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SYMMETRICAL SOCIAL RELATION AS A FACTOR IN CONSERVATION TASKS

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According to Siegal's hypothesis, despite having concrete operational abilities some children are not successful in conservation tasks. Social factors, such as repetition of question asked by an adult experimenter alter the manifestation of existing cognitive abilities. This study varied the following aspects of conservation tasks: symmetrical vs. asymmetrical power relation. The children in the study were asked to solve three different conservation tasks (quantity of continued material, length, and number). Each task was repeated twice; once with an adult experimenter and once with a child experimenter. Results show that children's responses were affected by social factors only in a certain tasks. In other tasks children's responses remained unaffected in both situations. This suggests that there exists an interaction between the experimenter and the task, and that the affect of social factor is mediated by a particular characteristic of the task. Results indicate that the modifying factor is the task difficulty.

Key words: cognitive development, conservation, social factors

Conservation is one of the key concepts in Piaget's theoretical system. In developmental psychology, the concept of conservation relates to the ability to understand that certain characteristics such as quantity, number and length remain constant regardless of obvious transformations like object motion or change of shape (Flavel, 1963). Conservation appears at the begining of the concrete operational stage and it gradually expands on different contents. The appereance of conservation signals that operations have became reversible. As such, it is one of the basic empirical evidences of the existance of a psychologicaly real system of intelectual operations. It is also a proof of Piaget's teoretical system. The sheer amount of research that has been inspired by the concept of conservation and Piaget's theory speaks of the significance of this concept. “It could be said that the study of the

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concept of conservation became so important in Piaget's research because it appeared as an objective indicator of the existence of a system of reversible operations, and a basic measure of objectivity of knowledge "(Ivić, 1990).

Beside their theoretical importance, Piaget's work and the study of cognitive development are also important for methodological reasons. Piaget developed a large number of experimental tasks in which he examined children's thinking in its active relationship with the environment. The most popular among these are tasks of conservation. All conservation tasks have a similar structure consisting of three phases. First, in which a child should agree that two objects are identical in terms of the examined characteristic, for example the quantity of water, length or weight. The child should also respond to the experimenter's question about the identity of this characteristic. Second, a child or experimenter performs an obvious transformation of the object, such as pouring of the water in a glass of different shape or changing of the shape of a play-dough ball. Although the object changed perceptually, the amount of examined dimension remains the same. Third, the child should answer again whether the two objects are the same with regards to the examined characteristic. According to Piaget, the child's responses will only be a reflection of his/hers cognitive ability and level of cognitive development. This leads to the conclusion that a child has reached the concrete operational stage if it is capable of successfully solving conservation tasks.

According to Siegal (Siegal, 1991), conservation tasks are not necessarily a reliable indicator of the concrete operational stage. When an adult tries to examine children's knowledge and thinking, s/he encounters difficulties in questioning and communication with the child. Problems due to differences in communication between children and adults could make the understanding of children's cognitive capabilities more difficult. For example, an experimenter that asks a child a question will use the child's responses to draw conclusions about the child's way of thinking. S/he assumes that the child understood the question, that it was motivated to give a straight answer, that the answer reflected only the child's cognitive capabilities and nothing else, etc. Siegal hypothesizes (Siegal, 1991) that children's responses in conservation tasks are influenced not only by cognitive, but also by non-cognitive factors such as conversation and communication rules, language comprehension, child's interpretation of experimenter's intentions, power relation between adults and children, etc.

Siegal thinks that there are many characteristics of standard conservation tasks, which may force children to give answers which appear as preoperational thinking. Because of this, communication between the adult experimenter who asks questions and the child is an important aspect of conservation research. Children interpret this communication according to their experiences in everyday communication with grownups. By using previous experiences, a child could wrongly interpret some of the experimenter's actions, which might lead him/her to give an incorrect answer. Thus, instead of a conceptual limitation, his/her incorrect answers may reflect a communication characteristic (uncertainty, misinterpretation of meaning or purpose of question, a desire to give an answer to attract attention, or simply a wish to end the conversations). Thus, according to Siegal, a conservation task for children is not just a cognitive, but also a **social problem**.

