

*ENHANCING THE SOCIAL ENVIRONMENTS OF ELDERLY
NURSING HOME RESIDENTS: ARE HIGH RATES OF
INTERACTION ENOUGH?*

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We investigated the social validity of a common intervention (i.e., serving food during a social hour) that has been reported to facilitate social interaction among nursing home residents. Using a group reversal design, rates of interaction were measured. In addition, the vocal content of the interactions was recorded and coded by raters blind to condition. Rates of interaction more than doubled during the treatment phases, but ineffective vocal behavior accounted for the bulk of the increase. Results suggest the need to examine the utility of such programs in nursing homes.

DESCRIPTORS: elderly, social behavior, nursing homes

The austerity of the social environments in nursing homes is noted often in the gerontological literature. Low rates of resident-to-resident interaction (Hoyer, Mishara, & Riebel, 1975), the absence of social reinforcement for independent behaviors (Barton, Baltes, & Orzech, 1980), and the lack of participation in structured group activities (Jenkins, Felce, Lund, & Powell, 1977) are pervasive in long-term care facilities for the elderly. There is little dispute that these low rates of activity are deleterious to the well-being of the aged. Indeed, extremely low rates of social interaction are thought to limit access to social reinforcers and relate to lowered mobility as well (Hogue, 1985).

During the past 15 years, a wide variety of innovative interventions, including operant reinforcement, prompts for social behavior, and stimulus control manipulation, have been reported to increase rates of social activity of nursing home residents (Hoyer et al., 1975). Stimulus control procedures, implemented at a systems level, are a particularly promising approach because of the simplicity and low cost with which they can be implemented. First reported by Blackman, Howe,

and Pinkston (1976), and later replicated by Carroll (1978) and Quattrochi-Tubin and Jason (1980), a procedure in which refreshments are served to nursing home residents has been observed to increase rates of interaction among residents. The increase reliably returns to baseline levels during reversal periods and returns to higher levels when the intervention phase is reinstated. Results of these studies suggest that refreshments may not only function as reinforcers for attendance at group activities, but may also function as setting events for social interaction among residents.

Despite the apparent success of such studies, some important questions remain unanswered. Although it is clear that serving refreshments to nursing home residents can produce an increase in the number of social interactions with other residents, the topography of this increase is not known. In other words, we do not know what type of interaction the intervention occasions. The tacit assumption regarding environmental engineering designed to increase the rates of interaction among nursing home residents is that such increases improve the quality of the social environment. No efforts have been made, however, to document the qualitative impact of these attempts.

Our study was designed to investigate the social validity of such interventions. Using a group reversal design, both quantitative and qualitative changes in vocal behavior were evaluated. We pos-

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tulated that the intervention would result in increased rates of social interaction among subjects. It was further expected that if such increases facilitated access to social reinforcers, this would be shown in the content of the observed interactions by increases in the number of positive statements made and the reciprocation of statements by peers.

METHOD

Setting

Data were collected in the activity area of a local nursing home in Bloomington, Indiana. The home's rectangular activity area measured 9.2 m × 6.6 m and had a floor-to-ceiling window covering three-quarters of the southern wall, facing the street. Three couches and seven chairs lined the walls, with space available in between them to accommodate wheelchairs. The room also contained a card table, a piano, a television, two bookcases, a bird cage, and a fish tank. A window-frame partition, extending two-thirds of the width of the room, separated the entry hallway and the activity area.

Subjects

The home housed 32 residents at the time of the study. The intervention was made available to 30 of the 32 residents. Two of the residents were not included; one was outside of the nursing home each day during the observation period, and the other was confined to her bed due to poor health. Ages of the remaining 5 male and 25 female subjects ranged from 55 to 97 years ($M = 81$ years, $SD = 11$ years). Twelve subjects were able to move about independently; nine walked without aid and three used wheelchairs. Six were able to walk with help, and 12 used a wheelchair with help. Because it was important to include all residents in the facility as subjects in order to record all interactions, informed consent was obtained from the administrators of the nursing home to implement the systems-level study rather than from individual residents. Consequently, subjects could not be identified by name. Rather, subjects remained anonymous and data were collected on the group as a whole.

Observational System

In the observational system used in this study, interactions were defined as they were by Alevizos, DeRise, Liberman, Eckman, and Callahan (1978): An interaction was considered to have occurred when one or more subjects made eye contact with another subject for 0.5 s or more with the torso and/or shoulders oriented toward that subject. Audible sounds and/or lip movements as well as nonvocal behaviors when there was physical contact, gesturing, or emotional facial expression in the presence of another subject, were considered interactions. According to this definition, a response from the person to whom the interaction was directed was not necessary for the behavior to be coded as an interaction. Discrete interactions were distinguished by intervals of noninteraction for 10 s or longer.

