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The Construction of Adult Child Intersubjectivity in Psychological Research and in School

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I. Introduction

Within the general theme of the present congress "social representations and the social bases of knowledge", we will concentrate on some aspects of the relationship between interpersonal communication and knowledge. We make the hypothesis that interpersonal relationships are very important both for the transmission of knowledge and the display of competence. In previous research (Perret-Clermont, 1980; Schubauer-Leoni, 1986a; Perret-Clermont & Schubauer-Leoni, 1989), we have had the opportunity to pay special attention to different modalities of social interactions and to their impact on cognitive development. We have also considered their impact on the aptitude to perform on psychological tests, and on the acquisition of elementary mathematical skills.

Obviously, the transmission of knowledge requires communication. Shared cognition can be accomplished only if both partners have common tools to display their cognition to each other. The common construction of understanding requires that, at some point, each partner makes the same assumptions about what is to be understood and the type of understanding that is to be developed.

In the case of the teaching situation, these processes are mysterious. Indeed, teaching requires from a "non-knower" that he comes to understand what the knower (in this case the teacher) is trying to say. By definition, there is something that he doesn't know yet. How can he then understand what the teacher refers to, if it is something he doesn't know? Of course the teacher accomodates his discourse in order to ensure the pupil grasps it. This accomodation often distorts the object of knowledge that the teacher is trying to transmit (Perret-Clermont et al., 1981). How is it possible, then, for the learner to really acquire the knowledge that he is meant to learn and not only a social representation of this knowledge?

When a psychologist wants to test the subject's competence, classically, he presents to him a test which is hoped to be "culture free" or even "school free" so as not to test memorized information but more complex cognitive functionings. It is difficult to imagine how a subject could understand in this case too, the tester's questions if they were completely culture free. If the one being tested (testee) wants to try to respond as adequately as possible to this test, he will certainly have to engage in some reflective activity in order to identify the meaning of the question and the expected possible answers (Light, 1986; Light & Perret-Clermont, 1989). This identification process relies on a series of cues whose meanings will be inferred from previous experience in similar settings. This means that the testee will refer to his previous cultural and social experience, particularly in the school situation, to decide how to behave (Elbers, 1986). Hence, the situation is not "culture free" and the tester is not only approaching the cognitive functioning of the subject, but also his capacity of generating answers as a function of his treatment of previous socio-cultural experience (Schubauer-Leoni et al., 1989).

Child psychologists have often considered that if a subject does not understand the other's discourse, it is simply because he is incompetent (e.g. because he lacks the prerequisite operative structures). This can be the case indeed, but it is not the only possible cause of failure. Communication might be failing between the adult and a competent child because they don't have the same frames of reference; they refer to different experiences; the meaning of the situation is different for one or the other; or, they are not involved in it for the

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same purposes (Mercer & Edwards, 1981; Hundeide, 1985). Of course, we do observe that adults and children succeed at times in communicating about knowledge in testing situations as well as in school classrooms! How do they proceed to reach such a mutual understanding? This is the centre of our present question: how is an intersubjectivity between the partners constructed within an encounter, and how do they come to talk about the same object of knowledge and even to build together a common understanding of a new object of discourse?

Often it is not obvious whether psychological research in teaching and in cognition is concerned with "knowledge" or with "competence". Some authors have distinguished competence as a more profound structure that allows for the learning of knowledge. But is it really so, and can "competence" be tested as such? Our various attempts to test "competence" have made us quite aware now that we can never test competence independently of the meaning of the situation (e. g. the subject matter) through which this competence is revealing itself. Competence is always displayed within an event with different persons, specific tasks, objects and concepts. For instance, in the classical piagetian operatory test, the child is not required to reason in the vacuum but to reason about quantities. He is tested, therefore, on his knowledge (or on his present capacity to elaborate a common knowledge) about a given concept: conservation of quantity. Similarly, elementary school mathematics require reasoning from the pupils, but this reasoning is intricately subordinated to a terminology, to written conventions, to established definitions of concepts, and to given algorithms that previously have been culturally and pedagogically elaborated. Success in elementary mathematics requires not only cognitive functioning but, simultaneously, a proper acculturation to this type of activity (Schubauer-Leoni & Perret-Clermont 1980, 1985; Carraher, 1989).

