

Effects of an early interruption and note taking on listening accuracy and decision making in the interview

ALLEN J. SCHUH

California State University, Hayward, California 94542

Employment interviewers ($N = 102$) and managers ($N = 128$) viewed a videotaped interview of an MBA applicant for a management position. Participants were assigned to the cells of a 2 by 2 by 2 factorial design with two levels of participants (interviewer, manager), two levels of concurrent note taking (required, forbidden), and two levels of interruption early in the interview (interrupted, control). The dependent variables were the score on a 25-item listening accuracy test based on the transcript of the interview, and the overall suitability evaluation of the applicant by the professionals. Results indicated no significant difference between participant groups and no significant effects on overall suitability judgments. Both the interruption and note taking had a significant impact on listening accuracy. The highest rate of accuracy (79%) was for the required note taking and no-interruption condition.

Little is known about the accuracy of the information interviewers use when making overall suitability judgments. One recent study by Schuh (1978) showed that levels of accuracy range considerably even from a 12-min interview. Listening accuracy has been a neglected issue in interview research.

Although the practice of note taking for study purposes by students is widespread, experimental evidence with respect to the efficacy of note taking for employment interviewers is not available. Even with student populations, the experimental evidence is not without confusion. An early work (Crawford, 1925) showed that note takers had higher immediate and long-term recall scores than non-note takers. A recent work (Howe, 1970) reported that the probability of recalling an item that occurred in the learner's notes was about seven times that of items not in the notes. The results do not always favor the note taker, however. Ash and Carlton (1953) reported significantly lower recall scores for note takers than for non-note takers during a film presentation. If there is an advantage in note taking, it is that the learners, in the process of taking the notes, "encode" the information by reorganizing the input data and putting it in their own words (Fisher & Harris, 1973), and the sensory motor process of recording the information also serves as an opportunity for rehearsal (Aiken, Thomas, & Shennum, 1975).

On the negative side, the process of note taking may interfere with memory. It has been known for quite some time that when no activity at all is demanded from a subject during a retention interval, very little forgetting occurs (Brown, 1958). Primary memory

has a limited capacity and anything that takes up part of this capacity interferes with its contents (Kintsch, 1970). Thus, even though note taking is done with the intention of aiding recall, while the information is being encoded, the sensory motor task of note taking will occupy part of primary memory and will interfere with incoming activity traces. The event of note taking may even prevent a stable structural memory trace from being established (Kintsch, 1970). Clues to the effects of note taking would be found in the item accuracy rates for different experimental conditions (Norman, 1969).

The effects of an interruption during an interview on later recall of the interview's content is not known. Gating effects (Webster, 1964) or perceptual narrowing (Bruner, 1957) are well established in the interviewing literature. The gating effects tend to be complete, on the average, by about 3.5 min into the interview. One might assume that an interruption that occurs about the time gating is being completed would have a potentially dramatic effect. Late in the interview, the effects of an interruption, even of the same type and magnitude, might be trivial. If one wishes to see the greatest impact of an interruption on decision making, the interruption should be timed to coincide with the completion of the gating phenomenon.

Two highly verbal professional populations were chosen for study. Professional interviewers make employment decisions frequently and so differ in this respect from managers who rarely make employment decisions. Also, the interviewer typically makes hiring decisions for others, while the managers make decisions that impact themselves directly. It is conceivable that managers who have had to live with their mistakes might be better listeners in interviews where their decisions are being sought regarding an applicant.

Requests for reprints should be sent to Allen J. Schuh, Department of Management Sciences, California State University, Hayward, California 94542.

Because of the field's general ignorance on the topic of interview accuracy on interview decision making and the equivocal nature of the research on note taking, it is thought best to allow all hypotheses to assume the null form.

METHOD

Subjects

There were two groups of participants: professional employment interviewers ($N = 102$) in the San Francisco Bay area, and branch managers ($N = 128$) of banks in the northeastern United States. The interviewers were enrolled in a management development program focusing on the interview and performance evaluation. The managers were enrolled in a management development program to review general management skills.

