Effects of Project Versus Parallel Groups on Social Interaction and Affective Responses in Senior Citizens

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Using activity analysis, occupational therapists structure group activities to meet the needs and goals of group members. This study compared the effects of project group structure (subjects participate together on a common task) with parallel group structure (subjects each have a task) in a sample of healthy seniors (32 women and 9 men). Subjects randomly assigned to either experimental condition made creative and imitative collages in a counterbalanced order. Time-sampled observations revealed that project group subjects talked and looked at others significantly more than parallel group subjects. On-task and laughing behaviors were also measured, but results were inconclusive. Project group subjects rated their activities higher on the action factor of the Osgood semantic differential (OSD) than did parallel group subjects, but there were no other differences on the OSD or on MacKenzie's Group Climate Questionnaire. Nor were there significant main effects between the creative collage and the imitative collage. Results are discussed both in terms of group task structure as an occupational therapy tool and in terms of methodologies for future activity analysis research.

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Through activity analysis and synthesis, occupational therapists structure occupation to meet the needs and goals of their patients. Groups have provided an important context for occupational therapy since the early days of the profession (Howe & Schwartzberg, 1986, p. 39), and the special characteristics of groups make group activity analysis a complex but rich task. The occupational therapist using group activities must determine (a) the degree of sharing required by the task among group members and (b) the degree of creativity allowed by the predetermined structure in the task. These variables within the group activity may be used to foster or inhibit different types of social interaction or affect, depending on the needs of group members.

The concept of the *project group* as a therapeutic tool has been credited to Anderson (1936). According to this author, in a project group all group members share the responsibility for the end product. This is seen in contrast to a situation where the individual is solely responsible for the end product whether working alone or in a group. In 1937 Dunton analyzed the activity of quilt making in terms of its potential effects on socialization and affect. He described how the specialization of group members and the alternation of roles within the project could increase the "social idea" and lead to increased verbal and nonverbal interaction. Mosey (1970) theorized that the project group can be thought of as the next developmental step beyond the minimal sharing seen in parallel groups.

Occupational therapy research into the nature of group task structure is limited, as is research in other areas of activity analysis. Hyde, York, and Wood (1948) compared the effects of different group games on social responses in institutionalized psychiatric patients. Efron, Marks, and Hall (1959) compared group-centered activity (making lawn chairs for use on hospital grounds) with individual activity in terms of rated psychiatric improvement. It should be noted that these authors mistakenly labeled individual activity as "occupational therapy" and group projects as "industrial therapy."

More recently, DeCarlo and Mann (1985) confirmed a key principle of occupational therapy groups by finding that an activity-based group enhanced self-perception of interpersonal communication skills more than a verbally oriented group. In a similar vein, Schwartzberg, Howe, and McDermott (1982) compared three different types of groups: a community group meeting, a self-expression group combining task- and process-oriented occupational therapy, and an open occupational therapy group oriented to individual activities. The acute psychiatric inpatients were found to communicate more in the individually oriented group than in the other two group contexts.

Two recent studies conducted with nondisabled populations (normal college students) investigated task-structured sharing as a variable of significance to activity analysis. Adelstein and Nelson (1985) studied two types of sharing within the context of collage activity: the sharing of materials and the sharing of end products. Affective meanings of the different activity experiences were measured by Osgood's short-form semantic differential (OSD), which measures evaluation (the affective value placed on the activity), power (the potency held by the activity), and action (the liveliness of the activity). No differences were found due to sharing on these dependent variables. Steffan and Nelson (1987) compared three levels of sharing brought about by the presence or absence of tool scarcity within the context of a stenciling activity. In addition to using the OSD, these authors used the Group Climate Questionnaire (GCQ). This instrument measures engagement, avoidance, and conflict in groups at various stages of development. It was found that subjects in groups experiencing a moderate level of sharing reported significantly more engagement than subjects experiencing either a high level of sharing or no required sharing.

The present study extended this line of inquiry into task-structured sharing through activity analysis. A project group in which subjects worked together to make the same shared end product was compared with a parallel group in which subjects engaged in the same types of activity to make individual products. Group task structure (project vs. parallel) was com-

pared both under the relatively less structured conditions of a creative collage activity and under the relatively more structured conditions of imitating a previously constructed collage from a photograph.