That means that despite having concrete operational abilities some children are not successful in solving conservation tasks, because social factors, especially repetition of question by the adult experimenter, alter the manifestation of existing cognitive capabilities. Consequently, the standard Piagetian procedure does not account for this and might lead us to wrongly underestimate children's knowledge.

It is possible that there is no difference between a child's and adult's understanding of conservation. However the difference may exists in the understanding of the situation and purpose of the repeated question. In standard procedure at the beginning of the task, the experimenter asks the child if there is an equal amount of liquid in two glasses, or whether there is more in one than in the other. After the transformation (i.e. the purring of the liquid in a glass of a different size), the experimenter asks a child the same question for the second time. According to Siegal, this *repeating of the question* by an **adult experimenter** can provoke a child to change his/her previously correct answer.

Children can attribute various intentions to the experimenter which can result in inconsistent and illogical responses. When the adult experimenter asks the same question twice, the child might think that the first answer was incorrect, that s/he is expected to give a different answer, that s/he is now asked something else, etc. Interpretations like these can lead a child to change his/her answer, even though s/he is aware that the probed characteristic remains unchanged. Therefore, an incorrect response can be caused not only by the child's inability to solve the task, but by a specific meaning s/he attaches to the experimenter's actions.

The main goal of our study was to test one of the implications of Siegal's hypothesis. Siegal's hypothesis is based on the claim that the existence of an **asymmetric power relation** between the adult experimenter and the child responder is an essential aspect of the conservation task (Siegal, 1991). The child is communicating with the experimenter who is physically much larger and more powerful. The conversation between the child (usually 3 to 4 feet high) and adult (usually 5 to 6 feet high) reflects the difference in stature. The ratio is similar to that between an average – sized adult and 8-foot giants.

With a more limited experience of social world and adults personalities, children may be highly susceptible in an interview setting. For a child, an adult means authority, someone who has much more knowledge, who knows the correct answers and the purpose of examination. If knowledge means power, a child might feel obliged to provide a response which will please a more knowledgeable adult when confronted with one. In that context, the conservation task would not be just a cognitive problem for a child, but also a social problem. A response to the repeated questions will be influenced by how the child perceives the experimenter, his intentions and the whole situation.

In our study we varied the symmetrical *vs.* asymmetrical power relation aspect of the conservation task. If the asymmetrical power relation between the adult experimenter and the child causes the child to change the answers, what can be done to prevent this? How can a symmetrical power relation be created?

A child can have a symmetrical relation only with another child. With this in mind we trained an 8.3 years old child as an experimenter

The children in our study solved three conservation tasks twice: (a) once with an adult experimenter, and (b) once with a child experimenter. We assumed that the same question has a different meaning for children depending on whether an adult or a child poses the question. When an adult who is more powerful than a child asks the same question, a child could misunderstand this as an implicit sign that his/her previous answer was wrong, and could thus change the answer and give the preoperational one. When the experimenter is a child, there is a symmetrical power relation, so we presumed that the child would not be burdened by contemplation of what the adult thinks of his/her answer.

How should the child respond in these two situations?

According to Piaget, children's behavior in conservation tasks depends only on their stage of cognitive development (concrete operational or preoperational). If the child is at the concrete operational stage, s/he will solve conservation tasks successfully. That means, s/he will claim that the two objects are still equal after the transformation (A=B1), regardless of whether the experimenter was an adult, a child or Donald Duck. Conversely, if the child is at the preoperational stage, s/he will claim that the two objects are not equal after the transformation (A≠B1), regardless of who the experimenter was. This means that according to Piaget a child's ability to solve the task / give the correct answer depends on his/her level of cognitive development and not on whether the experimenter was an adult or a child. This means that (Table 1) no child should succeed in solving the conservation task with one experimenter, and not with the other.

