


Rich conversation but vague theory

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Siegal calls our attention to conversation as a domain of knowledge and to its influence on children’s cognitive development. His attempt to integrate theoretically data from several developmental domains (conservation, contamination sensitivity, suggestibility, and theories of mind) is noteworthy; his rich view of the social interactive context is commendable; and his statement that what develops in children’s cognition is an interplay between conversational and conceptual processes is indisputable. Siegal’s ultimate goal, however, is far more ambitious, for he wants to show that the accumulating body of evidence from his research on cognition and conversation challenges the core of the Piagetian paradigm as well as some aspects of its defense by Lourenço and Machado (1996). Unfortunately, here Siegal claims more than he is entitled to. As we shall see, his theory is vague, his reasoning is circular, his methodology is equivocal, and his arguments are biased. In the end, Siegal’s ideas and findings challenge more his narrow reading of Piaget’s theory than the theory itself.

The most serious problem with Siegal’s account is that it assumes that children fail to give correct responses because some conversational rule was violated but it does not specify clear criteria to ascertain whether a rule was effectively violated; it does not assess rule violation independently of the behavior to be explained; and it does not explain how the violation of the rule leads to the child’s specific answers. That children may misunderstand, be confused, or in the extreme mystified with the experimenter’s questions is obviously possible. However, Siegal provides no evidence that that was indeed the case. In the absence of clear criteria for rule violation, Siegal can only guess – just count the number of times he says that children may assume, may interpret, may respond, may etc. Furthermore, to invoke a verbal misunderstanding to explain a child’s answers requires, at a minimum, that the evidence for the misunderstanding be independent of the answers themselves, lest our reasoning be plainly circular. Siegal provides no such evidence. Hence, his presupposition

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that young children engage in private and complex monologues (e.g. 'I am to pick the longer row as having more, or else an adult would not have gone to the trouble of asking me a second time whether that row has more') remains just that, his presupposition. But let us pretend that Siegal had somehow established rule violation on the basis of clear and independent criteria. His account would still be unacceptable, though, because it does not derive the content and form of pre-operational answers from the putative misunderstandings, confusions and mystification. The reader may search for the logic to move from a violation of the quantity maxim, for example, to the specifics of the child’s answer and the content of supporting arguments; he may search, but he will not find.

Siegal’s conservation tasks are also equivocal. First, because children (or puppets) cannot give ‘nonconservation’ responses and yet be consistent across questions, the task confounds response consistency and conservation, only one of which is central to Piaget’s theory. Siegal (1997) seems fully aware of this problem, for he notes ‘that no necessary connection exists between children’s own answers on conservation tasks and their attributions for others’ responses’ (p. 23). Yet, that has not refrained him from claiming that his findings are highly damaging to Piagetian theory. Second, Siegal’s experiments on conservation (e.g. Siegal, Waters & Dinwiddy, 1988) are permeated by conversational ambiguity, for they generally start by asking young children to indicate which of two rows ‘has more elements’ when in fact there is the same number in each row. Parenthetically, this ambiguity not only violates maxims of quality, relation and manner, but is also at odds with Siegal’s intention to re(create) an ambiguity-free conversational act.

Siegal’s arguments are at times uninformed and unbalanced, and thus biased. He fails to recognize that (a) the literature on moral development is replete with examples in which young children maintain their initial judgments and justifications under repeated questioning; (b) many adults fail formal tasks, and yet they are experienced conversationalists; (c) to appeal to a clash of conversational rules in many Piagetian tasks (e.g. imagery tasks) defies imagination; (d) the early competence literature used in the paper to criticize Piaget actually supports his theory that cognition is developmentally prior to language; (e) Chapman was able to integrate the operative and communicative components of interaction within a Piagetian perspective (Carpendale, McBride & Chapman, 1996); and (f) Siegal’s claim that what develops in children’s cognition is an interplay of both conversational and cognitive is stated but not documented nor elaborated.

