

A COMPARISON OF VARIOUS METHODS OF
RECORDING BEHAVIOR

A Thesis
Presented to
the Faculty of the Department of Psychology
University of Houston

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts

By
Josue R. Gonzalez
May, 1973

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ABSTRACT

Although observation and interviewing techniques have been increasing in frequency of use for the past 20 years, no work has been reported comparing the different methods used in observation studies. Moreover, little has been published comparing interviews and observational techniques to determine their relative efficacy. This study deals with comparisons of two methods of observing behavior with each other and with parental interviews.

Twenty-eight volunteer families were obtained from lists of church members in Houston, Texas. They were invited to eat supper in a clinic setting which included two observers who coded a target-child's behavior and his interaction with the family. Following the meal, the parents were interviewed about events that occurred during the meal as they related to the target-child. Codings of the transcribed interviews were compared with the continuous recording and time sampling record.

Reliability levels between continuous recording and time sampling ranged from .61 to .99 and were discussed as being acceptable limits for the number of categories involved.

Although the time sampling record was culled from the continuous recording protocol so as to produce a record of

seven second observation intervals followed by 35 seconds of rest, time sampling and continuous recording were significantly correlated for all comparisons. The data indicated that the disadvantages of time sampling were not as critical for this situation as originally thought. It was concluded that a researcher interested in a similar setting could use time sampling and obtain results similar to those obtained by continuous recording.

Parental interviews, however, were not related significantly with either time sampling or continuous recording, indicating that caution should be used in accepting parents' reports of frequencies of behaviors of a target-child.

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CHAPTER I

INTRODUCTION

"Systematic observation provides the cornerstone of science [Yarrow, 1968, p. 1]." Although systematic observation implies measurement techniques, there is no agreement concerning the type of method to be used. In addition to observational systems using either time sampling or continuous recording, data may also be generated by interviews. Several studies (Antonovsky, 1959; Douglas, Lawson, Cooper, & Cooper, 1968; Smith, 1958) have compared observational systems with parental interviews; however, no study has compared continuous recording, time sampling and parental interviews to determine their relative efficacy. Such was the purpose of this study.

Observational Systems

Bales (1950) developed a system of preselected codes for recording group interactions as they occurred. Data were expressed either quantitatively, i.e. in percentages or by ratios of frequency of one category to another, or qualitatively as inferences, e.g. a person agreeing to a request was said to show "passive acceptance, understand, concur, comply [p. 9]."

Caldwell, Hersher, Lipton, Richmond, Stern, Eddy, Drachman, and Rothman (1963) introduced an observational

system specifically designed to record behaviors expected at a well-baby clinic, and used rating scales, i.e. mothers and their infants were observed and rated on 28 scales by judges. Disagreements in ratings were resolved by mutual consent.

Haley (1964) devised an observation system to record frequencies of interchange between family members in a structured situation. Frequency counts were made of the interactions (father-mother, father-child, mother-father, mother-child, child-father, child-mother) allowing a quantitative analysis of the data.

Straus (1971) introduced SIMFAM, a system designed to record measures of family behavior along five dimensions: (a) power; (b) support; (c) communication; (d) problem solving abilities of families; and (e) creativity. Observations were made of the family in a structured situation and scored on a checklist as the codable behaviors were manifested.

Patterson, Ray, Shaw, and Cobb (1969) devised a method of continuously recording a target-child's behavior and the environment's response to him. The coding yielded quantitative data which allowed examination of antecedent and consequent events. The 35 categories could be collapsed into any groupings of interest.

Development of observation systems then was the

result of specific interests, such as behavior at a well-baby clinic, or investigations of children's behavior. Their use, however, quickly spread to other situations as researchers became interested in other settings, e.g. the use of the Patterson, Ray, Shaw, and Cobb (1969) coding system in a school setting (Johnston & Johnston, 1972). Methods of observation have also been extended, for example, Patterson, Ray, Shaw, and Cobb's (1969) system, originally intended for continuous recording, has also been employed using a time sampling technique, such as used by the present study.

Interviews

Definition. An interview is a situation composed of two or more persons, one of whom is identified as responsible for verbally eliciting material of a specific content.

Types. A traditional form of the interview is the self report where the reporter assumes the role of both subject and interviewer, perhaps the most famous of which is Beer's A mind that found itself (1908). The advantages of this method are that: (a) the subject is able to "interview himself" soon after any event in question; and, (b) auxiliary personnel to conduct interviews are not needed.

.Another form is the structured interview where the questions to be asked are decided prior to the interview.

