситуации взаимодействия. Установлено, что одни дети предпочитают действовать независимо от партнера, выдвигая и проверяя собственные предположения о способе решения; другие же прочитывают предложение помощи как эффективный способ выяснить недостающие условия действия с помощью вопросов. Проведенная авторами диагностика показала, что инициативные действия детей (направленные преимущественно на содержание задачи и/или на партнера взаимодействия) встречаются менее чем у половины современных учеников 3—4 классов. Авторы полагают, что одна из целей деятельностной педагогики — расширение инициативного репертуара каждого ученика в ситуации недоопределенной задачи и ослабление тенденций к отказу от собственной инициативы (ожидание готовых ответов и инструкций, капитуляция при первой неудаче). Эта цель будет достигнута более успешно, если учитывать, что у ребенка, пришедшего в школу, уже есть предпочитаемые установки действия в ситуации, когда взрослый ставит новую задачу.

Ключевые слова: детско-взрослое взаимодействие, детская инициатива, ориентация детского действия на содержание и на партнера, методика двойной стимуляции, младшие школьники.

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Introduction

An adult gives a child a task; if the child cannot cope with it on his own, the adult helps... The situation is ubiquitous, every day, but when thinking about it, many psychologists and educators address (in essence or in vain) the theoretical construct of the zone of proximal development, which underlies countless research and educational practices. Today the query “zone of proximal development” returns more than nine million Google search results in Russian and twice as many in English. Any review of such an array of statements will be incomplete and partial, revealing, first of all, the professional and taste preferences of the author.

Without hiding our own partiality, we will rely only on those that do not reduce the joint action of a skilled adult and an inept child to mastering the subject matter, methods, and means of acting with the material of the particular problem under study [3; 9; 19]. We will discuss the interaction, wherein the form and content of the action are recognized as interconnected and mutually subordinate, like the content and form in poetry [2; 7]. The form of such interaction includes the emotional and semantic components compatible to the various extent [6], but does not come down to it.

More or less explicitly, these studies are based on the conjecture by D.B. Elkonin about the cumulative action, in which "the nature of the orientation changes. Orientation on the action of another is at the same time the orientation on one's own action. Orientation on the content matter-oriented conditions is subordinated to orientation on the actions by another" [13, p. 518]. Expanding the concept of cumulative action to the idea of cumulative activity as a genetically initial unit of mental development, V.P. Zinchenko and B.G. Meshcheryakov compared it with "ontogenetic Pangea, from which all continents of human consciousness and activity derived" [4, p. 87]. The cumulative activity molds the form and content of the individual's social and objective actions and further on becomes the basis for the subsequent birth and development of both diverse forms of object-oriented activity and diverse forms of social actions and communication" [5, p. 139].

Here, we will not distinguish between cumulative action and activity and decide whether they exist only at the nativity of human development or in each new situation "pregnant with development." It is essential that the cumulative action is not sum of the separate actions by a child and an adult; it is one inseparable action, the situation when both participants may (or may not) become subjects of joint action [14]. By its nature, this action is interpsychological: it is not carried out according to the plan and initiative of only one of the participants, and therefore its course is unpredictable, even when the purpose of the action is apparently unambiguous: for example, to solve a problem [10].

When offering a task to a child, an adult "packs" both the subject matter and possible methods of the child's upcoming action into it; a sophisticated adult would even advance some assumptions as of the possible ways of the child's object orientation in the content of the task and the diagnostic traits to assess the characteristics of the child's action with this content. And what traits would disclose how the child perceives the proposed form of the interaction? To answer this question was the goal of our experiment. The study was aimed at revealing the position of the child faced with a new underdetermined task, to find out in what ways he would complete the task set by an adult, what role he would assign to himself and what role to an adult, what type of interaction he would consider optimal.

Microanalysis of Child-Adult Interaction in Solving an Underdetermined Task

In order to reveal the dual orientation of the child's action at both the content and the form of the interpsychological action when solving a new problem, we modified the method of double stimulation [8]. The classical method by Vygotsky-Sakharov makes it possible to study in detail the orientation of a child's action toward the content of a task set by an adult [15]. In order to study the orientation of the child's action on the form of interaction with the adult proposing the task, first of all, the instruction was changed [1]. The child was free to choose the type and amount of the adult's help. In this way it was possible to see what form of interaction with the adult the child would build on his own initiative.