Having criticized Piaget for underestimating young children’s logical abilities and endowing them with substantial conversational wizardry, Siegal and the authors he cites in his support (e.g. McGarrigle & Donaldson, 1975) have not realized that they may be underestimating young children’s conversational abilities and endowing them with substantial cognitive wizardry. For example, as Light, Buckingham and Robbins (1979) remarked, if ‘failures in the standard condition [i.e. two-questions condition] are seen as “false negative”, non-conservation arising from the implicit message: this transformation is important, contained in the tester’s action’, then should we not regard ‘successes in the [one-question] condition as “false positives”, conservation arising from the implicit message: this transformation is irrelevant, contained in the tester’s action?’ (pp. 309–310). Siegal’s conclusions are based on the tacit assumption that because the one-question condition generates a higher proportion of conservation judgments it must be a more sensitive index of the child’s competence. Unfortunately, he does not tell us why that should be the case.

In summary, Siegal embraces what we call the conventional or standard interpretation of Piaget’s theory, an interpretation that, among other things, fails to recognize the differences between age of acquisition and sequence of transformation, and between true knowledge and necessary knowledge. Having relied excessively on tabular asterisks at the expense of theoretical risks, Siegal has also failed to recognize that very often in psychology ‘problem and method pass one another by’ (Wittgenstein, 1958, p. 232). We certainly agree that Piaget’s theory must be transformed to fit a wider framework in which there is room for findings it did not predict. But we should also remember that if Einstein was able to improve upon Newton it was only because he knew Newton’s theory all too well.

References


Necessary knowledge in number conservation

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Michael Siegal’s paper made me think that I should ask him three questions:

* Is necessary knowledge required in Piaget’s account of conservation?
* Is truth conflated with necessity in Siegal’s argument?
* Is justification required for modal judgment?

My answer to each question is ‘Yes’ in contrast to his ‘No’.

Is necessary knowledge required in Piaget’s account of conservation?

Piaget told us what his central problem is:

The emergence of logical necessity constitutes the central problem in the psychogenesis of logical structures. (Piaget, 1967, p. 391)

His central problem is to explain the development of necessary knowledge. If you deny this, how do you explain its re-statement over 60 years by Piaget (1928, p. 234; 1950, p. 23; 1986, p. 235; 1995, pp. 51–3; Piaget & Garcia, 1989, p. 15); or in others’ commentary (Murray, 1981; Campbell & Bickhard, 1986; Kitchener, 1986; Chapman, 1988; Moshman, 1990; Beilin, 1992; Bickhard & Terveen, 1995; Lourenço & Machado, 1996); or in mine (Smith, 1993, p. 1; 1996a, p. 503; 1997a, p. 224; 1997b)?

Piaget’s central problem requires two steps. One step has already been made in modal logic (Sainsbury, 1991; Marcus, 1993). Necessary knowledge is modal knowledge which has a standard definition:

(1) \( \Box p = \neg \Diamond \neg p \)  
(read: \( p \) is necessary just in case not-\( p \) is not possible)

A proposition is necessary just in case its negation is impossible (Smith, 1997a). A consequence of (1) is that

(2) \( p \rightarrow \Box p \)  
(read: \( p \) entails \( p \) is necessary)

is false. Relation (2) expresses a modal fallacy since not all truths are necessities. The second step has yet to be made in psychology. The world is devoid of logical necessity (Wittgenstein, 1961, section 6.37). Experience is the source of empirical truth. But a necessary truth (which could not be otherwise) and an empirical truth (which always could be otherwise) are fundamentally different. Even so, a necessary truth can *in principle* be learned during experience (Leibniz, 1981). What these philosophers omitted to include was an account of how such learning *in fact* occurs. Piaget’s insight was to realize that this spectacular omission could be remedied (Smith, 1993, pp. 7, 36).

Two categories of necessary knowledge fit number conservation. All mathematical truths are necessities and all valid deductions are necessities (Smith, 1997a). Number conservation is important because it is a paradigm example of Piaget’s central problem of the construction of necessary knowledge from empirical learning (Smith, 1993, pp. 1, 90). This problem cries out for explanation, whereas in Siegal’s argument it is instead explained away.

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