Westhoff, Potter, Sagi, and Mishler (1961), for example, interviewed 1,165 couples on questions ranging from social background to contraceptive practices. The chief advantage was that all interviewed couples were asked the same questions so that the data were the various responses. The disadvantage was that the assumption that the questions adequately reflected the phenomena under study may not have been true.

An unstructured interview is a situation where the subject directs the content and the "interviewer" asks questions only to clarify any confusing issues. Douglas, Lawson, Cooper, and Cooper (1968), for example, used an unstructured interview to determine mothers' attitudes towards childraising. Similarly, Caldwell, Hersher, Lipton, Richmond, Stern, Eddy, Drachman, and Rothman (1963) used an unstructured interview to generate data for a structured interview on childrearing.

Advantages and disadvantages. All interview methods share the advantages of demanding less time, effort by the interviewer (as compared with an observer), and expense than observational systems. Interviews may either be interpreted metaphorically, or, as suggested by Wiecks (1968), coded for quantitative analysis. Thus interviews are among the most popular data sources (Nye, 1964).

Caldwell, Hersher, Lipton, Richmond, Stern, Eddy,

Drachman, and Rothman (1963) also state that:

...behavioral assessment of many variables is difficult in a clinic setting...[as it is] possible that authority and status roles involved in a clinic visit might bias the behavior sample available for assessment [of socially nondesirable behaviors such as punishment or hostility. p. 656]

However, it is difficult to understand why status and authority roles found in a clinic would not also be present in a home setting.

Furthermore, Yarrow (1965) states that:

Interview responses are the captives of the questions used to obtain them, and frequently the data of childrearing are captives of a particular kind of question...questions in the interview typically approach behavior of mother and child from a "trait" point of view, and ask for general descriptive accounts. The situations in which behavior has occurred are not differentiated except in a very gross sense (such as behavior at home or at school). Both the open-ended nature of the accounts and the situationally nonspecific descriptions tend to create a number of analytic problems [p. 140].

Perhaps the greatest problem, however, is that all material is dependent upon the respondent's memory, as well as his current emotional state.

Time Sampling

Definition. ...[Time sampling] fixes attention of observer and analyst upon selected aspects of the behavior stream as they occur within uniform and short time intervals. The length, spacing, and number of intervals are intended to secure representative time samples of the target phenomena. As a rule with exceptions, descriptive categories are

coded in advance for quick and precise judgments in the field and later efficient scoring (Wright, 1960, p. 92-93).

Using part of a record to represent the whole is also a form of time sampling. Barker and Wright (1954), for example, examined action-units extracted from more extensive records, namely, the day record. Epstein, Sigal, and Rickoff (1972) also selected parts of the total record due to the great amount of data to be interpreted.

Development and examples. The first large scale observation study (Arrington, 1939) used time sampling to observe the behavior of children in a playroom situation. Data were obtained by recording an entry every five minutes for 20 intervals. Arrington stated that usage of time sampling had several advantages to other methods, namely the objectivity involved in assessing a situation and the ability to describe the data quantitatively rather than qualitatively.

The use of coding systems in interaction research was not actively pursued during World War II. Impetus for research, then, was not furnished until Bales (1950) developed his Interpersonal process analysis system. Another boost came with the increase of behavior modification research as emphasis was placed on selecting target behaviors, hence predetermined behavioral categories and time sampling techniques to determine baseline rates of

behavior.

Bernal, Duryee, Pruett, and Burns (1968) videotaped a situation which was divided into 30 second segments. For each segment, a score of one was assigned to a category if behavior belonging to a preselected class was observed. Thus, an ordinal scale of observed behavior was constructed. The situation was not continuously recorded, however, as every codable behavior was not recorded as it occurred.

In a similar fashion, time sampling was used by Rheingold (1960) to determine whether infants in a home or institutional setting received a greater amount of care-taking behavior. They were observed for one second and behaviors were recorded during the following 14 seconds. They were again observed for the next one second and so forth for 10 minutes. This was followed by five minutes rest, followed by 10 more minutes of time sampling, for a total of eight hours of observation.

Rubenstein (1967), investigating whether greater attentiveness in the home led to increased exploratory behavior, observed the situation for 10 seconds, recorded for another 10 seconds, and repeated the cycle for 10 minutes. The observer was then given a five minute rest, following which the cycle continued until three hours total time was attained.