The experiment was carried out individually. In front of the child, there is a

table with 80 flat figures, which differed in color (red, green, yellow, blue, gray), shape (trapezia, rectangles, triangles), base width (narrow and wide) and height (low and high). The figures are divided into four groups: BAT — low figures with a narrow base; ROTS — low figures with a wide base; DEK — tall figures with a narrow base; MUP — tall figures with a wide base. The name of the group to which each figure belongs is written on its backside.

Instruction: "Now we will play the following game: I will show you a figure called BAT (turns over a low green trapezium with a narrow base to show that the word BAT is written on its backside). You will find here (among other figures) all the figures that are also called BAT without turning them over. I will answer any questions, you can ask for a hint and even for a ready-made answer.

Below we present the data from two experiments that reveal the diagnostic possibilities of the described technique to distinguish between the orientation of the child's action on the task content and on the form of interaction. Only the key episodes of solving the experimental problem are described. Quotes are from the video records. The names of the children have been changed.

1. Matvey, 8 years 9 months, 3rd grade. Solved the experimental problem completely in 12 minutes

The boy looks at the experimenter with curiosity in anticipation of something interesting. After listening to the first part of the instruction (find all BATs), he immediately finds exactly the same figure as in the sample. Then he looks around the table, sees that there are no more exactly such figures, and wonders whether the problem is really solved. The experimenter checks the correctness of her understanding of the child's non-verbal statement: "Are you out of BATs?" Matvey once again looks around the table and states: "It seems so. No more here."

After making sure that the boy does not know whether he should proceed further, the experimenter delivers the second part of the instruction: "You can ask me any questions, ask for a hint, I can even show you the solution. And you can think for yourself as it suits you best". In response to this proposal, Matvey clarifies: "Are there any other BATs here?" And, having received confirmation, he immediately suggests: "Do they have to be so small?" The adult invites the child to check his guess on his own, and the boy willingly gets down to business.

Having selected all the trapezia, Matvey checks, step-by-step, all the remaining features: first, the changes in the width of the base, then color variations, and then finally compares them by the height. The words that accompany his actions reveal intellectual emotions and are practically devoid of a communicative orientation: "Oh, and here's another BAT!", "This is some kind of ... rectangular BAT", "Maybe these are BATs?"... The adult sees that for this child, intellectual independence is desirable and feasible and therefore tries to step aside in the cases where the child wants and can act on his own. Only once, when trying to better understand the child's choice, the adult asks: "What do they (figures) have in common?" In this case, the adult gives the feedback without waiting for a request: "Well, I'll tell you that this is not BAT." In response, Matvey immediately switches from an unsuccessful attempt to a new search, smiling.

The climax of the solution of the problem comes almost by accident: Matvey superimposes one figure on another and notices something that is not obvious in a formal comparison: one figure can be transformed into another.

Matvey (takes a BAT rectangle and covers it with a BAT trapezium, Fig. 1a). Look, this is a rectangle — see? — with cut corners. Experimenter (nods). Okay. Well, I'll tell you that the figures you chose are indeed called BAT. But here (among the remain-

ing figures) there are still figures, which are also called BAT. And you better find them.
Matvey. Or maybe it's BAT? (Joyfully pokes a finger at the blue triangle of BAT and looks at the experimenter in anticipation.)
Experimenter (smiles, rejoicing at a fresh thought). Maybe... Why?
Matvey (smiling). Because it's the same thing, with its corners cut off. True, triangular ...
Experimenter. Triangular.
Matvey. Look here: the same!? (He imposes a small blue low triangle on the BAT trapezium, Fig. 1b). Just cutting corners off...
Experimenter (nods approvingly). OK, let's try…

Matvey (applies the BAT triangle to the BAT trapezium). Like this? O!..
Experimenter. Suitable, really? BAT?
Matvey. Yes!
Experimenter. Any more BAT figures?
Matvey. (Rises up, illumined by a new idea) Or maybe these things themselves? (Points to the BAT rectangle, compares it with the BAT trapezium — Fig. 1a, looks at the Experimenter as if checking.)
Experimenter (trying to remain impartial, but sharing the joy of discovery). These things themselves can be BAT too, right?
Matvey. Yes... (Picks up BAT rectangles. Examines remaining shapes.)
Experimenter. Have you collected all the BATs?
Matvey. (Continuing to look for BAT.) In my opinion, yes…

