

THE ASSESSMENT AND CONTROL OF MEMORY ACCURACY

Commentary on Memon and Stevenage on Witness-Memory

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ABSTRACT

Memon and Stevenage call for a more critical evaluation of the effectiveness of the Cognitive Interview for questioning witnesses. In this commentary, we address some general issues regarding the assessment of memory performance that emerge from their analysis. Our comments focus on (a) the need for a careful choice of memory measures and (b) the crucial role of monitoring and control processes in the strategic regulation of memory accuracy.

I. INTRODUCTION

1. There have been many efforts in recent years directed toward improving our methods of eliciting information from witnesses, and the Cognitive Interview (CI) is perhaps the most prominent example of the fruits of such efforts (Fisher & Geiselman, 1992). In their target article, Memon and Stevenage (M & S) call for a more critical evaluation of the effectiveness of the CI, with the aim of achieving a better understanding of both its strengths and limitations. Clearly, such an evaluation is desirable, whether it is directed toward the CI or any other technique or research program.

2. In this commentary, we wish to clarify several points that emerge from M & S's analysis. Our comments are not directed toward their evaluation of the CI per se, but rather to some more general issues regarding the assessment of memory performance. These concern (a) the need for a careful choice of memory measures and (b) the role of monitoring and control processes in the strategic regulation of memory accuracy.

II. ASSESSING MEMORY ACCURACY

3. M & S point out that the comparison of memory performance across different studies may be complicated by the use of different memory measures (sect. VII). Recently (Koriat & Goldsmith, 1994, in press a), we distinguished between two general types of measures, (a) input-bound quantity-based measures that tap the amount of correct information (or percent of the input) reproduced, and (b) output-bound accuracy-based measures that tap the faithfulness or dependability of the information that is reported (i.e., of the memory output). Traditional memory research, guided by a storehouse conception of memory has favored quantity-based measures, whereas more naturalistic memory research (including psycholegal research), guided by a correspondence conception of memory, has tended toward accuracy-based measures. In our work, we showed how a failure to acknowledge the basic difference between quantity-based and accuracy-based measures could underlie some apparent discrepancies in comparing empirical findings across laboratory and naturalistic research contexts (Koriat & Goldsmith, 1994; and see sect. 3.2 below).

4. M & S cite our work as implying that in a forensic context it is the accuracy of reported information rather than its quantity that is crucial (parag. 29). This point should perhaps be clarified. Clearly the quantity of correct information that can be reported is important in forensic as well as other memory contexts. Nevertheless, in many situations the accuracy of the information may be no less critical, and perhaps even more critical, than its amount. The relative importance of these two properties cannot be decided on theoretical or apriori grounds, but only on the basis of functional considerations pertaining to the situation at hand (Koriat & Goldsmith, in press a, c). Thus, for instance, as M & S point out (parag. 30), in the initial stages of an investigation the quantity measure might be given priority, whereas in evaluating testimony on the witness stand, accuracy should be of primary concern.

5. M & S also note that there are different possible treatments of memory accuracy, or alternatively, memory error (parags. 24 and 29). In some cases, researchers assess accuracy by counting the absolute number of errors, whereas in other cases it is the proportion of erroneous statements that is indexed. This choice is not arbitrary, as can be illustrated by a simple example: Assume that a control group reports an average of ten items of information, of which two are incorrect. Assume further that an experimental group, let's say those receiving the CI, reports an average of 15 items of information, of which three are incorrect. Was the CI effective in improving memory performance in this case? On the one hand, the CI elicited 50% more correct information than the control method (12 vs. 8 items), while maintaining an equivalent accuracy rate (80% correct in both cases). This seems admirable, and indeed, reflects the general pattern of empirical findings supporting the method. On the other hand, however, looking at accuracy another way, the CI actually produced more errors, fully 50% more, than the control method.

6. So, was the CI effective? Again, there is no way to answer that question in the abstract. As a conditional probability, the accuracy rate reflects the dependability of the reported information, that is, the extent to which each reported item can be counted on to be correct (Koriat & Goldsmith, 1994, in press a). Hence, an equal accuracy rate implies equal dependability, regardless of the absolute number of errors (and correct statements).

Nevertheless, in a situation in which each erroneously reported fact can have catastrophic consequences, we might actually prefer less reported information and fewer errors. Of course, such a consideration could be taken to an absurd extreme--the "best" memory performance in such a case would be obtained if the witness reported nothing at all! Thus, without additional qualitative information regarding the criticality of specific memory errors, it would seem that increasing the quantity of reported information while maintaining an equivalent accurate rate should generally be considered a desirable achievement.