Another form of time sampling is point sampling, a technique whereby the observer records only the event(s) existing at a specific point in time, such as at a pre-arranged signal. Browning and Stover (1971) used point sampling in an attempt to improve interobserver reliability. The shorter the observation period, the fewer events existed to be coded, and hence, fewer recordable behaviors for observer disagreement. Although Browning and Stover's procedure varied, a usual technique was to record events occurring at a given signal every 15 seconds.

Advantages and disadvantages. Time sampling has definite advantages which, as summarized by Barker and Wright (1959) are:

Time-sampling techniques generally use rating scales or checklists which require on-the-spot judgements along prescribed dimensions of habitat or behavior. These devices were developed originally to meet the commonly attributed shortcomings of anecdotal descriptions of behavior. They allow behavior and situations to vary in their full complexity and try to achieve objectivity and efficiency in recording and analysis by limiting with precision the aspects and the temporal lengths of the behavior continuum which are to be observed and studied. They also try to secure representativeness and reliability by recording large numbers of observations. These procedures are efficient. They incur a minimum of interference with the subject. They regulate systematically the aspects of behavior and situation to be recorded [p. 199].

A serious shortcoming, however, is that deviate behaviors, or "clinical symptoms (Patterson, Ray, & Shaw, 1969)"

are usually manifested at a low rate. Thus, time sampling would not record deviate behaviors which occurred in a non-sampled interval. Unfortunately, an experimenter who lengthened his nonsampling intervals to allow his observers more rest would increase the probability of not recording a low rate behavior.

In summary, time sampling is an efficient, economical method of recording behavior, and is best designed to sample behaviors which occur at moderate to high frequencies.

Continuous Recording

Definition. Continuous recording refers to a method of recording codable behaviors using trained observer-recorders.

Development and examples. Continuous recording first achieved popularity with Robert Bales' Interpersonal process analysis (1950), an observational system which allowed the coding of verbal or nonverbal interactions as they occurred, rather than keeping a narrative report. Bales used his method to investigate small group interactions.

Moustakas, Sigel, and Schalock (1956) used 82 pre-coded categories to determine whether there was any difference in mothers' behavior at home and at a clinic. Continuous recording was used so as not to miss coding of low rate behaviors, such as hostility.

Haley (1964) used six categories to describe intra-familial interactions, which were recorded as they occurred. Thus a frequency count for each category was obtained and served as measures of his dependent variable.

Adkins and Johnson (1972), interested in recording deviant behavior of a target-child, observed 33 families for 45 minutes each. The coding system was used as the measure of the dependent variable, the target child's behavior.

Advantages and disadvantages. By continuously recording a situation, one obtains the universe of codable behaviors. Continuous recording, then is best used when it is necessary to record low rates of behavior or to obtain a complete record of a subject's behavior patterns.

Observation and Interview Studies

Douglas, Lawson, Cooper, and Cooper (1968) used observation techniques to validate interviews with their sample of mothers. As part of a larger study, an observer noted all activities of a mother and her child for four hours in the morning. In the afternoon, an interviewer would ask the mother to describe the observed period. Douglas, Lawson, Cooper, and Cooper (1968) found that although mothers were inaccurate as to when specific events had occurred, the correlation between observations and interviews was .90.

There are several areas which must be discussed, however. First, the sample size was very small (nine mothers and their children). Also, the categories were few and general (sleep, play, basic care, and child leaving the setting) so that there would be fewer varieties of behaviors to notice and remember. Also, the home observations were recorded in a narrative style for future translation into the coding system so that experimenter bias may have played a role. Furthermore, although the interview was discussed as being unstructured, mention was made that the interviewer typically took the lead and so may have further biased the data.

Should the data be accepted as indicative of the situation, however, one would be able to say that if one were interested in only a few categories, maternal interviews would generate data similar to those obtained by observation.

Antonovsky (1959), as part of a larger study, examined whether there were any correspondence between structured interviews, unstructured interviews, and observation techniques. She interviewed nine mothers (structured interview), recorded behaviors in a playroom setting (continuous recording), and then listened to the mothers discuss anything they wished (unstructured interview). Her results indicated that structured interview and observation

data yielded greater correlations than unstructured interviews.

Again, however, there are problems. First of all, preceding the observation with a structured interview dealing with attitudes towards children may have influenced the mothers' behavior during the observation session. Since the codes used were also based on attitudes concerning children's behaviors, it is possible that they may have inadvertently been discussed during the interview. Also, mothers were rated by two judges according to various criteria. However, if the two judges differed by more than one point, they discussed the difference and agreed on a joint rating so that the data were subject to "observer drift" (Johnson & Bolstad, 1972).