Indeed all these subject matters are pre-existing to particular adult-child encounter: in books; in films; in museums; and also in school curricula, in the textbooks, and in the teacher's mind. Knowledge can be described as a socio-historical construction emerging from social interactions. In specific conditions individuals come to coordinate their actions and thoughts and regulate them according to different social traditions and experiences (Mugny, 1985; Wertsch, 1985; Rubtsov, 1989; Rogoff, 1990; see also Latour, 1979, 1987, for a consideration of this perspective in scientific life). Knowledge is constructed through social interactions not only on the societal level, but also on the individual level. These social interactions develop in conditions that are not always isomorphic to those that were prevailing at the time of the original construction of a given knowledge. The social conditions under which an understanding becomes established as "knowledge" (or more specifically as "scientific knowledge") are very specific and the child is not in the same social situation. It is quite unlikely that he will make the same "discoveries" in the same way again. What, then, are the social interactions that are likely to permit children to become competent in the objects of knowledge that adults want them to master? And, is the distortion between the previous socio-historical conditions in which this knowledge has been elaborated and the present social condition in which subjects learn, likely to result in the fact that the learners don't really acquire the expected knowledge, but only some sets of responses which they learn as fit to the school situation? Of course we hope that this last assertion is too restrictive a hypothesis, but it needs to be considered!

This brings us to modifications of our initial research paradigm. We will try to present these modifications on theoretical level and to illustrate them with empirical data. First, we will reconsider the classical "*peer interactions*" studies and wonder whether they are really *peer* interactions. Then we will turn to the *content* of the interactions and include the *object of discourse* in the model. This will bring us to abandon the claim that competence can be tested independently of the meaning that the context has for the interlocutors.

II. Theoretical Considerations

1. The nature of "peer" interactions

Most often peer interactions are presented like dyadic processes (or tryadic processes when three children are involved). To understand

our data, we think that it is more useful to introduce in our model an understanding of the interaction situations in psychological research as situations that also involve *the adult*. Indeed, in nearly all the cases, the adult is the author of the setting in which the peers under observation interact. Of course, the modalities in which the adult's expectations affect the peers' interactions are likely to vary according to the way in which the adult-child and the child-child relationships are established. Figure 1 represents the case of symmetrical relationships between each partner.

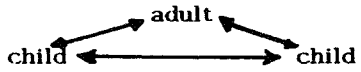

Figure 1.

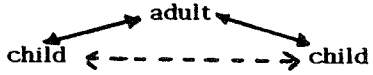

Figure 2.

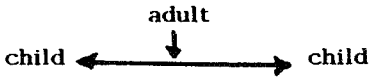

Figure 3.

Whereas in Figure 2 the strongest bounds are between the adult and the children who themselves interact only secondarily. In such a case, "peer" interaction is only a secondary event. Figure 3 represents another type of interaction in which the adult only tries to modify an interaction that takes place primarly between the children themselves. For most of our own studies, we have had experimenters who have tried to stimulate the dialogue between the peers and to keep out of their conversation in order to allow for a "horizontal" interaction between the children. Yet the adult is present and we might have underestimated his role.

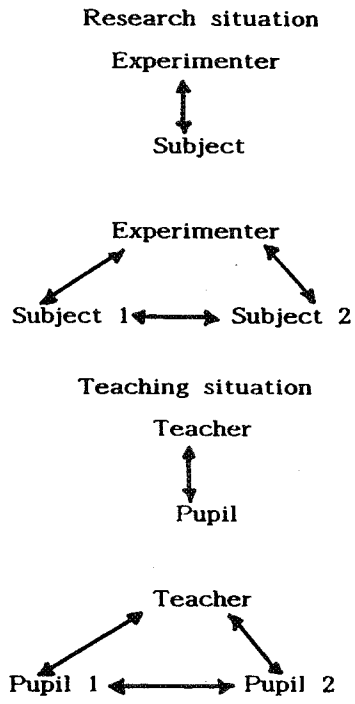

Figure 4.