Conversely if Siegal's hypothesis is correct (Table 2), some children should succeed in solving the conservation task (claim that A=B1) when the experimenter is a child, but not when the experimenter is an adult (claim that A≠B1). Namely, when the experimenter is an adult there exists an asymmetric power relation between the experimenter and the child. In this situation the child could interpret the repetition of the same question as a sign that his/her first answer (A=B) was incorrect. Because of this, a child could change his/her previous answer and claim that the two objects are different (A≠B1). According to Siegal, no child should be able to solve the task only with the adult, and not with the child.

Table 1: Piaget's prediction

		Child experimenter	
		A=B1	A≠B1
Adult experimenter	A=B1	√	0
	A≠B1	0	√

Table 2: Siegal's prediction

		Child experimenter	
		A=B1	A≠B1
Adult experimenter	A=B1	√	0
	A≠B1	√	√

METHOD

Subjects

A total of 30 children (17 girls and 13 boys), 7 to 8 years of age (mean age 7.3) participated in our experiment. All of them were from urban areas, and were in the first grade of the same elementary school.

Tasks

Three conservation tasks were performed: conservation of quantity of continued material (water), conservation of length and conservation of number.

Conservation of quantity of continued material (water). This task consisted of two trials. Two equal glasses with equal amounts of liquid were used in both. First the experimenter asked the child if there was an equal amount of water in booth glasses or whether one contained more than the other. When the child agreed that the amounts were equal (A=B), the experimenter performed the first transformation. He poured the water from one glass (B) into a shorter and wider glass (B→B1). The experimenter then asked the child again if there was equal amount of water in these two glasses (A ? B1). The child was asked to explain his/her answer. Although, due to the difference in size, it perceptually seemed that the two glasses did not contain the same amount of liquid, the child was expected to claim that they did (A=B1).

In the second trial the experimenter again had two equal glasses with an equal amount of liquid. The Experimenter asked the child if the two glasses contained an equal amount of liquid, or whether one contained more. After the child agreed that the amounts were equal (A=B), the experimenter poured the water from one of the glasses into taller and narrower glass (B→B1). He then asked the child the same question again (A ? B1) whether there was an equal amount of liquid in both glasses. Despite the perceptual difference the child was expected to claim that the glasses contained an equal amount of liquid.

Conservation of length In this task we used two wands of equal length. At the beginning they were placed parallel to each other. The experimenter asked the child whether the two wands were of equal length or one was longer. When the child agreed that they were equal (A=B), the experimenter moved a one of them a bit to one side (B→B1) which disturbed the perceptual equality of the wands. The child was asked again whether the wands were equal (A ? B1), and to explain his/her answer. Despite the perceptual difference the child was expected to claim that the wands were still equal (A=B1).

Conservation of number In this task children were shown 10 vases and a bunch of flowers. The experimenter asked a child to take as many flowers as there were vases. The children most often placed one flower in each vase and thus determined the right number. The experimenter then asked whether there were as many flowers as there were vases. When the child confirmed (A=B), the experimenter gathered the flowers in a bunch (B→B1). Then, the initial question was repeated (A ? B1). The child was expected to still claim that the number of flowers and vases was equal regardless of the perceptual change (A=B1).

Procedure

Each child was examined twice: once with an adult experimenter, and once with a child experimenter. There was a seven day interval between the two trials. Half of the sample solved the tasks with the adult experimenter first, and after 7 days with the child experimenter. The other half went through the trials in reverse order. Also, the order of the conservation tasks was balanced. The whole experiment took place in theirs elementary school.

RESULTS

The results are shown for each conservation task.

Task 1: Conservation of number

Table 3 shows the results for conservation of number. As it can be seen, all of the children (100%) from our sample (N=30) solved the problem and gave conservation responses both with the adult and child experimenter. The children behaved in the same way, regardless of the experimenter.

Table 3: Conservation of number results

		Child experimenter		
		A≠B1	A = B1	TOTAL
Adult experimenter	A = B1	0 (0%)	0 (0%)	0 (0%)
	A≠B1	0 (0%)	30 (100%)	30 (100%)
	TOTAL	0 (0%)	30 (100%)	30 (100%)

Task 2: Conservation of quantity of continued material

This task consisted of two transformations.