Smith (1958) compared observations made of children playing with their mothers (continuous recording) with interviews of the mothers made two to four weeks after the session.

From the preceding results, there is little evidence for deciding that either interviews or controlled observations are better for securing valid measures of actual mother behavior. Since observed behavior is consistent for most mothers; since both measures yield results that replicate previous findings on the antecedents of dependency; and since most mothers report similar behavior to that observed, the interview seems to be the preferable method because it permits study of a wider range of behavior in a shorter time than an observation session [p. 282].

Smith failed to stress, however, that mothers whose children attended the Harvard nursery school might remember more details due to the following: (a) their educational training as only four of the 30 mothers had not attended a college; (b) the status of having a child attend such a prestigious nursery; and (c) being involved in an experiment. Furthermore, no mention was made whether the mothers relied on notes for the interview which followed several weeks later.

Purpose of Study

The range of methods by which a child's behavior could be recorded has been classified by Lytton (1971) as the following: (a) questionnaires for parents and/or children; (b) parental interviews; and (c) observation in natural and lab settings of structured and unstructured interaction. The present study is concerned with the comparison of two methods of observation, time sampling and continuous recording, with each other and parental interviews. If time sampling and continuous recording were highly correlated, the experimenter could use time sampling and enjoy its advantages. If parental interviews were significantly correlated with continuous recording, the experimenter could use parental interviews and enjoy its advantages. However, if neither time sampling nor parental interviews were significantly related with continuous

recording, the experimenter would have to use continuous recording as the method of choice.

CHAPTER II

METHOD

Subjects

Twenty-eight volunteer families were obtained through lists of church members in Houston, Texas. Eligible families were required to have the following: (a) both parents living in the home; (b) four children or fewer; and (c) a target-child four to six years old. The families were first contacted by informing them of their right to leave the study at any time, that dinner and utensils would be supplied by the experimenter¹, and that they would be contacted in a few days to determine whether they wished to participate. The project was explained as thesis research concerning the nature of familial interaction. Within two days, the families were phoned and appointments were made.

Observers

Eight graduate and senior undergraduates were trained to use a slight modification of the Patterson, Ray, Shaw, and Cobb (1969) coding system and received course credit for their participation. Observers were trained over a six week period, first coding verbal problems, then staged videotaped situations, and finally by coding two families. Observers had to achieve 80% reliability on each of the subscales, as measured by a calibrating observer, before

they were allowed to code on their own.

Observers were then spot checked by calibrating observers seven of the 28 sessions, as advocated by Taplin and Reid (1972). Reliability was computed by dividing the number of agreements for each category in each unit by the number of agreements plus the number of disagreements, as advocated by Johnson and Bolstad (1972).

Procedure

The families were led into a clinic setting and asked to prepare their supper as they did at home. The dinner situation was chosen as it had been suggested as the most opportune time to observe familial interaction (Douglas, 1968). Either the observer and the interviewer or the observer and the calibrating observer sat in the corner of the room approximately eight to 10 feet from the nearest corner of the table. Following the meal, the parents were asked to follow the interviewer to another room for the interviewing session. The children were cared for by the observer who played games with the children until the parents returned.

Coding System

A slight modification of the Patterson, Ray, Shaw, and Cobb (1969) coding system was used (Appendix A) for all methods. The system was composed of 34 categories which were operationally defined and mutually exclusive. The

categories were summarized by code letters and were hand written by an observer along with numerical codes indicating the target and anyone in the environment responding with the target. For the purposes of this study, the target was one child in each family who was between the ages of four and six. The code allowed a minimum of one action and one response per interval and a maximum of two actions and responses.

Data were collected and the categories were grouped into classes similar to Shaw's (1971) descriptions (Appendix B). The target-child's behaviors were collapsed into three classes: (a) deviate behavior; (b) nondeviate behavior; and (c) prosocial behavior. The parents' behavior was grouped as either positive or aversive.

Data Collection

Continuous recording. The data sheet was divided into 18 lines of three, seven second intervals for ease in comparison. Codable behaviors were recorded as they occurred and every seven seconds, a tape recorded message indicated that the observer should proceed to the next unit. Earphones were used so not to disturb the situation. At the end of the 18 lines (6.3 seconds), the observer was given 15 seconds to prepare the next data sheet.

Time sampling. Following the continuous recording, every sixth block was culled to produce a time sampling

protocol. Thus, every seven second interval of recording was followed by a 35 second rest period.