III. THE STRATEGIC CONTROL OF MEMORY REPORTING

7. Our second comment concerns the strategic control of memory reporting. M & S state that an important component of both the CI and the structured interview (SI) are "techniques to facilitate communication," including "rapport building which is designed to increase transfer of control from the interviewer to the witness," and the use of "free report" rather than a "predefined" questioning protocol (parag. 2). Subsequently, they raise the issue of "whether the CI advantage could be attributed to the cognitive retrieval techniques at all, or whether it may be the result of a facilitation of communication" (parag. 19).

8. M & S's discussion highlights the role of subject control over memory reporting as an important determinant of memory performance. It is necessary, however, to distinguish two different aspects of such control (Koriat & Goldsmith, 1994) that are often confounded in questioning techniques such as those recommended in the Memorandum of Good Practice described in parag. 17 (see also Hilgard & Loftus, 1979). The first aspect is "report option" (free vs. forced) and the second is "test format" (production vs. selection). In free-report testing, the subject is allowed to decide which items of information to report and which to withhold, whereas in forced-report testing the subject is pressured or required to provide an answer to each question. With regard to test format, in production (open-ended or recall) questioning the subject produces his or her own answers, whereas in selection (specific questioning or recognition) testing the subject chooses a response from a limited set provided by the interrogator. When these two factors are orthogonally manipulated, they can be seen to have differential effects on quantity-based and accuracy-based measures of memory performance (Koriat & Goldsmith, 1994): Memory quantity varies primarily with test format (selection superior to production), whereas memory accuracy depends primarily on report option (free more accurate than forced). Thus, in attempting to determine the source of the CI advantage, the contributions of these two factors must be separated.

9. Focusing on how rememberers utilize report option, we recently put forward a model of the metamemory processes of monitoring and control that underlie the strategic regulation of memory performance in free-report situations (Koriat & Goldsmith, in press b). Basically, the model implies a separation between three components of memory performance: (a) retention--the amount of information that can be retrieved, (b) monitoring effectiveness--the extent to which the subject's confidence distinguishes between correct and incorrect information, and (c) control--the setting of the response criterion (level of confidence), which determines whether an answer will be volunteered or withheld. Most previous treatments, borrowing from signal-detection theory (see parag. 25), have focused on components (a) and (c) alone,

leading to the well-known dynamic of a quantity-accuracy tradeoff (e.g., Klatzky & Erdelyi, 1985). Our work, however, shows that both the quantity costs and accuracy benefits of subject control depend heavily on monitoring effectiveness, that is, on the effectiveness of the screening process.

10. Thus, although we agree with M & S regarding the need to examine the possible contribution of differences in subject control (i.e., response criterion) to observed CI effects, we emphasize that monitoring effectiveness must be considered as well. For this purpose, our recently proposed QAP (quantity-accuracy profile) assessment methodology, which is designed to isolate the effects of an experimental manipulation on retention, monitoring, and control (Koriat & Goldsmith, in press b), might perhaps prove useful (though it would have to be adapted so as not to be intrusive to the CI techniques).

11. We should also note that the role of monitoring processes calls into question M & S's conclusion that "it is inevitable that a technique which produces significant gains in information will produce an increase in errors and intrusions" (parag. 32). Instead, our work suggests that it may be possible, by improving monitoring effectiveness, to increase both the quantity and the accuracy of reported information. We would encourage more efforts in this direction.

12. Finally, the use of the term "communicational" to denote the processes involved in the control of memory reporting (in contrast to the term "cognitive," which is used to denote retrieval processes; e.g., parags. 2, 12, 19, 20) is perhaps unfortunate. Although the term is useful in emphasizing the social-psychological context of these processes, it seems to miss the intrinsic role played by self-directed monitoring and control processes in the strategic regulation of memory performance. Moreover, the metacognitive decisions made during memory reporting may not only serve to communicate one's memories to others, but may also constitute covert attributions regarding what a person actually believes he or she "remembers" (cf. Jacoby, Kelley, & Dywan, 1989; and for some interesting examples of such attributions, see Newby & Ross, in press). We feel that the term "metamemory" is more appropriate in capturing these various functions.

IV. CONCLUSIONS

13. Clearly, our remarks here pertain to only a small part of M & S's argument, and we have not taken up the issue of the effectiveness of the CI per se. Our commentary has two general take-home messages: First, great care must be taken in choosing (or perhaps developing) appropriate memory measures that conform to specific research goals. Second, the strategic regulation of memory reporting poses some important challenges for both theoretical and applied memory research, challenges that have only begun to be addressed.

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