Transformation 1. In the first trial, water was poured into a shorter and wider glass. Results are shown in table 4. In this trial, 9 children failed to solve the problem (non-conservation respond) in both situations (with the adult and child experimenter). On the other side, 18 children solved the task (conservation response) in both situations. There was no child who solved the task with the adult, but failed with the child experimenter. The most interesting for us were the children (3 of them) who failed to solve the problem (non-conservation) with the adult experimenter, but succeeded (conservation response) with the child experimenter.

Table 4: Results for the first trial of conservation of quantity of continued material

		Child experimenter		
		A≠B1	A = B1	TOTAL
Adult experimenter	A = B1	9 (75%)	3 (25%)	12 (40%)
	A≠B1	0 (0%)	18 (100%)	18 (60%)
	TOTAL	9 (30%)	21 (70%)	30 (100%)

When children's success in two situations is compared, we see that 18 children solved the task when the experimenter was an adult but 21 did it with the child experimenter.

What does this difference mean and is it statistically significant? In order to check this, we compared distributions of responses when the experimenter was a child with the ones when the experimenter was an adult. A statistically significant difference between the two distributions would mean that the children responded systematically differently in the situation with the child experimenter as compared to the situation with the adult experimenter. On the other hand, if a difference between the distributions is not significant, that would indicate that the children responded in the same way, regardless of who the experimenter was and that difference is due to affect of non-systematic factors.

In the first trial of conservation of liquid there was no significant difference between two distributions (χ^2=1.250; df =1; p=0.264) which means the children gave same responses to both the adult and child experimenter.

Transformation 2. In this trial, water was purred into a thinner and taller glass. Results are shown in table 5. In this trial 12 children failed to solve the problem (non-conservation response) with both the adult and child experimenter. On the other hand, 10 children solved the task (conservation response) in booth situations. There was only one child who solved the task with the adult, but failed with the child experimenter. The seven children who failed to solve the problem (non-conservation) with the adult experimenter, but succeeded (conservation response) with the child experimenter were for us the most interesting.

Table 5: Results for the second trial of conservation of quantity of continued material

		Child experimenter		
		A≠B1	A = B1	TOTAL
Adult experimenter	A = B1	12 (63%)	7 (37%)	19 (63%)
	A≠B1	1 (9%)	10 (91%)	11 (37%)
	TOTAL	13 (43%)	17 (57%)	30 (100%)

When the responders' success is compared in two situations, we see that 11 children solved the task with the adult experimenter, but 17 did it with the child experimenter. If the differences between these two distributions are tested, we see that they are statistically significant (χ^2=5.167; df=1; p=0.023) which means that children responded differently in two situations. They gave non-conservation responses with the adult experimenter (A≠B1), but they gave conservation responses with the child experimenter (A=B1).

When the responses from two trials were integrated (on two transformations) the following results were obtained:

Table 6: Results for conservation of quantity of continued material

		Child experimenter			
		A≠B1	A≠B1 A=B1	A=B1	Total
Adult experimenter	A≠B1	9 (75%)	1 (8%)	2 (17%)	12 (40%)
	A≠B1 A=B1	0 (0%)	4 (50%)	4 (50%)	8 (27%)
	A=B1	0 (0%)	1 (10%)	9 (90%)	10 (33%)
Total		9 (30%)	6 (20%)	15 (50%)	30 (100%)

In this case we have one new category of responses for children who in one transformation gave a conservation response and a non-conservation response in the other. As we can see, 10 children gave conservation responses with the adult experimenter and 15 with the child experimenter. The twelve children gave non-conservation responses with the adult and 9 with the child experimenter. The eight children gave one conservation and one non-conservation response with the adult and 6 with the child experimenter. The differences between the two distributions are not statistically significant (χ^2=3.750; df=1; p=0.153), which means (when both transformations are considered) the children responded in the same manner regardless of who the experimenter was.