If we consider more generally the context in which these interactions take place, it is possible to distinguish those that are in psychological settings (encounters between a psychologist and a child) from those in more explicitly socially regulated institutional settings such as schools (Figure 4). Obviously the implicitness of the communication process is different in the learning situation and in the testing situation. Not only are experimenters and teachers trained differently, but their intentions when they address the children are also different. The institutions to which they belong have norms for their behaviours. The "didactic contract" or the "experimental contract" that binds them to the children as partners have different presuppositions. Our hypothesis is that in both situations, but differently in each case, the adult patronizes the modalities of the interactions (between himself and the children but also among the children) because he is the initiator of the encounter and has a higher status.

The interlocutors do not always start their common discourse on the same premises and consequently misunderstandings do happen (Rommetveit, 1979). How are these misunderstandings dealt with? We have tried to transcribe detailed protocols of such interactions in order to follow the history of these misunderstandings and to observe how the children (who are from a status viewpoint in a "low" position) invent strategies to resolve these misunderstandings and how the adults (in the "high" position) react to expected, and also unforeseen behaviours. Obviously these social interactions are very rapid events and the interlocutors are not always conscious of the strategies that they develop in such conversational situations. When there is a communication breakdown it often looks like a "situation of emergency" and the partners immediately engage in "repair" transactions if they are aware of the breakdown. How is an intersubjectivity constructed between the partners in such circumstances?

2. What is the object of the common discourse in a testing or a learning situation? What is the status of the object of knowledge in these interactions?

Our model in figure 4 is bi-positional (the one asking and the one answering). When a teacher or an experimenter questions a child, the former is in the "high" position and this legitimizes the fact that he asks questions. The child is in the "low" social status and his role as a subject or as a pupil obliges him to answer. If he does not do so he will be declared incompetent, or uncapable to undergo the experiment. The adult questions the child about an "*object of knowledge*". The introduction of this object into the model (Figure 5) makes its triangular. It then becomes evident that the partners of the interaction have to relate to one another but also to the object of discourse within which the object of knowledge is nested.

This object of knowledge pre-exists to the event of the encounter even if its reality is different for each partner. For instance, when a piagetian psychologist tests a child about an operatory notion, he conducts the interview according to his professional training, his epistemological concerns, and has in mind the colleagues to whom he will later address the description of his results. The child does not have the same reference points and his motivations to pursue the relationship with this strangely behaving adult are quite different!

In the school context the situation is slightly different. In this case the adult explicitly tries to transmit some knowledge to the child and in order to succeed, he transforms this knowledge to render it learnable by the pupil (Perret-Clermont et al., 1981). The "didactic contract" requires from the teacher that he introduces difficulties only progressively in his discourse, but in this case, the adult is not the author of the knowledge he transmits. His own relationship to this knowledge is marked by his previous cultural experiences and training. In the school situation, the pupil is generally conscious of the importance of this knowledge that he has to learn. In the testing situation, the object is likely to be less clear for him: "What is this psychologist trying to do when he invites me to play 'a little game'?" In the school situation, the child can refer to some scripts, but in the testing situation only the adult is trained to the script and the subject has to find his way without specific training for this peculiar relationship. Nevertheless, we observe in both cases

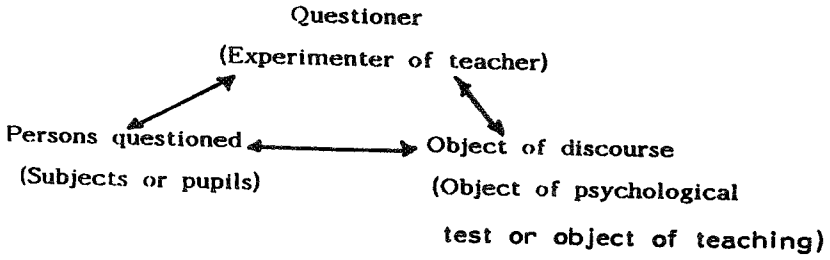

Figure 5.

