Effects of Contextual Variables on Social Behavior in Integrated Settings

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Running Head: SOCIAL BEHAVIOR IN INTEGRATED SETTINGS

Abstract

There is increasing interest in the effects of contextual variables on the behavior of persons with disabilities. This study examined the effects of three types of contextual variables: location (school, classroom, and community), degree of teacher structure (nonstructured, context organized, and teacher directed activities), and type of activity (task and recreational) on the social interactions of 42 students with disabilities in integrated school programs. A repeated measures design with 3 independent groups (N = 14 per group) was employed. Each group was composed of 4 students with moderate disabilities, 4 students with severe disabilities, 3 students with autism, and 3 students with profound disabilities. Each student was observed during 5 different integrated activities. Frequencies of opportunities for social interaction, initiations, duration of interactions, and number of turns taken were recorded. Results included the following: (a) There were significantly more opportunities for social interaction in school and community settings as opposed to classroom settings, (b) The frequency of initiation by students with disabilities was significantly higher under teacher directed conditions, (c) The frequency of initiation by nondisabled peers was significantly higher in recreational/nonstructured activities, and (d) Teacher directed activities within school settings produced the longest duration of interactions. The need for further research concerning contextual variables and setting events to promote integration is discussed.

Effects of Contextual Variables on Social Behavior in Integrated Settings

Achieving integration of students with disabilities into public school campuses, regular classrooms, and the community remains a central focus of service delivery and policy efforts (Brown, et al., 1991; Haring & Breen 1989). Increasingly, the goal of integration efforts is to create and support social interactions between students with disabilities and their nondisabled peers. In many research efforts, integration is

operationally defined as the degree of social exchange between students with disabilities and nondisabled peers (Gaylord-Ross, Haring, Breen, & Pitts-Conway, 1984; Odom & Strain, 1986). The identification of variables that are associated with increasing social interaction remains an important focus for research. The present research was designed to investigate contextual variables and their influence on social interactions in integrated school and community settings.

Many aspects of the social and physical environment affect interaction. Among the most powerful variables identified is the social behavior of nondisabled people in the environment. Brinker and Thorpe (1986) found that approximately 32% of the variance in the degree of social integration was associated with the social behavior of nondisabled peers. The long history of success with peer initiation training (e.g., Strain, Kerr, & Ragland, 1979; Sasso & Rude, 1987) demonstrates the applied significance of this finding. A variety of interventions on the behavior of nondisabled peers seem to be effective in increasing social interactions including peer tutoring experiences, and friendship-based programs (Haring, Breen, Pitts-Conway, Lee, & Gaylord-Ross, 1987), as well as programs that simply increase contact between students with disabilities and peers (Voeltz, 1980).

Beyond the level of initiation by nondisabled persons, other important variables may affect the quantity and quality of social interaction. Although distinctions between these variables are not yet well understood theoretically, these variables have been referred to as contextual variables (e.g., Baer, Wolf, & Risley, 1987; Haring, Kennedy, & Breen, 1991), setting events (e.g., Hendrickson, Gable, & Shores, 1987; Kantor, 1959; Wahler & Fox, 1981), establishing operations (Michael, 1982), or eco-behavioral variables (e.g., Rogers-Warren & Warren, 1977). Empirical demonstrations of setting events and contextual variables that have been found to exert control over social interactions and other important schooling variables (e.g., Mayer, Nafpaktitis, Butterworth, & Hollingsworth, 1987) are increasing in the literature.

One class of contextual variables that has been shown to influence social interaction is group size and composition. Brown, Fox, and Brady (1987) showed that altering spatial density (i.e., reducing the size of a play area) affected the social responding of a diverse group of children who were at risk, developmentally delayed, and mentally retarded. Pellegrini (1984) found social-cognitive aspects of play among preschoolers was affected by types of learning centers and number of children and adults present. The study by Brinker and Thorpe (1986) indicated that 20 percent of the variance in social interaction was controlled by the number of teaching staff present, number of nonretarded students present, and number of community members present.

The manner in which the environment is physically constituted also affects social behavior. R. D. Horner (1985) showed that the adaptive behavior of profoundly retarded institutional residents was affected by the environmental richness of the ward (i.e., number of interactive toys and games). Storey and R. H. Horner (1991) found that social interactions in supported employment placements were associated with the structure of the placement. Workers employed in individual and enclave programs had significantly more interaction with nondisabled persons than did members in work crew placements. Similarly, Brinker and Thorpe (1985) indicated that the grouping of materials in the environment and the age-appropriateness of materials were significant predictors of social bids for interaction.