Task 3: Conservation of length

Table 7 shows the results for conservation of length. In this task 14 children failed to solve the problem (non-conservation response) both with the adult and child experimenter. On the other hand, 9 children solved the task (conservation response) in both situations. There was only one child who solved the task with the adult, but failed with child experimenter. The six children who failed to solve the problem (non-conservation) with the adult experimenter, but succeeded with the child were for us the most interesting.

Table 7: Results for the conservation of length task

		Child experimenter		
		A≠B1	A = B1	TOTAL
Adult experimenter	A = B1	14 (70%)	6 (30%)	20 (67%)
	A≠B1	1 (10%)	9 (90%)	10 (33%)
	TOTAL	15 (50%)	15 (50%)	30 (100%)

When we compare the success of children's in two situations, we see that 10 children solved the task with the adult experimenter, but 15 did it with the child experimenter. If we test the differences between these two distributions, we see that they are statistically significant (χ^2=3.750; df=1; p=0.053).

This means that children responded differently in two situations. When the experimenter was an adult they gave non-conservation responses (A≠B1), but they gave conservation responds (A=B1) when the experimenter was a child.

DISCUSSION

Our results show that the social factor (adult or child experimenter) affects children's responses in some tasks, but that there are also other tasks which the children solved in the same way, in both situations.

Why did the social factor affect only some tasks?

This suggests that there exists an interaction between the experimenter and the task. It appears that the effect of the social factor is mediated by certain characteristic of the task. In other words, some characteristic of the task modify the effect of the social factor. Based on our results we can conclude that the modifying factor is **the difficulty of the task**.

The difficulty of the task is defined by the number of children who solved the task correctly (gave the conservation response) (Ivic, 1990). When we integrate data on the difficulty of each task with data on the effect of social factor, we get the following schema:

Table 8: The connection between task difficulty and effect of social factor

Task	Tasks' difficulty (% of incorrect answers)	Social factor
Number	0.0	no affection
Liquid 1	40.0	no affection
Liquid 2	63.3	affection
Length	66.7	affection

Conservation of number. In the standard procedure all children solved this task correctly, which indicates that this was the easiest task, that the children possess all abilities required for solving it and that this task was below the level of their cognitive development.

All children also solved this task with the child experimenter, which indicates that the social factor did not affect the children when dealing with a task which was below their level of cognitive ability. The children were confident of their responses and were not confused by the repetition of the same question by two experimenters.

Conservation of length. In the standard situation (with adult experimenter) only 33.3% of our sample solved the conservation task successfully. This indicates that this was the most difficult task in our study. It shows that abilities which are needed to solve this task are not yet developed at this age (7-8 years). In the situation with the child experimenter, a statistically significant larger number of children solved this task. In this task the social factor (repetition of the question by an adult) had a confusing influence on some children, which led them to give a non–conservation response even though they responded correctly with the child experimenter.

Thus, difficulty of the task is the factor that modifies affection of social factors, that Siegal has spoken about.

Why are some tasks easier, and some more difficult for children of certain age?

We can assume that some abilities are needed to solve each task. In that context, the success of children of a certain age will depend on the percent of children who developed certain abilities. Since most of the children develop these abilities at certain developmental intervals, we could conclude that: (a) before that period no child could solve a certain task, (b) after the development has started, the number of children who can solve the task successfully gradually increases, and (c) after a certain age, all or almost all children are successful in solving the task.

Therefore the factor which determines the difficulty of the task is the reached level of cognitive development. In that context it could be said, that a cognitive factor underlies the difficulty of the task in our experiment.

If we accept that the difficulty of the task depends on the level of development cognitive ability, then our results can be explained by the existence of an interaction of cognitive and social factors. We think that the *interaction* between cognitive and a social factor arises because the effect of social factor is determined by the cognitive factor.

How does the range of cognitive development affect the demonstration of social factors?

If the task is not complicated for children of certain age, it means that most of those children have abilities needed to understand and successfully solve that task. Consequently, children will have confidence in their own reasoning. That will make them resistant to various influences of others (power relation, repeating of a question, misleading, counter-suggestions, etc.).