Parental interview. Following the meal, the parents were escorted to another room where they were interviewed according to the following directions:

I: And now, as another part of the project, I would like to ask each of you a few questions about what went on during the meal, but first please state your names, those of your children, and their ages.

I: How did you and (Target) interact verbally and how did each of you respond to the other? Please be as detailed as you can. [Asked of each parent.]

I: How did you and (Target) interact nonverbally and how did each of you respond to the other? Again, please be as detailed as you can. [Asked of each parent.]

I: How did (Target) interact either verbally or nonverbally with your other children? Once more, please be as detailed as you can. [Asked of both parents.]

I: Is there anything else that either of you can remember about (Target) and what went on during the meal? [Asked of both parents.]

I: Thank you very much for your cooperation.

An experienced interviewer was instructed to prod for examples. All interviews were tape recorded for later transcription and coding.

CHAPTER III

RESULTS

Reliability

The reliability values ranged from .55 to 1.00, while the means ranged from .61 to 1.00. The reliability means for time sampling and continuous recording are presented in Table 1 for each class of behaviors that were observed. It is of interest that the lowest reliability mean obtained was recorded for the target-child's deviant behavior, while the highest reliability mean was scored for the parents' aversive behavior class. The time sampling deviant behavior reliability mean was disregarded due to the small sample from which it was calculated.

Reliability means were also determined using single codes, instead of double codes and the results are presented in Table 2. It is interesting to note that the lowest reliability levels were scored for the target-child's deviant behavior as well as for the parents' positive behavior.

Correlations

Data were collected and transformed into measures of rate per minute by dividing the frequency of events by the total time the events were observed. Product-moment correlations were then computed between all groups and methods.

TABLE 1

Reliability Means: Double Coding

Technique	Classes				
	Deviant behavior	Nondeviant behavior	Prosocial behavior	Positive behavior	Aversive behavior
Continuous recording	.61	.82	.70	.64	.80
Time sampling	1.00 ^a	.84	.66	.68	.95

^aBased on only one of seven comparisons

TABLE 2

Reliability Means: Single Coding

Technique	Classes				
	Deviant behavior	Nondeviant behavior	Prosocial behavior	Positive behavior	Aversive behavior
Continuous recording	.68	.98	.77	.68	.84
Time sampling	1.00 ^a	.99	.72	.72	.98

^aBased on only one of seven comparisons

The correlations are presented in Table 3.

It should be noted that while time sampling and continuous recording were significantly correlated for all comparisons, neither time sampling and parental interview, nor continuous recording and parental interview, were significantly correlated for any comparisons.

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TABLE 3

Correlations of Methods

Comparisons	Classes				
	Deviant behavior	Nondeviant behavior	Prosocial behavior	Positive behavior	Aversive behavior
Continuous recording-Time sampling	.74*	.91*	.78*	.77*	.91*
Continuous recording-Parental interviews	-.02	-.19	.18	-.07	.11
Time sampling-Parental interviews	-.08	-.01	.08	.13	.31

* $p < .01$

CHAPTER IV

DISCUSSION

Reliability

The overall reliability means are similar to the .60+ values reported by Johnson and Bolstad (1972). That all means were not higher may be considered a direct result of the large number of categories used to record behaviors (Appendix A). Landers (1970), for example, demonstrated that the variance among observers increased as the number of categories used to code behaviors also increased.

The issue of observer variance increasing due to the ability of one observer to code two events in an interval, or double coding, while another observer coded only one event, or single coding, did not seem to play an important part (Table 1 and Table 2). This was demonstrated inasmuch as the only category where single coding dramatically increased the reliability means was the target-child's non-deviant behavior class. However, since this class's double coding means were already above .80, the improvement obtained by using single coding was of little value.

In a similar fashion, since the target-child's non-deviant behavior grouping was the class whose behavior categories were most frequently coded another class was developed, prosocial behavior, which contained all of the

categories of nondeviant behavior save independent activity and self-stimulation, two of the most frequently coded categories. The reliability means for both single and double coding remained acceptable for prosocial behavior.

The reliability means also demonstrated that the target-child's deviant behavior was the class least recorded by observers. This may have been due to the fact that deviant behavior occurred at a low rate, and thus was more difficult to observe than high rate behaviors. This argument is supported by the higher reliability levels recorded for nondeviant behavior, a class of categories composed of high rate behaviors.