Apparatus

The apparatus consisted of a Sony tape deck with a 21-in. Stechel-Carlson monitor. The audio-video tape used in this study was a 12-min broadcast-quality employment interview of a 26-year-old male dressed casually and seated across from an off-camera interviewer. The tape was played to the audience at a comfortable listening level.

Procedure

Participants were divided into treatment conditions where they were shown only one of two possible audio-video tapes: the tape in which the interview is interrupted from 3 min 50 sec to 4 min 30 sec by a secretary giving the interviewer a letter to sign and then leaving the room, or the same tape as above but with the interruption removed by splicing. Except for a single roll of the screen at the splice, it was not evident that the tape has been altered from the original.

The following instructions were printed on the top sheet of the pack of evaluation materials issued to all of the participants: "The applicant's name is Mike Johnson. Previous experience has been with a large retailing establishment and several other organizations. He is completing the requirements for the MBA and is applying for a general management position."

The "notes" group received the following additional instructions: "You will be required to take notes during the video-tape presentation. Taking notes is a method of learning. Learning, in turn, leads to better decisions. Thus, note taking is required to make the best decision."

The "no-notes" group received the following additional instructions: "You will not take notes during the video-tape presentation. Note taking is distracting. This distraction could lead to a distortion of the data presented. Therefore, in the interests of clarity, do not take notes."

After general introductory remarks by the experimenter, the equipment was operated and the interview was seen by the participants. The interview focused on the applicant's prior work history and educational background. After viewing the interview, the participants were given 5 min to complete an evaluation form and turn it in to the experimenter. The participants were required to make an overall suitability judgment of whether to go further or to stop employment negotiations. This is the same dichotomous decision that these professionals were familiar with in their evaluations outside the experimental setting. When the evaluations and all other notes and materials were collected, the participants were handed a 25-item multiple-choice test based on a transcript of the interview. Participants had to take the test from memory, without the aid of notes taken during the interview. No indication had been given that such an examination would be given. The total time for the exercise was less than 30 min.

The participants were run in groups of about 25. Within groups of interviewers and managers, participants were divided into interruption and no-interruption conditions and each other person within these conditions was assigned to notes or no-notes duties. Thus, the assignment of participants to conditions represented a complete 2 by 2 factorial design.

RESULTS

Employment Recommendation

An analysis of variance (ANOVA) for the unweighted means and unequal cell frequencies (Winer, 1962) was conducted on the pass-fail decisions. Results indicated that none of the effects was significant.

Accuracy

An ANOVA for unweighted means and unequal cell frequencies (Winer, 1962) was conducted on the accuracy test scores. Results indicated that the interruption [$F(1,222) = 5.792, p < .05, \omega^2 = .024$] and note taking [$F(1,222) = 5.216, p < .05, \omega^2 = .022$] had a significant effect on accuracy. The other main effect (participants) and all interactions were not significant. The two participant groups were pooled for a calculation of total accuracy scores for the two subgroups of each of the two significant effects. The mean for the no-interruption and notes group was 19.859 (79%); that for the interruption and notes group was 18.500 (74%); for the no-interruption and no-notes group, the mean was 18.583 (74%); and the mean for the interruption and no-notes group was 18.000 (72%). Thus, the no-interruption and notes condition scored 10.32% more accurate than the interruption and no-notes group. The Kuder-Richardson Formula 8 reliability estimate for the test was .66.

A comparison was made of item accuracy rates between the notes and no-notes conditions for the no-interruption group. It was found that, prior to the time of the interruption, the two groups were not statistically different, with six items of higher accuracy for the notes group and two items of higher accuracy for the no-notes group. From Item 9 through Item 25, the notes group had a higher accuracy rate (13 of the 17 opportunities, $p < .05$) with a binomial test (Siegel, 1956).

A comparison was made of the item accuracy rates between the notes and no-notes conditions for the interruption group. It was found that, prior to the interruption, the two groups had about the same item accuracy rates (each was higher than the other on four of the eight items), but after the interruption, the no-notes group had a significantly lower item accuracy rate (12 of 17 opportunities with one item tied, $p < .05$) with a binomial test (Siegel, 1956).