The study of creative vis-a-vis imitative activity is of theoretical significance to the profession of occupational therapy in its own right. Tiffany (1983, p. 300) and Cynkin (1979, p. 122) specified creativity as a factor occupational therapists should consider in conducting activity analyses. Fidler and Fidler (1978) reasoned that creative activity has an important role in the development of a sense of self-worth. On the other hand, imitative activity of the type considered in this study requires problem solving to fulfill external criteria. Since creative activity and imitative activity involve different kinds of challenges, the provision of both in this study extended the generalizability of the comparison between project and parallel groups.

Another feature of the present study was the measurement of directly observable social behavior in addition to the use of the OSD and the GCQ. Carlsmith, Ellsworth, and Aronson (1976, p. 197) have argued that research of small group situations has relied too much on self-report rating scales. Needed are behavioral studies to supplement rating scales such as the OSD and the GCQ. The present study included the measurement through time-sampled direct observation of four variables: talking, looking at another person, laughing, and on-task behavior. Ottenbacher (1986, pp. 71–74) is among those who have described the time-sampling of prespecified behaviors.

Previous study (Froehlich & Nelson, 1986) indicated that collage making is a highly rated activity among healthy older women. The study of older people, for many reasons, including the demographic distribution of seniors, the prevalence of seniors' activity programs, and the special needs of seniors for leisure activities, is important to the profession. However, Johnson (1983) stated that occupational therapy research with the elderly is rare and that occupational therapists are "scarcely recognized in the broad field of gerontology" (p. 729). Although the study of disabled groups should be a high priority, the study of normal populations at various levels of the developmental span is also important for several reasons: (a) basic principles of occupational therapy depend on an understanding of normal function and occupation; (b) an understanding of normal function is directly relevant to the role of occupational therapy in the prevention of disability; and (c) a logical progression of research is from studies of normal function to studies of abnormal function (for example, many of the procedures used in this study to measure social interaction are directly transferable to studies of clinical populations).

This study tries to determine (a) whether the ef-

fects of project and parallel group structure on healthy seniors differ in terms of affective responses, group climate, or directly observed measures of social interaction and (b) whether there are differences between creative and imitative activity.

Method

Subjects. Forty-one subjects (32 women and 9 men) living in a small Midwestern city participated in the study. Research assistants asked staff at a variety of senior citizen activity and educational centers for their assistance in identifying healthy seniors who might be interested in participating in a research project involving collage making. They were told of the following selection criteria: independent mobility, adequate vision and hearing for reading and following instructions, ability to fill out forms, and ability to engage in a fine motor activity for 2 half-hour periods. Activities center staff allowed the research assistants to post signs advertising the project and encouraged individuals meeting the criteria to call the research assistants for appointments. All subjects attending the research sessions had the basic abilities required by the study's procedure.

The mean age of those participating was 68.9 years, with a standard deviation of 5.1 and a range from 62 to 83. Socioeconomic status was measured by the Four Factor Index of Social Status (Hollingshead, 1975). This instrument has a possible range from 8 to 66. The mean score of subjects on this index was 40.0, with a standard deviation of 11.1. This score indicates a sample broadly reflective of the community, with family educational and occupational backgrounds varying considerably.

Measurements. The OSD (Osgood, May, & Miron, 1975, p. 172) consists of twelve 7-point scales of paired opposites. Each of the three factors of affective meaning (evaluation, power, and action) are calculated by adding together four of the scales. Osgood et al. have identified the OSD's construct validity and internal reliability through extensive factor-analytic studies.

The GCQ (MacKenzie, 1983) is based on several other group dimension scales and the factor analysis and refactoring of items. It has 12 items on 7-point Likert scales, each ranging from *not at all* to *extremely.* Scoring involves the calculation of a weighted *t* score for each item; in addition to that, the mean of the *t* scores for each factor is calculated (five scales make up the engaging factor; three, the avoiding factor; and four, the conflict factor) (MacKenzie, 1984).

Four of the 41 subjects left missing data on scales of the OSD and GCQ. For the OSD, averaging of the remaining scales of the factor was used (Nie, Hull,

Jenkins, Steinbrenner, & Bent, 1975, pp. 119–120). Missing data on the GCQ were handled in accordance with the calculations recommended by MacKenzie (1984).

