REACTIVITY TO HOME OBSERVATION: A COMPARISON
OF AUDIO RECORDED BEHAVIOR WITH OBSERVERS
PRESENT OR ABSENT¹

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The study compared the behavior of family members at home as recorded by audiotape recordings in two conditions: with an observer present or absent. Behavioral differences were expected as a function of differential reactivity to these observational procedures, but none was found, and there was no evidence of adaptation effects in either condition. In general, significant positive correlations were obtained between the rates of recorded behavior in both situations. The implications of these findings for the development of nonreactive observation procedures were discussed.

DESCRIPTORS: behavioral recording, home observations, observer, reactivity to observer

Reactivity to observation is one of the most widely recognized methodological concerns for those employing naturalistic observation. Because the object of direct observation is to yield a representative sample of subjects' naturally occurring behavior, investigators are usually concerned that the presence of an observer may influence subjects' behavior. Such concerns are particularly disturbing when a researcher seeks to obtain behavioral data in homes. In this constricted private setting, the intrusive effects of a live observer are especially apparent. For these reasons, several investigators have pioneered development of mechanical recording devices for obtaining naturalistic behavioral data (e.g., Bernal, Gibson, William, and Pesses, 1971; Hoshiko and Holloway, 1968; Nordquist, 1971; Purcell and Brady, 1965; Soskin and John, 1963).

The present study sought to determine whether such mechanical recording procedures used alone would yield less reactive, or at least different, data than those obtained with an ob-

server present. In short, this study compared the behavior of children and parents at home as recorded by audiotape recordings in two conditions: with an observer present and with the observer absent. Differences in the behavior of individuals were expected between these two conditions, and these differences were *assumed* to reflect the subjects' differential reactivity.

Several extended reviews of the reactivity question are available (e.g., Johnson and Bolstad, 1973; White, *unpublished*; Wiggins, 1973). As the present authors have pointed out (Johnson and Bolstad, 1973), reactivity has been studied with two basic paradigms (a) by the recording of behavioral changes over time, and (b) by comparisons of data collected by differing methods that presumably differ in obtrusiveness. As White (*unpublished*) concluded, the presence or absence of reactivity or observer effects appears to depend upon many factors, including the setting employed, the intrusiveness of the observation procedures, the research paradigm employed, and the dependent variable examined.

Because most audio recording procedures seem to be less obtrusive than procedures involving a live observer, it is logical to suspect that they may be less reactive. In spite of the growing use of such procedures however, there

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has as yet been no adequately controlled test of this assumption. Soskin and John (1963) and Purcell and Brady (1965) noted that their subjects' references to being observed disappeared after one or two days. These findings only suggest rapid adaptation, however, and do not prove either adaptation or the lack of reactive effects. Although Bernal *et al.* (1971) compared their observer-recorded and tape-recorded data, their study was not designed to examine the issue of reactivity, as such as examination was confounded by the data source (*i.e.*, observer-recorded data or data coded from the audio recording). Similarly, Surratt, Ulrich, and Hawkins (1969) noted that follow-up data collected surreptitiously via closed-circuit television differed from data collected by the observer who had been involved in prior interventions. The follow-up data were more favorable with the observer present. As the authors noted, however, the observer in this study had been a dispenser of reinforcers during the interventions and would therefore be far more likely to acquire a discriminative function than observers not involved directly or indirectly in intervention programs.

The present study employed both paradigms outlined above to study reactive effects by comparing subjects' behavior in two conditions presumed to differ in the obtrusiveness of the observation procedures (observer present or absent) and further examined behavior changes over time.

As outlined elsewhere (Johnson and Bolstad, 1973), audio recording procedures have several additional advantages over direct observation. First, such procedures attenuate the problem of observer bias by limiting subject-observer contact. Second, these procedures allow for completely random checks of observer agreement, thereby eliminating the inflated observer agreement estimates produced by observers who are aware of periodic agreement checks, as demonstrated by Reid (1970) and Taplin and Reid (1972). Finally, these procedures also appear to provide greater convenience to all involved

and are less costly than direct observation. All of these advantages were realized in the present investigation.