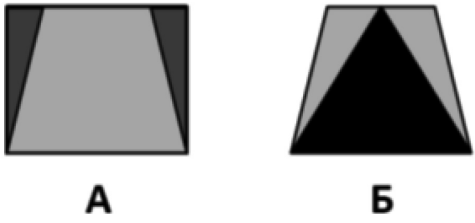

Fig. 1. Matvey shows how, by "cutting off the corners", you can transform (a) a rectangle into a trapezium and (b) a trapezium into a triangle

Thus, at the 4th minute of the experiment, Matvey invented a method for defining BATs: in order to turn one BAT figure into another, you need to "cut the corners". The next three artificial concepts Matvey constructed in the same way, without fully verbalizing the invented method of the solution. The adult only confirmed his guesses (mostly non-verbally — a nod, a smile) or by repeating the successful remarks) and clarified the problem, prompting the child to a further search. The boy sometimes threw an inquiring glance at the experimenter, but did not ask for control and evaluation. In other words, Matvey seeks to rely on himself not only in the subject-matter aspect of solving the problem, but also in the control and evaluation. "I am the main condition for solving a problem"[1] is the leading form of orientation of this child in a situation where the adult sets a new problem.

2. Masha, 9 years old, 3rd grade. Solved the experimental problem completely in 19 minutes

Masha listens to the instructions attentively and with great interest. Seeing

[1] D.B. Elkonin's expression.

a BAT sample, she immediately states that it is a trapezium. Then she instantly finds a figure that completely matches the sample (in shape, color and size). Looking for more and having found none, she stops her efforts. As the experimenter starts to offer help, Masha immediately interrupts him with a sensible question: "Is it supposed to be exactly the same?" The experimenter replies that "it may not be exactly the same." Having received the necessary (albeit insufficient) information, Masha instantly tests her first (half-conscious) hypothesis: BATs are figures of the same shape, but may differ from each other in color *(Fig. 2).* She selects, however, only low trapezia, even as she looks only for a particular form. And considers the problem solved. The experimenter "restarts" the process of solving the problem by giving a short feedback: "Not all the figures that you have selected belong to BATs."

Encountered with the first difficulty, the girl, now without interrupting, listened to the instruction: now she seeks cooperation rather than focuses on the subject matter of the task "You can ask any questions, ask for a hint, I can even show you all these figures."

This episode is followed by several attempts to collect BATs and, despite her failures, the girl never ceases the active search. Each hypothesis (except one) is preceded by a question addressed to the adult. Through these questions, Masha seems to figure out whether it makes sense to test her particular hypothesis. And the adult invariably answers positively, encouragingly — but evasively: "Try", "Maybe", "Do you think so?" And Masha collects the next batch of BATs to find again that she is only partially right.

Then a new stage begins in the work: with the help of questions, Masha collects information about what BAT is and does NOT collect a new collection of figures. Here are the girl's questions:

- Does BAT have only 4 corners?
- Is BAT only green?
- BAT has only warm colors, has it?
- Maybe BAT…can be composed from these figures?
- Can BAT be of all colors?
- Maybe BAT has… a rectangle has a right angle, but BAT has only an obtuse one? And acute.

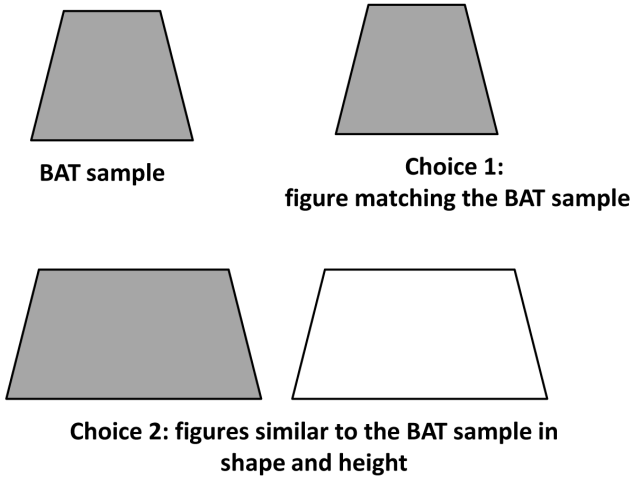

Fig. 2. The BAT group selected by Masha includes low trapezia with a wide base (ROTS)

• Maybe BATs are of all shapes?
• Are all green /figures/ exactly BATs?
• Are BATs — big or small?
• BATs are only small, right? All colors ... So, these are all small, I guess.

Having found a new line of thinking, Masha quickly gathers a collection consisting of all BATs and all ROTS — low figures of all colors and shapes, but differing in the width of the base and, accordingly, in area.