Directly observed behaviors were measured in accordance with a protocol established through extensive pilot testing. Three observers sat behind a one-way vision window with a full view of the subjects. Generally the observer on the left observed 2 or 3 subjects on that side, and the observer on the right observed the 2 or 3 remaining subjects on the right. Except for one session in which the middle observer substituted for the observer on the left, the middle observer checked for interobserver reliability by independently scoring behaviors of observed subjects.

Each of the observers had a Radio Shack TRS-80 Model 100 portable computer. The middle observer's computer was programmed to signal 10-second observation and 5-second recording intervals through beeps audible only to the observers. A single high-pitched beep indicated that each observer should start observing a designated subject; a single low-pitched beep indicated that 5 seconds were available for recording the 1st subject's behaviors before the double high-pitched beeps indicating the beginning of another subject's observation. The progression continued until after the 3rd subject's behaviors were recorded, at which time the program signaled the return to observing the 1st subject. This continued for 16 cycles, at which time the computer signaled a 4½-minute break for the observers. After the break, 16 more cycles were signaled.

The middle computer was programmed both to signal with beeps and to accept recorded data, whereas the other two computers were programmed only to accept recorded data. During each recording interval each observer had to choose among four left-hand keys to press (which represented no talking or laughing, laughing but no talking, talking but no laughing, or both talking and laughing) and among four right-hand keys to press (no looking at any other person or at task, looking at another person but not at task, looking at task but not at another person, and both looking at another person and at task). Laughing was operationally defined as any audible nonverbal exhalation accompanied by smiling (smiling without making a sound did not count). Talking included any audible vocalization with communicative intent and excluded laughing or coughing. Looking at another person included any orientation of the eyes in the direction of any part of another person. On-task behavior was any orientation of the eyes to the collage materials or tools.

After each session, the data were uploaded to a mainframe computer programmed to recode the variables, add up the intervals so that each of the four

variables had a possible range from 0 to 32, and compute interobserver reliability. Computed as the percentage of interobserver agreements divided by the total number of intervals, the mean interobserver reliability across sessions and across observers was (a) talking—90%; (b) looking at another person—85%; (c) laughing—95%; and (d) on-task—98%.

Procedure. As soon as each subject contacted the recruiting research assistants, he or she was randomly assigned to either the project condition or the parallel condition. Next each subject signed up for one of the scheduled sessions. Men were much harder to recruit than women, and they were scheduled in such a way that there would always be at least one man per group but no more than two. The recruiter used Reiss's Interpersonal Contacts Categories scale (Reiss, 1959) to ensure that good friends, close associates, and kin were not scheduled for the same session. Six persons were scheduled for each session; if fewer than four appeared, the session was rescheduled.

A 4 × 6.4 m room equipped with a one-way vision window and located in a university building was the site. On entering the room each subject was greeted by the group leader and was asked to choose one of six colored cards that randomly determined initial seating position along one side of a 1 × 3 m table.

The group leader carefully followed a written protocol. After the group leader welcomed and oriented the group, each subject filled out a short form eliciting demographic information. As a warm-up exercise, subjects were encouraged to pair up for approximately 5 minutes and to share some background information with each other; each then shared one or two pieces of information about the other person with the group.

For the four sessions designated as parallel groups (*n* = 22), subjects were told to use a 45.7 × 61 cm sheet of railroad board as the background for each person's collage. In two of these sessions subjects were first told to create their own collage: "What you make is up to you." In the other two sessions the imitative collage came first; these subjects were asked to "copy one of the collages on these photographs." Two identical sets of nine mounted 10 × 15 cm color photographs of different collages were then distributed. Subjects were told that they would have about a half-hour to make the collage, and the computer program behind the one-way mirror was not started until subjects actually began the collage. Every 5 minutes the group leader told the group that all was going well but did not otherwise interact with the subjects unless asked a direct question. At the end of the half hour, subjects were asked to finish up, and then subjects filled out the OSD and GCQ before taking a refreshments break outside the room. After the break and without another warm-up exercise, the group that had

made a creative collage received the instructions for the imitative collage, and vice versa. All other procedures were the same as before the break.