that children and adults are likely to proceed with more or less successful adjustments, to enter into the expectations of their partners, and to reach some type of intersubjectivity about the object of discourse. If this is not the case, then the dialogue breaks down and sometimes the relationship breaks down too. The maintenance of the relationship is quite dependent on the adult's and children's desire to maintain their point of view, to pursue the interaction, to defend their status, to reach an agreement, etc. and, in order to do so, it also depends on their capacity to operate with adequate cognitive and social strategies.

III. Empirical Illustrations

1. The effects of the experimental context

To illustrate this interdigitation between cognitive and relational processes we will present the results of two experiments concerned with the declared role of the experimenter or the institutional context of the testing.

a) Experimenter as "teacher" or "playmate"

In the first experiment we varied the role of the experimenter during a classical piagetian test of conservation of number. In the first experimental condition, the adult presented herself to the child "as a teacher who wants to understand what he knows". In the second experimental condition, the same person introduced herself as "a lady who wants to play with children".

In the second experiment we varied the institutional location of the testing of the child's capacity to formulate an additive problem. In the first experimental condition, the testing was done by the experimenter in the classroom and required a written reponse from each child. In the second experiment, the task was exactly the same and the experimenter rigourously gave the same instructions to each subject. The testing was done outside the classroom in a "psychological setting" within a one-to-one relationship.

Ninety-nine children underwent this experiment.* They were all tested individually; 49 belonged to the last form of the infant school (age range: 4,11 to 6 years) and 50 to the first year of primary school (age range: 5,11 to 7,9 years). The subjects were tested on the conservation of number in two different experimental conditions as described above. Social class and sex were controlled. Tables 1 and 2 show the results.

The data shows the interdependence between the cognitive and the social dimensions

Table 1. Pupils of infant school (age 5–6 years). Number conservation test.

	Non-conservers	Intermediate	Conservers	Total
Tester in role of "teacher"	18	1	5	24
	75%	4%	21%	100%
Tester in role of "playmate"	16	1	8	25
	64%	4%	32%	100%

($z = 0.7$; $p<.24$, Jonckheere test)

Table 2. Pupils of primary school (age 6–7 years). Number conservation test.

	Non-conservers	Intermediate	Conservers	Total
Tester in role of "teacher"	4	1	20	25
	16%	4%	80%	100%
Tester in role of "playmate"	10	3	12	25
	40%	12%	48%	100%

* This data was compiled in the italian speaking part of Switzerland, Ticino, by Romana Poncioni (1989) whom we would like to thank here. The "Scuola materna" places ludic activities as central in its curriculum. This is not the case in other areas of Switzerland, in which case we would not expect the same results as those presented here.

of the situation. Of course there is an age effect: the students of primary school perform better in this test than the younger children of the infant school, but more interesting is the difference found in these two schools according to the experimental condition. Children of infant school are slightly better in the "playmate" condition (but this does not reach statistical significance: it is only a small trend) whereas children of primary school perform much better in the "teacher" condition.

We understand these results as showing the structuring effects of the social roles attributed to the partners: if these roles are congruent with the institutional context, then they sustain the interaction and give the subject a better opportunity to display competence. If they are paradoxal for the situation (e. g.: the adult becoming a "playmate" within a primary school situation), then this dissonance between the expected and the actual role creates confusion and renders the child less likely to perform according to the adult's expectation and to the best of his cognitive competence.

b) Testing in or out of the classroom

This other research (Schubauer-Leoni, 1990) was conducted with seventy-three 8–9 year old pupils belonging to the second form of primary school in Geneva. These pupils were asked to write their solutions to addition problems on a sheet of paper. These subjects had been pretested in the ordinary classroom situation by another experimenter in order to assess their competence in elementary arithmetics. The pupils were then randomly divided into two experimental conditions: face-to-face testing out of the classroom or collective testing in the classroom.