On the contrary, if the task is difficult for that age, it implies that the abilities for solving the task are still developing in most children. In that case, it is understandable that the children would not be sure of their own reasoning, and that they would be susceptible to the influence of social factors. The children will rely much more on other aspects of situation such as the experimenter's reactions, his/her approval, the reason why s/he is repeating the same question, etc.

Thus, Siegal is right when he claims that some children can give preoperational responses to conservation task because they interpret the adult's repeated question as an implicit sign that their previous answer was incorrect. However it should be noted that the social factors that Siegal has spoken about, can influence only children whose abilities for solving certain tasks are not completely developed.

How could this data be interpreted from the perspective of Piaget's theory and his understanding of conservation tasks as a reliable indicator of concrete operations?

We think that these findings can be assimilated in Piaget's theory**.** According to Piaget (1969, 1995), the children who changed the answers would be at a transitional stage between preoperational and concrete operational stage. Firstly, Piaget himself allowed that the children at transitional stages are sensible to various non-cognitive factors (Piaget, 1995). Secondly, according to Piaget concrete operations are a system of mental schemas that allow children to think logically (Piaget, 1969, 1995). This means that with concrete operations children can perceive that two objects remain necessarily identical in terms of probed characteristics after the transformation (Piaget, 1995; Smith, 1993). This feeling of necessity makes children resistant even to social influences such as counter-suggestion, and to less direct social influences such as a repeated question.

If we accept children's resistance to non–cognitive influences as criteria for the concrete operational stage, we can say that children whom we have spoken about are not at the concrete operational stage. In that case it can be concluded that conservation tasks are (it appears) a reliable indicator of concrete operations. Children who are successful in conservation tasks have concrete operational abilities, but children who for any reason (cognitive or non-cognitive) make a mistake in conservation tasks have not developed concrete operations as a system of internalized schemas.

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REZIME

SIMETRIČAN SOCIJALNI ODNOS KAO FAKTOR U ZADACIMA KONZERVACIJE

Ksenija Krstić i Aleksandar Baucal

Pojam konzervacije jedan je od ključnih pojmova u Pijažeovom teorijskom sistemu. Pojam konzervacije odnosi se na sposobnost shvatanja da određena dimenzija objakta ostaje nepromenjena bez obzira na vidljive transformacije objekta. Konzervacija se javlja na početku perioda konkretnih operacija. Pojava konzervacija je znak da su operacije postale reverzibilne i kao takva je jedno od osnovnih empirijskih potvrda postojanja psihološki realnog sistema intelektualnih operacija i potvrda celokupnog Pijažeovog teorijskog sistema. O značaju tog pojma za kognitivnu razvojnu psihologiju u opšte, može se suditi i na osnovu ogromnog broja radova i istraživanja koja su inspirisana tim pojmom i Pijažeovom teorijom u celini. Pijažeove postavke o ograničenjima i mogućnostima dečijeg mišljenja, našla su potvrdu u rezultatima velikog broja istraživanja. Međutim, rezultati jednog broja istraživanja nisu bili u skladu sa tim postavkama i podstakli su nalaženje novih načina da se pristupi ispitivanju dečijeg mišljenja, podstakli su nova istraživanja i nova, alternativna objašnjenja. Tako je Siegal, na osnovu svojih istraživanja, u kojima je varirao pojedine elemente eksperimentalne siuacije u zadacima konzervacije, postavio hipotezu kojom objašnjava odgovore deteta na ovim zadacima nešto drugačije od Pijažea.

Siegal smatra da se mogućnosti dečijeg mišljenja i razumevanja ne ispoljavaju uvek i u potpunosti u onome što ona govore i rade. Kada odrasli pokušava da ispita njihovo znanje nailazi na brojne teškoće u postavljanju pitanja i komunikaciji sa detetom. Teškoće koje proizilaze iz razlika u načinu komuniciranja dece i odraslih mogu zamračiti razumevanje dečijih kognitivnih sposobnosti. Seigal pretpostavlja, i u svojim istraživanjima nalazi za to potvrdu, da na odgovore deteta utiču i neki drugi nekognitivni faktori. Pitanje je da li su dečiji neuspesi na zadacima konzervacije posledica stvarnih ograničenja u razumevanju ili posledica nekih metodoloških aspekata koji provociraju dete da daje nedosledne odgovore.