The four groups (*n* = 19) assigned to the project group condition experienced exactly the same protocol except that subjects were asked to work together as a group in making a single collage. They were given background railroad board that was six times as large as that provided for the parallel group collages.

At the start of each collage experience, the same types of tools and materials were available: glue, scissors, varieties of dried flowers, grains, macaroni, peas, felt and other patterned and nonpatterned materials and trims, ribbons, yarn, feathers, construction paper, and other small patterned objects made of plastic, metal, Styrofoam, or paper. Magazines and newspapers were not used because it was impossible to copy many types of photographs, and thus the imitative condition could not have been compared with the creative condition.

Results

Table 1 summarizes the results. Three of the variables—observed laughing, observed on-task behavior, and GCQ conflict—were not normally distributed and did not meet the assumptions for analysis of variance. Laughing was an infrequent behavior for most subjects, and all subjects remained on task for most of the intervals observed. Most subjects reported very little conflict.

Each of the other dependent variables was submitted to a two-way analysis of variance with one repeated measure (Group Structure x Type of Activity) via the SPSS MANOVA repeated measures (default model) facility.

Observed Talking and Looking at Other Persons

The project group structure elicited significantly more talking than the parallel group structure, $F(1,39) = 62.4$, $p < .001$. As can be seen by the mean scores in Table 1, there were more than twice as many talking intervals in the project group than in the parallel group. There was no significant difference between the creative task structure and the imitative task structure in terms of talking, $F(1,39) = 0.9$, and the interaction between the two factors was not significant, $F(1,39) = 2.2$.

The ANOVA for observed looking at another person revealed a significant main effect for group structure, $F(1,39) = 25.2$, $p < .001$, and a significant interaction between group structure and type of activity, $F(1,39) = 13.3$, $p < .001$. As Table 1 shows, the difference between the project and parallel means is greater in the imitative condition than in the creative

Table 1
Effects of Task Group Structure and Activity Type on Directly Observed Variables, Factors of the OSD, and Factors of the GCQ (N = 41)

Dependent Variable	Possible Range	Group Structure	Creative Collage		Imitative Collage	
			M	SD	M	SD
Observed talking	0–32	Project*	18.1	4.7	18.7	5.2
		Parallel	9.0	6.6	6.6	4.7
Observed looking at other person	0–32	Project*	16.2	5.9	18.2	6.4
		Parallel	12.4	5.1	7.7	4.1
Observed laughing	0–32	Project	2.6	3.3	2.9	3.3
		Parallel	1.8	2.0	0.7	0.9
Observed on task	0–32	Project	31.9	0.2	31.8	0.4
		Parallel	31.2	1.6	31.9	0.5
OSD evaluation	0–24	Project	18.2	4.9	19.4	4.3
		Parallel	18.0	5.3	19.6	3.8
OSD power	0–24	Project	13.8	5.2	14.8	5.0
		Parallel	13.6	6.9	14.0	6.1
OSD action	0–24	Project*	14.8	3.9	16.0	3.1
		Parallel	12.9	3.3	13.1	3.0
GCQ engaging	23–68	Project	50.7	6.8	53.7	8.4
		Parallel	49.2	8.1	48.0	10.0
GCQ avoiding	34–75	Project	58.2	6.1	60.4	7.6
		Parallel	55.0	5.9	57.4	10.8
GCQ conflict	37–82	Project	39.2	5.3	39.7	6.9
		Parallel	38.0	3.4	40.2	4.0

Note. OSD = Osgood semantic differential. GCQ = Group Climate Questionnaire.
* Project scores greater than parallel scores, $p < .01$ for main effect on this factor.

condition. F tests for simple effects demonstrated that subjects looked at each other more when they were in the project groups than when they were in the parallel groups both while being engaged in the creative collage, $F(1,39) = 4.8$, $p < .05$, and in the imitative collage, $F(1,39) = 40.1$, $p < .001$.

Affective Meanings and Group Climate

For the OSD factors of evaluation and power and for the GCQ factors, there were no significant main effects or interactions. However, for the OSD factor action, there was a significant difference between project group structure and parallel group structure, $F(1,39) = 7.4$, $p < .01$. Project groups were experienced as more active than parallel groups.