METHOD

Subjects

Twelve families with only children between the ages of 4 and 8 yr were recruited through newspaper advertising and paid \$15 for their participation. Families with only one child were recruited because pilot investigations indicated that observers could not reliably discriminate between children's voices on the audiotapes employed.²

Observers

Three undergraduate students were recruited to serve as observers and were trained by paid research assistant observers to simulate the observational recording procedures employed in other research conducted in this laboratory (*e.g.*, Eyberg and Johnson, 1974; Johnson, Wahl, Martin, and Johansson, 1973; Wahl, Johnson, Johansson, and Martin, 1974). Regular data collection procedures were simulated because the paid observers were required for other research, complete training of accurate observers is very expensive, and all data for the present study were based on the recorded tapes.

Three paid research assistant observers coded the audio tapes. These observers were not aware of the purpose of the investigation nor of which tapes represented each of the two conditions. Although several hypotheses were formulated by the coders concerning the object of the study, only one observer correctly guessed the nature of the manipulation and her hypothesis was tentatively held. Thus, the authors conclude that the data could not have been seriously affected by observer bias.

²Such discriminations can usually be made with the use of sophisticated radio transmitters now employed in our laboratory (*e.g.*, see Johnson, Christensen, and Bellamy, 1974).

Apparatus

All recordings in the families' homes were made on Sony cassette tape recorders, Model TC40A. These small cassette recorders (1.4 by 7 by 4.4 in.) are relatively unobtrusive.

Procedures

All families were observed for six consecutive weekdays with observers present on alternate days. Observer presence was counterbalanced such that for half of the families, observers were present on the first, third, and fifth days. For all other families, observers were present on the alternate days.

To obscure the real purpose of this investigation, families were told that the observers were required to observe more families than they had time for. As a result of this, they could be present in the home for only three days, and would have to rely on tape-recorded data for the remaining three days. No subjects gave any evidence of doubting the veracity of this explanation.

The observers arranged a standard 45-min period for observation, always during the hour before the family's typical dinner time. In the observer-present condition, the observer appeared in the home for the scheduled observation at this time; in the observer-absent condition, the parents were instructed to activate the cassette tape recorder. In all families, the parents were called at the appointed time for the first observer-absent observation condition. Thereafter, parents were trusted to activate the cassette tape recorder at the appointed hour. No family indicated that this requirement was not met. The observer activated the cassette tape recorder on observer-present days.

During all observation periods, the family was subjected to the same restrictions used in earlier research employing home-observation procedures; *i.e.*, not permitted to watch television, to have outside visitors or extended phone calls, or to interact with the observer. In addition, subjects were restricted to one room,

as opposed to the two-room restriction employed in earlier home-observation research.

Observation System

A new observation code was devised, including only those categories that can reliably be coded from an audiotape. Several of the codes employed were derived from the direct observation system devised by Patterson, Ray, Shaw, and Cobb (1969). Three basic summary statistics were used for the present study. They were (a) child deviant behaviors, (b) parent negative behaviors, (c) parent commands. The child deviant behaviors included the following codes: physical negative, disapproving tone, cry, whine, yell, verbal negativism, tease, and demand attention. The parent negative behaviors included: disapproval, threat, whine, yell, verbal negative, tease, physical negative, and disapproving tone. Parent commands included initiating, terminating, and threatening command categories.

Observer Agreement

All data were taken from coded records of the tape recordings. Three observers were randomly assigned to code the tapes from each family, and one-third of the tapes were randomly assigned to a second observer for agreement checks. None of the observers was aware of which of their own tapes were calibrated for agreement or when they were calibrating another observer's data for agreement. Thus, the observer agreement checks were completely random and can be viewed as fully representative of the remaining, noncalibrated data. This procedure seems to solve the methodology problem documented by Reid (1970) and Taplin and Reid (1972) that observers tend to achieve higher agreement scores when they are aware of being calibrated.