The final (eighth) attempt made at the fourteenth minute of the work led the girl to success.

Masha (very intent, repeats the signs of BAT to herself). BAT — small, all colors, with any number of corners. Experimenter. Yes. Well, you already said that BAT is what kind of figures? The most… Masha (quickly and confidently). Small. Experimenter. Yes. Masha. So, it is necessary to select all the smallest ones from here? (At the suggestion of the adult, rapidly removes all low figures with a wide base (ROTS), turns the remaining figures over and smiles: all of them are marked BAT).

The problem is solved. Just once in 15 minutes of the work, the experimenter prompted the child: “You have already said that BATs are what kind of figures? The most ...” The word MOST helped the girl to distinguish figures with a larger and smaller area. The hint, even if not claimed, fell on the breeding ground of the child’s thoughts and instantly led Masha to a solution. This success was not accidental: it is confirmed by the speed of reasonable dividing the remaining figures into three groups: the concepts of ROTS, MUP and DEK were constructed in four minutes accurately and consciously. Gathering each next group of figures, the girl repeated to herself: “All colors, with any number of angles, but just a little larger.”

The Discussion of the Results

Using the method of clinical analysis of the child-adult interaction, we studied the behavior of two children who successfully coped with an underdetermined task set by the adult. What do their behaviors have in common? Both are extremely proactive. However, the direction of their initiatives differed distinctly. Matvey was focused mainly on the subject matter of the task: he put forward hypotheses (about what BAT is), tested them in action (collected alleged BATs), cleverly used feedback voluntarily provided by the adult, put forward a new assumption and tried to test it again in the same way. Masha apparently started to act in the same manner: she made assumptions, checked them in action, but at the same time, from the very first attempt, she asked the adult questions that allowed her to test hypotheses in a different way: by turning to the information carrier for missing evidence. After several unsuccessful attempts to collect all BATs, the girl ceased to manipulate with the figures physically and asked the adult a series of questions that allowed her to mentally test new assumptions.

Both strategies for solving an underdetermined task are extremely effective, both are based on the children’s initiative. One child, on his own initiative, included the adult in the conditions of the action and, with the help of this “condition,” found the missing information; another one worked exclusively with the subject matter of the problem, manifested remarkable ingenuity in developing hypotheses, and eventually found an original way of solving the task.

Both patterns of the children’s activity in solving the task set by the adults are opposed to the passive expectation of help by the adult found by many children. Diagnostic screening of 52 schoolchildren in grades 3—4 of two Moscow schools using a modified double stimulation technique

showed that more than half of younger schoolchildren after two to three years of schooling are prone to passive behavior when presented with an intellectual task [1] *(Fig. 3).*

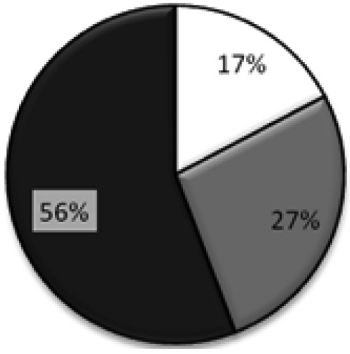

Fig. 3. Patterns of the child's behavior in a situation of an underdetermined task of constructing artificial concepts:
subject matter orientation
orientation on the partner
abandoning one's own initiative

Conclusions

The behavior patterns demonstrated by children in this experiment do not cover the whole of their individual behavior repertoires. Thus, one and the same child would show different trends depending on how significant the partner or the subjective assessment of the difficulty of the task is. We believe that one of the goals of primary education during the transition from traditional to activity-based education is to expand the active behavioral repertoire of each student in a situation of an underdetermined task and alleviate the tendency to abandon his own initiative (waiting for ready-made answers and instructions, surrender at the first failure), to create the conditions that would orient the children's action both on the content and partner of the interaction. The solution to this problem has already been found and the necessary conditions have been established [16]: the methods and means for teaching the children to ask smart questions about the missing conditions of action [12; 17; 20] and to encourage the children's hypotheses about how to solve a new problem [11; 18].

We will reach this goal with more success and precision if we take into account the individual characteristics of the child who has come to school: the first-grader ALREADY HAS preferred settings for action in a situation where the adult sets a new task. Therefore, further work should be targeted at finding and designing means and methods for organizing such child-adult interaction in educational activities that can take into account the existing effective attitudes of the children's action (on the subject matter and / or partner of interaction) and expand the repertoire of these attitudes.

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