The low target deviant behavior scores as well as the low parents positive behavior scores reflected a tendency towards Hull's (1970) systematic observer effect which stated that variation in recording behaviors could be systematic, that is, "evaluative differences among observers are an important variable in behavior coding variability and thus the assumption of observer homogeneity can be rejected [p. v]." If also supported by other studies, then those using observers to record patterns of behavior could analyze the observers' protocols for signs of systematic observer bias.

Comparison Between Continuous Recording and Time Sampling

The data indicated that continuous recording and time

sampling were significantly correlated for all classes of behavior compared. Continuous recording and time sampling procedures were expected to be correlated to some degree since the methods were similar and they were used to record the same events. That the two methods were not perfectly correlated, however, was assumed indicative that the time sampling protocols were not copies of the continuous recording data, but accurate statements of the observed events. Furthermore, it was assumed that another sampling of comparable interval lengths would yield similar results. However, caution should be followed in generalizing these results as the data were obtained during the first step in testing the relative efficacy of continuous recording and time sampling. That is, since high correlations were obtained between the culled time sampling records and the continuous recording protocols, it is now possible to proceed to the next step of comparing the two methods independently.

The strong correlations between time sampling and continuous recording suggest that the disadvantages previously mentioned for time sampling were not as critical as proposed. Thus, an experimenter interested in those classes and setting used in this study could use time sampling instead of continuous recording and obtain similar results. This, however, should be tempered by noting once more that time sampling protocols were obtained by culling the

continuous recording record. Future research then would be needed before fully accepting this finding.

Systematic Observations and Parental Interviews

The nonsignificantly correlated relationships between continuous recording and parental interviews, as well as between time sampling and parental interviews, do not support the findings of Anatovsky (1959); Douglas, Lawson, Cooper, and Cooper (1968); and Smith (1958). The difference between the present results and the previous studies may be explained by the fact that a structured interview was employed immediately following the situation in question. Spot checks of the observers, and use of an explicit coding system were also strengths of this study.

The data do support, however, Yarrow's (1968) contention that parental interviews are a poor source of data. This study, then, would caution against the use of parental interviews to obtain frequencies of behavior by merely asking the parents, as the data indicate that parental reports do not correspond to the frequencies recorded by trained observers.

Accordingly, additional research is called for to investigate the relative efficacy of commonly used methods and their applicability to various settings. Research in this neglected area would eventually allow the experimenter to use a well tested method that best fit his interests.

BIBLIOGRAPHY

- Adkins, D.A., & Johnson, S.M. What behaviors may be called deviate for children? Paper presented at the Western Psychological Association Convention, Portland, Oregon, April, 1972.
- Antonovsky, H.F. A contribution to research in the area of the mother-child relationship. Child Development, 1959, 30, 37-51.
- Arrington, R.E. Time sampling studies of child behavior. Psychological Monographs, 1939, 51, (2, Whole No. 228).
- Bales, R.F. Interaction process analysis. Cambridge, Massachusetts: Addison-Wesley, 1950.
- Barker, R.G., & Wright, H.F. Midwest and its children: the psychological ecology of an American town. Evanston, Illinois: Row, Peterson & Co., 1954.
- Beers, C.W. A mind that found itself. New York: Longmans, Green, 1908.
- Bernal, M.E., Duryee, J.S., Pruett, H.L., & Burns, B.J. Behavior modification and the brat syndrome. Journal of Consulting and Clinical Psychology, 1968, 32, 447-455.
- Browning, R.M., & Stover, D.O. Behavior modification in child treatment. New York: Aldine-Atherton, 1971.
- Caldwell, B.M., Hersher, L., Lipton, E., Richmond, J., Stern, G., Eddy, E., Drachman, R., & Rothman, A. Mother-infant interaction in monomatric and polymatric families. American Journal of Orthopsychiatry, 1963, 33, 653-664.
- Douglas, J.W.B., Lawson, A., Cooper, J.E., & Cooper, E.C. Family interaction and the activities of young children. Journal of Child Psychology and Psychiatry, 1968, 9, 157-171.
- Douglas, R.R. Dinnertime dynamics. Family Coordinator, 1968, 17, 181-184.
- Epstein, A.B., Sigal, J.J., & Rakoff, V. Methodological problems in family interaction research. In J. Framo (Ed.). Family interaction: a dialogue between family researchers and family therapists. New York: Springer Publishing Co., 1972.