Observer agreement was computed by correlational methods on total frequency scores obtained over the entire 45-min recording as recommended by Johnson and Bolstad (1973) and Hartmann (1974). With one-third of the total 68 tapes calibrated in this fashion, the

observer agreement correlation for child deviant behavior was 0.96; parent negative behavior, 0.89; and parent commands, 0.91.

RESULTS

Results were analyzed by means of two-way analyses of variance with repeated measures, testing for the effects of observation conditions and changes associated with the passage of time. Due to mechanical failure, four of the 72 tapes were not usable for coding, and the analyses were accomplished with corrections for these missing data as suggested by Meyer (1972, pp. 171-172). Such analyses were performed on each of the three dependent variables—child deviant behavior, parent negative behavior, and parent commands. No significant main effects or interactions were found. Thus, there was no evidence in these data to suggest differential reactivity to the observation procedures, and no evidence for adaptation to the observational procedures. Separate one-way repeated measures of analyses of variance were performed on the observer-present and the observer-absent data to check further for adaptation effects. No such effects were found. Supplemental analyses were also performed to determine whether the subjects' behavior changed over the 45-min periods in either observation condition. This test for within-session adaptation was accomplished by dividing the behavioral data into three 15-min time segments per day and then collapsing the data for days. A 2 x 3 analysis-of-variance test for effects of observation condition and early, middle, and late time periods within days yielded no significant effects. Thus, there was no evidence of adaptation either over or within days.

Correlations between observer-present and observer-absent data were also computed. The Pearson product moment correlations were as follows: child deviant behavior, $r = 0.68$, $p < 0.01$; parent negative behavior, $r = 0.51$, $p < 0.05$; and, parent commands, $r = 0.48$, $p < 0.06$. While all of these correlations are somewhat lower than those stability correlations ob-

tained in earlier home-observation research (e.g., Johnson and Bolstad, 1973), all but the parent command correlation were significant. Furthermore, such correlations might be expected to be somewhat lower due to the fact that the observational conditions differed, potentially contributing more variability in behavior.

DISCUSSION

Although it seems very likely that mechanical recording procedures would yield less reactivity and faster adaptation in the observed, there is no evidence in the present study to substantiate that proposition. The significant correlations between the observer-present and observer-absent conditions are consistent with Bernal *et al.*'s (1971) earlier findings, and the lack of significant change over time is consistent with the earlier findings of Patterson and Cobb (1971).

Because the proposition that audio recording devices should yield less reactive data is so intuitively persuasive, it may be well to examine those factors in the present research that could have contributed to the negative results. First, and most obvious, is the fact that all family members were aware of the exact time at which the recordings were taking place. The parents were required to activate the tape recorder, and all family members were restricted to one room. Obviously, this restriction and the awareness of data recording would have made the procedures obtrusive to the family members. Parenthetically, it would seem nearly impossible to arrange an observer-present condition without subject awareness in the home setting. Second, the observations under each condition were conducted for a relatively brief period, and it is possible that the findings would have reflected differences had the research been carried out for a longer period. Third, the counterbalancing procedures that required observer presence on alternate days may have enhanced the reactive effects on observer-absent days. It might be well in future research to counterbalance blocks of observer-present and observer-absent time.

In an effort to deal with some of the problems outlined above, Johnson, Christensen, and Bellamy (*unpublished*) used radio transmitters carried by the target child for observation in the home. These transmitters were connected to a receiving-recording apparatus that was activated at random intervals without the awareness of those observed (as in Bernal *et al.*, 1971). Because such recording procedures also attenuate the methodological difficulties of observer bias and problems in testing observer agreement, as outlined earlier, and because they provide for greater convenience to observers and families at a somewhat lower cost, they appear to be of considerable utility irrespective of the reactivity question. At this point, however, any advantages of audio recordings in reducing reactivity remain to be demonstrated.

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