The written productions of these pupils were analysed in order to classify them according to the type of knowledge on which the pupils had relied. Three types appeared: the conventional arithmetical notation learned in the classroom, natural language, and drawings. Table 3 presents these results comparing the subjects who utilized the knowledge they had previously learned in school (conventional arithmetical notations) and the subjects who utilized non conventional means more idiosyncratically (language and drawing).

Obviously children do not "naturally" rely on the arithmetical writing that they learnt in the classroom. The data showed that the likelihood that they did rely on these pre-acquired symbolic tools was enhanced if they were tested in the classroom. They then used conventional writing more often, whereas only 3 out of 34 pupils did so when tested in a one-to-one situation out of the classroom.

Hence, the institutional location of the testing was not indifferent. The child developed an understanding of the meaning of the questions that were presented to him according to his understanding of the context. Even if the task seemed a classical scholastic task in the adult's opinion, it was not always considered as such by the child when he was interviewed by a stranger out of his usual school context.

2. *The social construction and the object of discourse*

In order to observe the progressive construction of a common object of discourse in these different contexts, we recorded and transcribed the adult's and child's discourses in different interactional settings. We varied the task and the role systems in which the interlocutors were placed: adult-child interaction in psychological settings (classical piagetian testing situations: Grossen, 1988; Grossen & Bell,

Table 3. Second form primary school pupils (age 8–9 years). Coding of additive operations.

	Conventional arithmetical notation	Drawing/natural language	Total
In the classroom	17	22	39
	44%	56%	100%
Ourside the classroom	3	31	34
	9%	91%	100%

($z = 3.04$; $p < .001$) (reproduced from Schubauer-Leoni, 1990)

1988; assessments of elementary mathematical skills: Schubauer-Leoni, 1986b; teacher-pupils interactions in the usual classroom context: Schubauer-Leoni, 1986a, 1990.

Observations of adult-child interactions during piagetian tests showed that from the beginning the partners didn't always share the same presuppositions about the task and the nature of the encounter. For instance, in the three main items of this test (equalization of the quantity of juice in the two identical glasses; pouring from one of these glasses into a different one; adult opposing the child's assertions with a countersuggestion) children were likely to pay attention to aspects that were not relevant for the experimenter, e. g. sometimes they looked for perfection (almost obsessionaly!) in equalizing the quantities of juice in the identical glasses; or they considered practical consequences of the fact of drinking (how much juice would be left in drunken glasses!); or they inquired on who was the "other child" to whom the experimenter referred in his countersuggestion, etc. The analysis of the interactions revealed in a number of cases, how the child managed little by little, to modify his understanding of the task in order to join into the experimenter's intentions and to share with him a common definition of the situation. This construction of an intersubjectivity was achieved through a series of subtle indications (often implicit and non voluntary) that the experimenter gave to the child about the expected answers. At the same time, the child could be seen involved in a number of strategies (including silence!) that implicitly obliged the experimenter to give him more signs as to how he was meant to behave. All this occured as if the test situation which in the experimenter's opinion, was supposed to be an assessment of the child's *state* of cognitive development, were in fact, a *learning situation* in which he learned how to respond adequately to the adult's representation of a task yet unknown to him. To achieve this goal, the subject relied on a number of cognitive as well as social strategies. This understanding of the testing situation as a learning situation was well illustrated by the subjects of our research who were experimenters with novice peers. Indeed they did not usually maintain the expected "neutrality" of a proper experimenter questioning a subject; but instead they were inclined behave like "little schoolmasters" in charge of teaching something to their mate in a classroom situation!