Setting events, in many cases defined as occurrences that precede activities that serve to control subsequent behavior, have also been documented. For example, engaging in brief pre task activities with students in which the adult requests that the student respond to a number of simple demands has been shown to set the occasion for lower levels of disruptive behavior under subsequent task conditions (Harchik & Putzier, 1990; Singer, Singer, & Horner, 1987). Gardener, Cole, Davidson, and Karan (1986) analyzed the setting events that were associated with the reduction of aggressive behavior. Events such as being informed of something disappointing, being reprimanded,

being hurried or rushed, disrupted sleep patterns, and being ill as reported by residential staff were found to correlate with subsequent aggression.

The structure of the activity itself also exerts contextual control over social behavior. Oetting and Rice (1991) found that the complexity of conversations influenced mentally retarded adults' judgements of topic maintenance. Breen and Haring (1991) demonstrated that competence within a context affected the frequency of subsequent social interactions. Higher levels of purely social interaction (as opposed to teaching and prompting interactions) were observed when students with disabilities were competent with the microcomputer games that structured the interactions. Haring and Kennedy (1989) showed that the motivational control of problem behavior of two adolescents with autism varied as to the type of activity in which they were engaged. Within recreational contexts, the stereotypic behavior of the students served a self-stimulatory function, while within task conditions the same behavior served a negative reinforcing function.

Thus, there is an emerging data-base to support the further development of research into the control of behavior by contextual variables. The purpose of the present study was to investigate the relations between variables within a contextual model of social integration and the amount of social interaction observed in integrated settings. Within this model three types of contextual variables were identified: location (school, classroom and community), degree of teacher structure (nonstructured, context organized, or teacher directed), and type of activity (task and recreational). We sought to identify those contextual variables associated with the highest levels of social interaction with nondisabled persons. Conducting this investigation within the framework of a specified model of contextual variables might serve to help better define the construct of context in investigations of school and community integration.

Method

Participants

Forty-two students with disabilities, ages 11-21 participated. Twelve students were identified as having moderate disabilities (Measure of IQ [Leiter, Stanford-Binet]: M = 49.0, range = 35-65; Measure of Adaptive Behavior [Vineland Adaptive Behavior Scales]: M = 57.5, range = 50-70), 12 with severe disabilities (Measure of IQ: M = 35.4.0, range = 30-40; Measure of Adaptive Behavior: M = 34, range = 25-40), 9 with autism (Measure of IQ: M = 34.7, range = 20-64; Measure of Adaptive Behavior: M = 30.6, range = 10-45), and 9 with profound disabilities (Measure of IQ: Untestable, measure of Adaptive Behavior: < 20). Students were enrolled in public junior and senior high schools serving general education students and received primary educational services within classrooms supporting students with moderate, severe, and profound disabilities. Students were enrolled in school programs from four county and district school systems in Central and Southern California. School service areas were selected for inclusion based on the demonstrated commitment to the integration of students with severe and profound disabilities in age-appropriate school and community contexts and at least a five year history of comprehensive (i.e., school and community) integration efforts.

Procedures

Design. A repeated measures, 3 (Locations) X 5 (Activity types/Teacher structures) X 4 (Disability levels) design was employed. The 42 students were randomly assigned to one of 3 groups matched according to level of disability. Thus, each group was composed of 4 students with moderate disabilities, 4 students with severe disabilities, 3 students with profound disabilities, and 3 students with autism. The three groups corresponded to the locations in which students from that group would be observed: Community, School, or Classroom. Thus, for the purpose of statistical analyses, location is a between group variable (i.e., there was independence across groups). Each student was observed in 5 activities defined by two activity-types (Recreation and Task) and three levels of teacher structure (Nonstructured, Context Organized, and Teacher Directed), such that each student

engaged in one activity in each of five cells: Recreation/Nonstructured; Recreation/Context Organized; Recreation/Teacher Directed; Task/Context Organized; and Task/Teacher Directed.

Locations. Locations in which typical adolescents frequent were selected. Within each type of location, subenvironments were identified which included interactions or opportunities for interaction between individuals. Community subenvironments included: grocery stores, banks, public transit, drug stores, restaurants, job sites, video arcades, libraries, public pools, bowling alleys, and clothing stores. School subenvironments included: the hallways, cafeteria, lunch lines, playgrounds, social activities room, mainstreamed classes, library, school office, school pool, locker room, gymnasium, school snack shop, kitchen. Classroom subenvironments included: student desks, kitchen areas, leisure areas, computer areas, hygiene areas, and large games areas (e.g., ping pong, air hockey, fus ball).

Activity type. Two general types of activities were identified: (a) Task related activities, defined as functional daily living tasks or instructional academic exercises, and (b) Recreation activities, defined as not necessary for successful daily functioning, but serving to provide enjoyment. Table 1 gives a listing of specific task and recreation related activities observed across location.

Insert Table 1 about here

Teacher structure. Three levels of teacher assistance or structure were observed. Nonstructured teacher structure was defined as (a) no teacher direction of activity, and (b) no teacher prompting of interaction between participants. Context-Organized teacher structure was defined as (a) teacher specification of an activity to be engaged in, and (b) no teacher prompting of interaction between participants. Teacher Directed teacher

structure was defined as (a) teacher direction of activity, and (b) teacher prompting of interaction between participants.