Siegal je svoja istraživanja usemrio na proveravanje hipoteze da na odgovore koje deca daju prilikom ispitivanja konzervacije može uticati činjenica da *ispitivač dva puta postavlja detetu isto pitanje, jednom na početku zadatka i drugi put nakon izvedene transformacije*. Različite namere koje deca mogu pripisivati ispitivaču koji ih dva puta pita isto pitanje, različito razumevanje svrhe ponovljenog pitanja, može navesti decu da daju nelogične i nedosledne odgovore.

U ovom istraživanju, polazeći od Siegalove hipoteze, ispitali smo uticaj jednog nekognitivnog faktora eksperimentalne situacije u zadacima konzervacije. Naime,

naša pažnja je bila usmerena na činjenicu da ***odrasla osoba*** dva puta postavlja isto pitanje. Dakle, naglasak je na postojanju asimetrične relacije u pogledu moći između odraslog ispitivača i deteta, ispitanika. Ukoliko je Siegalova hipoteza tačna, usled ove asimetrične interakcije, zadatak konzervacije postaje za dete socijalni, a na kognitivni problem. Da bi proverili ovu hipotezu mi smo u standardno ispitivanje konzervacije uveli dete – ispitivača. Sada je jedno dete (uzrasta približnog ispitanicima) na standardni način, dakle postavljajući pitanje pre i posle transformacije, ispitivalo drugu decu.

Za ispitivanje su korišćena tri zadatka iz Pijažeove baterije za ocenjivanje preoperacionalnog mišljenja: zadatak konzervacije količine kontinuirane materije (tečnosti) sa dve transformacije, zadatak konzervacije dužine i zadatak konzervacije broja. Ispitano je 30 subjekata, oba pola, prosečnog uzrasta 7.3 godine. Svi ispitanici su prošli kroz dve eksperimentalne situacije, u jednoj je ispitivač bilo dete, u drugoj odrasla osoba. Redosled eksperimentalnih situacija je kontrolisan, a razmak između dva testiranja je bio 7 dana.

Zadatak konzervacije broja pokazao se kao isuviše lak i nediksriminativan za ispitani uzorak. Rešen je sa 100% uspeha u obe eksperimentalne situacije, pa rezultati dobijeni na ovom zadatku ne idu u prilog postavljenoj hipotezi. Na zadatku konzervacije količine tečnosti, u celini nema statistički značajne razlike između frekvenci tačnih odgovora dobijenih kada je ispitivač odrasla osoba i onih dobijenih kada je ispitivanje vodilo dete. Kada se uzmu u obzir pojedinačne transformacije u okviru zadatka konzervacije količine tečnosti, pokazuje se da samo kod prvog presipanja postoji statistički značajna razlika ($p<.05$) između frekvenci odgovora u dve eksperimentalne situacije. Takođe, poređenjem odgovora na zadatku konzervacije dužine, pokazalo se da postoji statistički značajna razlika ($p=.02$) u frekvencijama odgovora u dve situacije. Ova dva nalaza idu u prilog pretpostavci da ponavljanje pitanja od strane odraslog ispitivača dovodi do promene odgovora ispitanika, što se ne dešava kada je ispitivač dete.

Zadaci na kojima je efekat faktora simetrične / asimetrične interakcije značajan (konzervacija dužine i prva transformacija u zadatku konzervacije količine tečnosti), pokazali su se kao dosta teški za decu iz ispitanog uzorka. U oba slučaja procenat netačnih odgovora iznosi više od 60%. Može se pretpostaviti da je delovanje socijalnog faktora, povezano sa težinim zadtaka, odnosno razvojnim nivoom deteta za dati pojam konzervacije.