These observations clearly showed that the child's responses in a testing situation were not the direct expression of "competence" nor the direct result of a "micro-genesis" on the simple individual level, nor the "re-discovery" of a socio-historically constructed concept. His responses were the results of the construction of an intersubjectivity between himself and the experimenter. This joint understanding relied on cognitive as well as social skills within the present interaction between the partners.

In our research concerning a specific object of knowledge, mathematics, we have considered different interactions: a teacher who assessed his pupils' knowledge; or an experimenter who gave usual or unusual school exercises to children (Schubauer-Leoni, 1986a; Schubauer-Leoni & Perret-Clermont, 1988; Perret-Clermont et al., in preparation); or a child who had to role-play the teacher with another child. In all these cases we have observed that a tacit "didactic contract" ruled the teacher-child-mathematical knowledge interaction. But this tacit contract varied from one pupil to another according to the teacher's representations of his pupils and to the present history of this tripolar interaction. The teaching relationship appeared to be a very complex process, both cognitive and social, in which each interlocutor behaved according to his social position and status within the institutional setting, according also to his representations of what the knowledge was, and to his expectations of what his partner's representations were.

The role-playing experiments provided the opportunity to observe the children acting out their understanding of the pupil's and the teacher's roles and of the object of discourse. (They often had to go into a lot of trouble to enter into the debate or the task imposed by the experimenter). The role player in the teacher position often spent a lot of energy in strategies to consolidate his status: he chose a weak partner so as to make more evident his greater competence as a "teacher"; he asked the questions but answered them himself; he looked for support and approval from the adult even when the experimenter tried to keep out of the situation; and in some cases he abused the object of knowledge, teaching things that

he did not really know in order to save his face and have the last word as a teacher! In this position, to be "the one who knows" seemed more important than transmitting some knowledge or even pretending to do so.

IV. Conclusion

Experimental and clinical data on tester-testee or teacher-pupil interactions show that the learning of specific objects of knowledge cannot be reduced to the simple acquisition of specific cognitive competence. Both knowledge and cognitive competence are dependent on each interactor's representations of the role of his partner, of what knowledge is about, of the common task, and of the setting in which the encounter takes place. The shared representations are organized in terms of a tacit *social contract* and constitute a system of reciprocal expectations that regulates the exchanges between the partners and that allows for the establishment of a common object of discourse. This object is always partly original because it is a fruit of the present encounter, and never totally isomorphic to the socio-historically constructed "established" object of knowledge that serves as a reference to the adult. This does not mean that the child only learns social representations of knowledge and never knowledge itself, but that each actualization of a competence, of an understanding or a knowledge takes a different meaning according to the setting. It appears then, that the child's endeavour is not only to acquire knowledge but also to understand its meaning in the interactional context in which it is embedded.

Still, knowledge per se, is not always a goal for the children. To display competence is also a matter of negociating a social identity and a status within a structured social symbolic context in which he tries to situate himself.

Bibliography

Carraher, T.N. (1989). Negotiating the results of mathematical computations. *International Journal of Educational Research, 13*, 6, 637–646.

Elbers, E. (1986). Interaction and instruction in the conservation experiment. *European Journal of the Psychology of Education, 1*, 1, 77–89.

Grossen, M. (1988). *L'intersubjectivité en situation de test.* Cousset (Fribourg – CH): Delval.

Grossen, M. & Bell, N. (1988). Définition de la situation de test et élaboration d'une notion logique. In A.N. Perret-Clermont & M. Nicolet (Eds.), *Interagir et connaître.* Cousset (Fribourg – CH): Delval.

Hundeide, K. (1985). The tacit background of children's judgements. In J.V. Wertsch (Ed.), *Culture, communication and cognition.* Cambridge (Mass.): Cambridge University Press.

Latour, B. (1979). *Laboratory Life. Social construction of scientific facts.* London: Sage.

Latour, B. (1987). *Science in action: how to follow scientists and engineers through society.* Cambridge (Mass.): Harvard University Press.