Each time an interaction occurred, the observer repeated verbatim what he or she heard into a tape recorder. If the content of the interaction was not heard or understandable, observers said "inaudible interaction" into the recorder. In order to minimize interaction with the observers, when subjects spoke to the observers, the observer replied, "I cannot talk to you now; I will talk to you later." Interactions with staff members and the refreshment attendant were also recorded on the tape, but only resident-to-resident interactions were included in the analysis.

Intervention

During intervention conditions (Treatments 1 and 2), refreshments consisting of unsweetened apple juice and plain butter cookies were served. An attendant served refreshments once at the start of each observational period and again 15 min into the period. The attendant began serving at one point in the room and moved clockwise around it until all residents had been asked if they would like some juice and a cookie. Following the first serving, the attendant left the activity area, leaving the refreshments in the center of the room, until it was time for the second serving. All requests for more juice and cookies were filled immediately if the attendant was in the room. When spoken to

by the subjects on other topics, the attendant replied, "I cannot talk to you now; I have to get some more juice."

Procedure

Before the study was implemented, meetings were held with the social worker and nursing staff of the home. Letters that explained the study were sent to the families of the residents to ascertain if anyone objected to a resident's participation. None of the family members contacted objected to the involvement of his or her relative in the study. Medical approval from the nursing director of the facility also was obtained.

Nursing staff were informed that a study was in progress, but were not apprised of the focus of the investigation until the completion of the project. For the duration of the study, staff members were asked to turn off any radio or television that was on in the activity area prior to each observation period. They were also asked to stay out of the activity area during the observation periods if possible. Full cooperation with these requests was obtained throughout the study.

Data were collected 5 days per week, over a 5-week period, for 20 min a day between 3:30 and 4:30 p.m. During the first baseline phase (Baseline 1), observations in the activity area began. Refreshments were served to subjects, in the manner described above, during the second phase, Treatment 1. The third phase, Baseline 2, was a reversal condition (i.e., no refreshments were served). In the final phase (Treatment 2), refreshments were once again served to the residents. The duration of each phase varied; Baseline 1 lasted for 10 days, Treatment 1 for 5 days, Baseline 2 for 5 days, and Treatment 2 for 4 days.

Observations were made by two observers during each session. Observers were all undergraduate research assistants enrolled for research credit in the Behavioral Gerontology Laboratory at Indiana University. Observer training consisted of watching and recording videotaped vignettes of interactions in the laboratory, and subsequently practicing the recording procedures in a large hall at the student union. During practice sessions, individuals were

identified and observed for a circumscribed period of time. Discrepancies in recording were discussed and resolved to the satisfaction of the observers and the second author.

During data collection, before entering the activity area, the observers divided the number of subjects into equal halves and situated themselves in a seat placing them closest to the subjects they were observing. The number of residents who were within the boundaries of the activity area were counted at the beginning of each session and again at the end, 20 min later.

Reliability with an independent observer was computed in order to assess the accuracy of the recordings of the principal observers. For reliability assessment purposes, an independent observer recorded all interactions during 5-min periods two times each week. The independent observer was present at all times during the observation periods so principal observers did not know when the reliability checks were being conducted. She stood behind a wooden partition out of sight of the principal observers and recorded her observations in writing rather than verbally recording, so that observers would not be cued by her voice when she recorded an observation.

Each session's tape-recorded interactions were transcribed verbatim. All vocal statements, those representing interactions and those that were made in the absence of an apparent listener, were randomly compiled into three sets and distributed to two independent raters, blind to the focus of the study, for assignment to vocal behavior subcategories by content. All subcodes for which there were discrepancies between raters were given to a third rater for classification. The code provided by the third rater, if consistent with one of the original raters, determined the final subcode. Verbal statements representing interactions were listed together so that the statement that occasioned the response from the initiating resident was available to the rater. Examples are: "Is this Tuesday?," "Yup," "Huh" and "Are you mad at me?," "I'm not mad at you," "You're not mad at me, are you?," "No, why should I be?" Each of the statements was scored individually, but within the functional con-

text of the interaction. It should be noted that one interaction could, and usually did, have more than one coded vocal so the number of vocals is in no systematic way proportional to the number of interactions.

A modified version of the vocal behavior subcodes of the Staff Resident Interaction Chronograph (Paul & Lentz, 1977) was used to classify each vocal. Examples of subcodes included in the system were: positive vocal, negative vocal, singing, questions, instructions, ineffective communication, and greetings. Positive vocal behaviors were defined as "praise, compliments, positive feedback, and verbal positive reinforcement occasioned by another person." Negative vocal behaviors were defined as "reprimands, discouragement, derogatory remarks, and negative feedback occasioned by past behavior of another person." Ineffective communications were considered to be those that were directed toward an individual but were not responded to by the person to whom the interaction is directed and were also incoherent or nonsensical in content. For example, when one subject said something like "Angels coming then" to another subject who did not respond, it was coded as ineffective communication. Similarly, if a subject displayed unreciprocated mumbling it was coded as ineffective. But if a subject said "Hello" to another subject who did not respond, the vocal was coded as a greeting. Thus, in order to meet the criteria for ineffective communication the vocalization had to be both nonsensical and unreciprocated.