Thus, for the no-notes group, listening accuracy declined after the interruption. The participants appeared to have listened less after they had been interrupted. One might conclude they had consolidated

the preinterruption material, which then, by proactive inhibition, prevented retention of later material. However, the same decrease in listening accuracy also occurred with the no-notes group that was not interrupted. The no-notes groups were at a disadvantage whether they were interrupted or not.

DISCUSSION

The most significant finding of this study was that professionals who were tested on a representative work sample of employment interviewing had more accurate recall of the interview's content when the setting was free of interruption and they were required to take notes. The practical advantage is of the order of 10% increased accuracy. In actual organizational settings, the professionals would have been allowed to retain their notes for rehearsal. Thus, the 10% increase in accuracy might be seen as a lower bound estimate for what the beneficial effects of the note taking and interruption-free environment would be during actual applicant screening.

The beneficial effects of note taking held whether the groups were interrupted or not. A pairwise comparison was made between the notes and no-notes groups within the interruption and no-interruption conditions. It was found that those taking notes had higher item accuracy rates whether they had been interrupted or not.

In this study, the positive effects of concurrent note taking, which psychologically is the process of encoding with brief rehearsal, outweighed the added drain on primary memory of the sensory motor task of writing the encoded material. Possibly, the disparity between the Ash and Carlton (1953) study using a film and the present study with videotape is the difference in pace and equivocality of the information that was transmitted to the learners. One might assume that a videotape of an employment interview would be processed by the learners differently than a scripted film containing a relatively large amount of new information. It is unlikely that the professionals in this study heard anything that they had not heard before in their work routine.

Not finding a difference between the two professional groups in retained accuracy of information in the interview is probably a reasonable finding, because they both have a highly verbal work environment. However, it could have been expected that the groups would be different in decision making. Whether the results would have been different in an actual employment setting is not known.

It would appear that the implications to practice are quite

clear. In general, managers and interviewers can be expected to do about as well in listening accuracy while screening applicants for employment. The professionals should be encouraged to take notes while interviewing, and the environment should be free of disturbances. However, even more attention needs to be given to the level of listening accuracy of professionals and especially to possibilities for improving it.

Future research should investigate the possibility of training professionals in how to take better notes and how to listen better. The effects of interruptions at different points in the interview also warrant further attention.

REFERENCES

- AIKEN, E. G., THOMAS, G. S., & SHENUM, W. A. Memory for a lecture: Effects of notes, lecture rate, and informational density. *Journal of Educational Psychology*, 1975, *67*, 439-444.
- ASH, P., & CARLTON, B. J. The value of note-taking during film learning. *British Journal of Educational Psychology*, 1953, *23*, 121-125.
- BROWN, J. A. Some tests of the decay theory of immediate memory. *Quarterly Journal of Experimental Psychology*, 1958, *10*, 12-21.
- BRUNER, J. S. On perceptual readiness. *Psychological Review*, 1957, *64*, 123-152.
- CRAWFORD, C. C. Some experimental studies on the results of college note-taking. *Journal of Educational Research*, 1925, *12*, 379-386.
- FISHER, J. L., & HARRIS, M. B. Effect of note taking and review on recall. *Journal of Educational Psychology*, 1973, *65*, 321-325.
- HOWE, J. J. Using student's notes to examine the role of the individual learner in acquiring meaningful subject matter. *Journal of Educational Research*, 1970, *64*, 61-63.
- KINTSCH, W. *Learning, memory, and conceptual processes*. New York: Wiley, 1970.
- NORMAN, D. A. *Memory and attention: An introduction to human information processing*. New York: Wiley, 1969.
- SCHUH, A. J. Predicting listening accuracy in the interview with training scores. *Bulletin of the Psychonomic Society*, 1978, *11*, 281-282.
- SIEGEL, S. *Nonparametric statistics for the behavioral sciences*. New York: McGraw-Hill, 1956.
- WEBSTER, E. C. *Decision making in the employment interview*. Montreal: Eagle, 1964.
- WINER, B. J. *Statistical principles in experimental design*. New York: McGraw-Hill, 1962.

(Received for publication July 2, 1978.)