Light, P. (1986). Context, conservation and conversation. In M. Richards & P. Light (Eds.), *Children of social worlds: Development in social context* (pp. 170–195). Cambridge (Mass.): Cambridge University Press.

Light, P.& Perret-Clermont, A.-N. (1989). Social context effects in learning and testing. In A. Gellatly, D. Rogers & J. A. Sloboda (Eds.), *Cognition and Social Worlds* (pp. 99–112). Oxford: Oxford Science Publication.

Mercer, N. & Edwards, D. (1981). Ground rules for mutual understanding. In N. Mercer (Ed.), *Language in school and community* (pp. 30–46). London: Edward Arnold.

Mugny, G. (Ed.). (1985). *Psychologie sociale du développement cognitif.* Bern: Peter Lang.

Perret-Clermont, A.-N. (1980). *Social interaction and cognitive development in children.* London: Academic Press.

Perret-Clermont, A.-N., Brun, J., Conne, F. & Schubauer-Leoni, M.L. (1981). Décontextualisation, recontextualisation du savoir dans l'enseignement des mathématiques à de jeunes élèves. *Interactions didactiques, 1*, Universities of Neuchâtel and of Geneva.

Perret-Clermont, A.-N., Grossen, M. & Schubauer-Leoni, M.L. (en préparation). La construction de l'intersubjectivité entre l'adulte et l'enfant dans des situations d'enseignement ou de recherche.

Perret-Clermont, A.-N. & Schubauer-Leoni, M.L. (1989). Social factors in learning and teaching: towards an integrative perspective. *International Journal of Educational Research, 13*, 6, 575–580.

Poncioni, R. (july 1989). *Il bambino e la matematica: un approcio psicosociologica del numero nell' ambito della scuola materna e della scuola elementare.* Mémoire de licence en Sciences de l'éducation, University of Geneva.

Rogoff, B. (1990). *Apprenticeship in thinking. Cognitive development in social context.* New York: Oxford University Press.

Rommetveit, R. (1979). On common codes and dynamic residuals in human communication. In R.M. Blakar & R. Rommetveit (Eds.), *Studies of language, thought and verbal communication.* London: Academic Press.

Rubtsov, V.V. (1989). Organization of joint actions as a factor of child psychological development. *International Journal of Educational Research, 13*, 6, 623–636.

Schubauer-Leoni, M.L. (november 1986a). *Maître – élèves – savoir: Analyse psychosociale du jeu et des enjeux de la relation didactique.* Doctoral dissertation, University of Geneva.

Schubauer-Leoni, M.L. (1986b). Le contrat didactique dans l'élaboration d'écritures symboliques par les élèves de 8–9 ans. *Interactions didactiques, 7*, Universities of Neuchâtel and Geneva.

Schubauer-Leoni, M.L. (1990). Ecritures additives en classe ou en dehors de la classe: une affaire de contexte. *Résonances, 6*, 16–18.

Schubauer-Leoni, M.L. & Perret-Clermont, A.-N. (1980). Interactions sociales et représentations symboliques dans le cadre de problèmes additifs. *Recherches en Didactique des Mathématiques, 1–3*, 297–350.

Schubauer-Leoni, M.L. & Perret-Clermont, A.-N. (1985). Interactions sociales dans l'apprentissage de connaissances mathématiques chez l'enfant. In G. Mugny (Ed.), *Psychologie sociale du développement cognitif* (pp. 225–250). Bern: Peter Lang.

Schubauer-Leoni, M.L. & Perret-Clermont, A.-N. (1988). Représentations et significations de savoirs scolaires. *European Journal of the Psychology of Education*, special issue, 55–62.

Schubauer-Leoni, M.L., Bell, N., Grossen, M. & Perret-Clermont, A.-N. (1989). Problems in assessments of learning: the social construction of questions and answers in the scholastic context. *International Journal of Educational Research, 13*, 6, 671–683.

Wertsch, J.V. (Ed.) (1985). *Culture, communication and Cognition: Vygotskian perspectives*, Cambridge (Mass.): University Press.