RESULTS

Reliability

Interobserver reliability was 100% for the number of residents in attendance in the activity area during each observation period. Consistency of the tape-recorded vocals by observers with the written recording of vocals made by the independent observer during reliability checks was determined by a percent agreement statistic based on the code assigned to the vocal. Verbatim accuracy was not calculated. Rather, if observer's codes were in agreement, the vocal was considered to be in agreement. In illustration, if one observer recorded "Nice

day" and the other recorded, "It's a nice day outside," the codes would be the same even though there were discrepancies in the verbatim accounts. Reliability of the observers with the independent observer was 99%, as computed using a percent agreement statistic (i.e., number of agreements between observers divided by total number of observations made by either observer multiplied by 100).

Interrater reliability for vocal behavior subcodes of recorded content was determined by providing raters with written transcripts in the manner described in the procedure section. Using this procedure, two out of three raters agreed on the subcode category 97% of the time.

Attendance and Interaction

Figure 1 shows the frequency of resident attendance and interaction in the activity area during all four phases. Also depicted in Figure 1 is the breakdown of the vocal content during each phase. During Baseline 1, there was an average of nine subjects in the room and they interacted an average of 14 times per day. When Treatment 1 was initiated, the mean number of subjects present rose to 12 and the mean number of interactions to 30 per day. During Baseline 2, both attendance and interaction decreased, resulting in a mean number of eight subjects present and nine interactions. With the reinstatement of treatment during Treatment 2, attendance again rose to an average of 10 subjects present and the average number of interactions to 21.

The average number of interactions per subject during Baseline 1 was 1.54. This increased to 2.30 during Treatment 1 and dropped to 1.18 during Baseline 2. The final phase resulted in an average of 2.05 interactions per subject. All changes in rates of interaction between phases, as computed using a Student's *t* test, were statistically significant at the $p < .05$ level.

Content Analysis

Of 20 possible subcodes, vocal behavior falling into the following seven subcodes was displayed by subjects: positive vocal, negative vocal, instructions, greeting, question, fact/opinion, and ineffective