Discussion

The data demonstrate that task group structure may have a significant effect on social interaction. Specifically, groups structured in a project fashion elicited much more verbal and nonverbal (visual regard) interaction than groups structured in a parallel fashion. This was true both under the relatively unstructured conditions provided by the creative collage activity and under the relatively high degree of structure provided by the imitative collage.

As pointed out by Howe and Schwartzberg (1986,

p. 205), a major role for the occupational therapist group leader is to adapt the group's structure in a way that will help group members achieve their therapeutic goals. For example, the occupational therapist may want to encourage social interaction among socially isolated individuals, or may want to increase the rate of interaction so that individuals have more opportunities to become aware of self-defeating interpersonal patterns. On the other hand, the occupational therapist may want to decrease the rate of social interaction in a particular group. For example, the members of a group might not yet be ready to deal with a high level of interpersonal demands, or they might need a temporary retreat from interpersonal stresses. Another possibility is that the members of a group might be more in need of individual task achievement than enhanced interpersonal skills.

The other significant difference found to be due to group task structure was in the affective dimension of action. In factor-analytic studies conducted by Osgood et al. (1975), the scales making up this factor (fast–slow, noisy–quiet, young–old, and alive–dead) were found to be independent of the scales making up the evaluation and power factors. In the present study the subjects may have found the project group to be faster moving and livelier than the parallel group because of the added stimulation brought about by working together on a project.

Task group structure is not only one of the most important variables in group work, it is also a variable that is highly specific to the profession of occupational therapy. Whereas a verbally oriented group therapist would be unlikely to consider the presence or absence of a shared end product as a source of affective meaning and increased or decreased social interaction, the occupational therapist using activity groups has this added tool in fostering behavioral change. This is part of our heritage of activity.

It is improper to extrapolate research findings with a healthy population to clinical practice with patients in convalescent hospitals and nursing homes. The study reported here is theoretically oriented rather than oriented to the efficacy of intervention. However, the present study is relevant to the clinician insofar as it strengthens occupational theory in the area of group work. The practitioner makes clinical judgments based on theoretical considerations, situational matters, and other factors. This study has confirmed a theoretically based relationship in a healthy population; it is up to the clinician to apply the theory to actual clinical situations.

Although the present study does document the importance of group task structure, there were few differences between creative and imitative activities as defined in this study. This is in contrast to the findings of Carter, Nelson, and Duncombe (1983) who showed that college students asked to create a collage expressing their own image rated this activity significantly higher both in evaluation and power than the activity of imitating a magazine picture with the same collage materials. In the present study elders' mean ratings of the four experimental conditions ranged from 18.0 to 19.6 on the evaluation factor; these scores were high given the fact that a score of 12 can be considered a neutral rating. In contrast, the mean evaluation scores of the college students in the Carter et al. study were 14 for the imitative condition and 16.8 for the creative personal collage condition. This suggests the possibility that there may be age-related differences both in how collage activities are perceived and in how creativity and imitation are perceived. There is a need to study this possibility under controlled conditions within the same investigation using a factorial model.

The main limitation to this study in terms of research design is the fact that any competent group leader would be aware of the differences between groups and therefore could deduce the independent variables under study. It is important to acknowledge the possibility that such a group leader could bias the study's results. To mitigate this problem, the group leader in this study followed a carefully established protocol and interacted minimally with the subjects.

The nature of the variables observed from behind the one-way mirror was not discussed with the group leader until after the study was over.

Methodologically the present study advances activity analysis research by documenting the reliable use of direct observation technology to measure the effects of occupation on activity participants. Although more time-consuming and costly than the use of self-report forms, direct observation technology can provide valid, sensitive measures of a wide variety of clinically relevant behaviors. This is especially important for future activity analysis research with clinical populations who do not have the cognitive abilities required by self-report measures. For example, many seniors living in nursing homes would be hard-pressed to fill out the OSD or the GCQ; however, most people in nursing homes are capable of engaging in a wide variety of occupations. Future research should explore those occupations, including the differences between project and parallel activities, through the use of direct observation technology.

Conclusion

With healthy seniors as its sample, this study has demonstrated that task group structure can have a significant effect on verbal interaction, nonverbal interaction, and the perception of action in the group. This was true within the contexts both of a creative activity and of an imitative activity. Further activity analysis research should be done to extend the methodologies used in this study to investigations of clinical populations.

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