- Haley, J. Research on family patterns: an instrument measure. Family Process, 1964, 3, 41-65.
- Hull, H. Interobserver variation in recording behavior: random or systematic error? Unpublished doctoral dissertation, University of Houston, 1970.
- Johnson, S.M., & Bolstad, O.D. Methodological issues in naturalistic observation: some problems and solutions for field research. Paper presented at the Fourth Banff International Conference on Behavior Modification, Banff, March, 1972.
- Johnston, J.M., & Johnston, G.T. Modification of consonant speech-sound articulation in young children. Journal of Applied Behavioral Analysis, 1972, 3, 233-246.
- Landers, D.M. Effect of the number of categories systematically observed on individual and group performance ratings. Perceptual & Motor Skills, 1969, 29, 731-735.
- Lytton, H. Observation studies of parent-child interaction: a methodological review. Child Development, 1971, 42, 651-684.
- Moustakas, C.E., Sigel, T.E., & Schalock, M.D. An objective method for the measurement and analysis of child-adult interaction. Child Development, 1956, 27, 109-134.
- Nye, F.I. Field surveys. In H.T. Christensen (Ed.), Handbook of marriage and the family. Chicago: Rand McNally, 1964.
- Patterson, G.R., Ray, R.S., & Shaw, D.A. Direct intervention in families of deviant children. Unpublished manuscript, University of Oregon, 1969.
- Patterson, G.R., Ray, R.S., Shaw, D.A., & Cobb, J.A. Family observation code. Unpublished manuscript, University of Oregon, 1969.
- Rheingold, H. The measurement of maternal care. Child Development, 1960, 31, 565-575.
- Rubenstein, J. Maternal attentiveness and subsequent exploratory behavior in the infant. Child Development, 1967, 38, 1089-1100.

- Shaw, D.A. Family maintenance schedules for deviant behavior. Unpublished doctoral dissertation, University of Oregon, 1971.
- Smith, H.T. A comparison of interview and observation methods of maternal behavior. Journal of Abnormal and Social Psychology, 1958, 57, 278-282.
- Straus, M.A. SIMFAM: a technique for observational measurement and experimental study of families. In J. Aldous, T. Condon, R. Hill, M. Straus, & I. Tallman (Eds.), Family problem solving: a symposium on theoretical, methodological, and substantive concerns. Hinsdale, Illinois: Dryden Press, 1971.
- Taplin, P.S., & Reid, J.B. Effects of instructional set and experimental influence on observer reliability. In S.M. Johnson & O.D. Bolstad, Methodological issues in naturalistic observation. Paper presented at the Fourth Banff International Conference on Behavior Modification, Banff, March, 1972.
- Westhoff, C.F., Potter, R.G., Sagi, P.C., & Mishler, E.G. Family growth in metropolitan America. Princeton: Princeton University Press, 1961.
- Wieck, K.E. Systematic observational methods. In G. Lindzey & E. Aronson (Eds.), Handbook of social psychology, Vol. 2. Reading, Massachusetts: Addison-Wesley, 1968.
- Wright, A.F. Observational child study. In P.H. Mussen (Ed.), Handbook of research methods in child development. New York: Wiley & Sons, 1960.
- Yarrow, M.R., Campbell, J.D., & Burton, R.V. Child rearing: an inquiry into research and methods. San Francisco: Josey-Bass, 1968.

FOOTNOTE

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APPENDIX A
Observation Codes and Definitions

This appendix contains a list of the codes used in this study with their definitions. The codes were taken from the Patterson coding system (Patterson, Ray, Shaw, & Cobb, 1969). Codes that were added for the purpose of this study are identified by an asterisk.

1. AP APPROVAL. This category is used whenever a person gives clear gestural or verbal approval to another individual.
2. AT ATTENTION. This category is to be used when one person listens to or looks at another person, and the categories AP or DI are not appropriate.
3. AV AVERSIVE COMMAND. This is a command which implicitly or explicitly threatens aversive consequences if compliance is not forthcoming. It also typically demands immediate compliance.
4. CM COMMAND. This category is used when a direct, reasonable and clearly stated request or command is made to another person. The statement must be sufficiently specific as to indicate clearly the behavior which is expected from the person to whom the command is directed.
5. CO COMPLIANCE. Use this category when a person does what is asked of him in a CM or AV.
6. CR CRY. Use this category whenever a person cries. There are no exceptions.
7. DA DEMAND ATTENTION. This category is to be used whenever someone engages in a behavior which requires that a person pay immediate attention to it.
8. DB DEVIANT BEHAVIOR. This code is used whenever the subject is engaged in behavior which in some way is not sanctioned in the situation.
9. DI DISAPPROVAL. Use this category whenever the person gives verbal or gestural disapproval of another person's behavior or characteristics.