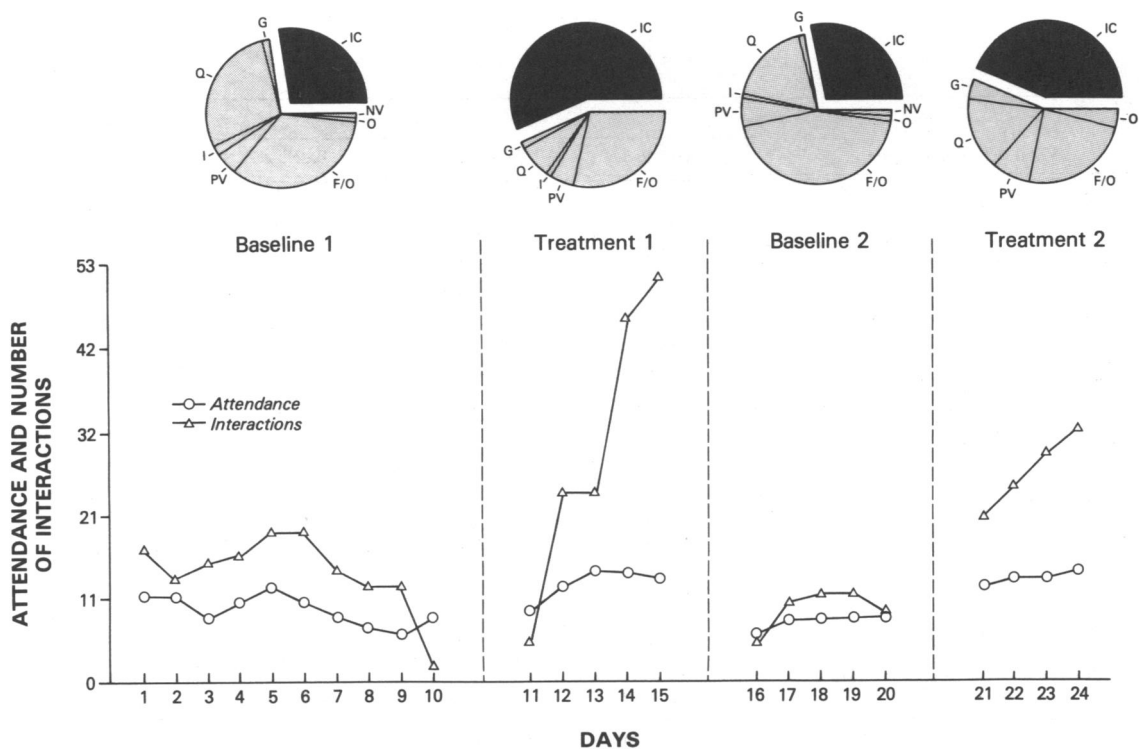


Figure 1. Frequency of attendance and number of social interactions during Baseline 1, Treatment 1, Baseline 2, and Treatment 2. Pie charts illustrate the breakdown by percentage of vocal content during each phase: IC = ineffective communication, NV = negative vocals, O = other, F/O = facts/opinions, PV = positive vocals, I = instructions, Q = questions, and G = greetings.

communication. The percentage distribution across these seven categories, plus an "other" category, are displayed in Table 1. Also displayed in parentheses under the percentages are the raw numbers representing the number of occurrences of the particular subcode. Because phase length and the total number of vocals recorded for each phase varied, raw numbers should be considered in relation to the total number of vocals during each phase. This number is listed at the bottom of the table. An examination of the raw numbers of vocals suggests that, although the rates of interaction increased during the intervention conditions, there were, on the average, fewer vocals per interaction. That is, there were actually more vocalizations during baseline conditions than treatment conditions.

The categories instructions, greetings, and negative vocal all remained fairly constant, ranging from 0 to 4%. Positive vocal accounted for 8% or less of the total vocal behavior in each condition.

The major portion of the interactions was accounted for by ineffective communication, facts/opinions, and questions. During Baseline 1, these categories comprised 27%, 33%, and 29% of the vocal behavior, respectively. During Treatment 1, the first intervention condition, these same categories accounted for 57%, 28%, and 7% of the vocal behavior. In the reversal condition, Baseline 2, they returned to previous levels of 28%, 44%, and 18%, respectively. In the final intervention condition, Treatment 2, 44% of verbal content was categorized as ineffective communication, 24% as facts/opinions, and 16% as questions.

DISCUSSION

Serving refreshments was shown to increase attendance and frequency of interaction in the activity area of the nursing home. However, no evidence was found to support the assumption that

Table 1
Percentages of Vocal Behavior Content by Phase

Vocal behavior subcode	Condition			
	Baseline 1	Treatment 1	Baseline 2	Treatment 2 ¹
Ineffective communication	27 (87)	57 (105)	28 (65)	44 (11)
Facts/opinions	33 (211)	28 (53)	44 (102)	24 (6)
Questions	29 (181)	7 (13)	18 (43)	16 (4)
Greetings	2 (9)	2 (3)	1 (2)	4 (1)
Negative vocals	1 (6)	0 (0)	1 (2)	0 (0)
Positive vocals	5 (32)	5 (9)	6 (14)	8 (2)
Instructions	2 (11)	1 (2)	1 (3)	0 (0)
Other (e.g., singing)	1 (7)	0 (0)	1 (2)	4 (1)
Number of vocals coded during the entire phase	(<i>n</i> = 632)	(<i>n</i> = 185)	(<i>n</i> = 233)	(<i>n</i> = 25)

Note. Total numbers are presented in parentheses under each percentage. Note that total number of vocals varied across phases.

¹ Due to a failure in the recording equipment, data from only the first day of the second intervention phase were available.

the quantitative increase in the rate of interaction was accompanied by a concomitant change in the number of positive vocalizations among subjects. Not only did ineffective vocalizations account for the bulk of the proportional increase in vocal behavior, rates of more appropriate behaviors (i.e., positive vocals, questions, and facts/opinions) declined during the treatment phases. Although it is evident that the provision of refreshments increased the number of resident-to-resident interactions in the activity area, it cannot be automatically assumed that this produced a similar improvement in the quality of the social environment. It is conceivable that interactions involving ineffective vocalizations represent "steps in the right direction." If this is the case, however, interventions designed to improve the quality of the social environment for this population should take active steps to shape this rudimentary vocal behavior into a form that will maximize the likelihood that it will enable positive interactions, rather than assume that this goal has been met.

All analyses in this and earlier studies have been

conducted on group data and therefore interpretation of the results must be tempered accordingly. It is possible that this type of intervention has positive effects on some subjects but not others. Because individual subjects remained anonymous, it was not possible to obtain reports of subjective enjoyment of the intervention nor was it possible to obtain more detailed information about subjects from staff or medical records. Nonetheless, it appears that, when implemented at a systems level, some caveats must be recognized. Future research is needed to identify ways to effect qualitative improvement in the social environments of nursing homes.

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