10. DP DEPENDENCY. Behavior is coded DP when Person A is requesting assistance in doing a task that he is capable of doing himself.
11. DS DESTRUCTIVENESS. Use of this category is applicable to those behaviors by which the person destroys, or attempts to damage any object.
12. HR HIGH RATE. This category is applicable to any behavior not covered by other categories, that if carried on for a long period of time would be average, i.e. running back and forth in the living room.
13. HU HUMILIATE. This category should be used when the agent makes fun of, shames, or embarrasses the subject intentionally.
14. IA INDEPENDENT ACTIVITY. This code is used whenever the child is appropriately engaged in solitary activity. This activity need not involve a game or another organized activity.
15. IG IGNORE. Use this category when Person A has directed behavior at Person B and Person B appears to have recognized that the behavior was directed at him, but does not respond in an active fashion.
16. IN INDULGENCE. Behavior is coded IN when a family member stops what he is doing in order to do some behavior for another person which that person is fully capable of doing for himself.
17. LA LAUGH. This code is used whenever a person laughs in a non-humiliating way.
18. LE LEAVE. Use this code whenever the subject physically leaves, makes a motion to leave or verbally indicates that he is going to leave.
19. NC NON-COMPLIANCE. This code is used when a person does not do what is requested of him by CM or AV. This non-compliance can be of a verbal or non-verbal nature.
20. NE NEGATIVISM. This category is only used when a person makes a statement which is delivered in a tone of voice that conveys an attitude of "Don't bug me; don't bother me."

21. NR NO RESPONSE. This category is to be used when a person does not respond to another person. This category is applicable when a behavior does not require a response, or when behavior is directed at another person, but the person to whom the behavior is directed fails to perceive the behavior.
22. PL* PLAY. This category is used when a person is playing with other persons. It involves interaction with other persons. Play need not be restricted to games in which clear rules are defined, but is applicable to many activities, such as playing with a pet or playing with toys.
23. PN PHYSICAL NEGATIVE. This code is used whenever a subject physically attacks or attempts to attack another person. The attack must be of sufficient intensity to potentially inflict pain, i.e. biting, kicking, slapping, hitting, spanking and taking an object roughly from another person.
24. PP PHYSICAL POSITIVE. Use this category whenever a person touches another in a friendly or affectionate manner, i.e. pat, hug, kiss, arm around shoulder, holding hands, ruffling hair, etc.
25. QU* QUESTION. This category is to be used when one person asks a question of another.
26. RC RECEIVE. Use this category when a person receives a physical object from another person, or is touched physically by another person and does not do anything as a result of the contact.
27. SS SELF-STIMULATION. Use this category for behaviors which the individual does to himself and cannot be coded by any other codes, such as humming, scratching oneself, etc.
28. ST SMART TALK. Coded whenever the subject "sasses" others or relates in an apparent sarcastic way to others.
29. TA TALK. This code is to be used for verbal interaction when no other codes are appropriate.
30. TE TEASE. Use this category when a person is teasing another person in such a way that the other person is likely to show displeasure and disapproval or when the person being teased is trying to do some

other behavior, but is unable to because of the teasing.

- 31. TH TOUCH. This category is to be used when young children touch other people or hand an object to another person.
- 32. WH WHINE. Use this category when a person states something in a slurring, nasal, high-pitched, falsetto voice.
- 33. WK* WORK. This category is used when a person is working alone or with other persons.
- 34. YE YELL. This category is to be used whenever the person shouts, yells or talks loudly. The sound must be intense enough that if carried on for a sufficient time, it would be extremely unpleasant.

APPENDIX B
Groups of Categories

Target-Child Categories

<u>Deviant Behavior</u>	<u>Nondeviant Behavior</u>	<u>Prosocial Behavior</u>
Command negative	Approve	Approve
Cry	Attend	Attend
Demand attention	Command	Command
Destructiveness	Comply	Comply
Disapproval	Independent activity	Laugh
High-rate	Laugh	Physical positive
Ignore	Physical positive	Play
Negativism	Play	Question
Noncompliance	Question	Receive
No response	Receive	Talk
Physical negative	Self-stimulation	Touch
Tease	Talk	Work
Whine	Touch	
Yell	Work	

Parental Categories

<u>Positive Behavior</u>	<u>Aversive Behavior</u>
Approve	Cry
Attend	Destructiveness
Command	Disapprove
Comply	Humiliate
Indulge	Ignore
Laugh	Negativism
Physical positive	Noncompliance
Play	No response
Question	Physical negative
Talk	Tease
Touch	Whine
	Yell