Dependent Variables

Measurement procedures. Two 15 min observations were conducted under each of the 5 activity type/teacher structure conditions per student. Thus, students were observed for a total of 2 hr and 30 min. An observer stood 5-10 feet from the student with disabilities and coded opportunities for interaction and social interaction variables (initiations, duration, and number of turns taken) between the student and nondisabled peers or community members. Interactions that occurred between the student and teachers or other students with disabilities were not recorded. Table 2 shows a sample of the observation assessment form used in the study.

Insert Table 2 about here

Opportunity for interaction was defined as settings, events, or stimuli which established the appropriateness of initiator-respondent interactions between two or more persons independent of an actual occurrence of an interaction. An opportunity was created (a) by a conventionalized social role where interaction is customary and the potential initiator is oriented toward the potential respondent (clerk, bus driver, lunch lady, cashier), (b) during social or instructional interaction, if approached by a new individual, (c) when entering a setting with people with equivalent social roles who are or are not already engaged in social interaction, (d) during a low frequency accidental or inadvertent event such as bumping into someone, needing to get by someone, or dropping something, or (e) by an initiation made by the participant or nondisabled individual directed toward the other. Multiple interactions could occur within the same opportunity.

Initiation was defined as an appropriate or inappropriate linguistic behavior with use of a formal language system (either vocal, written, synthesized, or standard sign

language) or appropriate or inappropriate nonlinguistic behavior with use of an informal communication system (gestures, points, pats, to "high fives") attempting to start an interaction with another person. A new initiation was coded if there was a change in topic, or a mutual break in focus followed by a refocussing of attention. Initiations were coded as to the identify of the initiator (student with disabilities, nondisabled individual), and whether the initiation was a social or teaching behavior. Social initiations were appropriate responses that served to establish or maintain friendly contact with another person such as exchanging an object, starting a conversation, or making a gesture. Teaching initiations were those that served to request assistance or request a performance response by another person such as requesting that a student complete a vocational task, or explaining to a students how to make a move in a board game. Inappropriate initiations, such as age-inappropriate, bizarre or stereotypic responses, were responses that would serve to stigmatize the student in the view of others. Initiations were further coded as to who made the initiation (Person with disabilities or Nondisabled person).

The duration of the interaction was measured by starting a stop watch whenever an interaction was initiated and stopping the watch when the activity is terminated or joint attention to the interaction was broken off.

Turns taken were recorded by counting the number of exchanges within an interaction. For example, if an interaction was structured around sharing a picture communication book, the number of times the book was handed back and forth was recorded. Within a conversation, subsequent remarks exchanged after an initiation were recorded as turns.

Reliability

Five people served as reliability observers. Observers were first trained to a criteria of 90% using videotapes of social interactions from contexts closely related to those used in the study. Reliability of the dependent variables was assessed across 20% of the observations by calculating the percentages of interobserver agreement. For

frequency data, the point-by-point correspondence method (Kazdin, 1982) was employed. For duration measures, the percent agreement was calculated by dividing the smaller total durations by the larger total durations. Table 3 shows the range and means of interobserver agreement across the dependent variables.

Insert Table 3 about here

Results

The data were analyzed with repeated measures ANOVAs with the five activity type/teacher structure conditions as the within group factor (i.e., the repeated measure), and between group factors: (a) disability levels (i.e., students with autism and moderate, severe, and profound disabilities) and (b) location (school, classroom, and community). Table 4 summarizes the results of the statistical analysis. There were no statistically significant interaction effects between: location and activity type/teacher structure variables, or disability and activity type/teacher structure. In addition, there were no complex three-way interactions between these variables. We will summarize the results by each dependent variable.

Insert Table 4 about here

Opportunities. There was a significant main effect for location, $F(2, 30) = 7.10$, $p < .003$. Across 30 min of observation there was a mean of 6.3 opportunities for interaction within school locations, 5.6 within community locations, and 3.4 within classroom locations. Post hoc Scheffé tests indicate that opportunities for interaction in community and school settings did not differ ($t_{obs} = .95$, $t_{crit(.05,\ 2,30)} = 2.57$); however,

significantly more opportunities existed in community and school settings than in classroom settings(t_{obs} = 4.8). No other main effects or interactions were found.

Initiations by Students with Disabilities. There was a main effect for disability level, $F(3, 30) = 7.01$, $p < .001$. The frequency of initiations by students with moderate disabilities (M = 8.90), severe disabilities (M = 3.89) profound disabilities (M = 1.55) and autism (M = 4.69) were compared using Scheffé post hoc analyses. These analyses indicated that students with moderate disabilities initiated interactions significantly more often than did students with severe and profound disabilities (t_{obs} = 5.85, $t_{crit(.05, 3,30)}$ = 2.96), while the frequency of initiation by students with autism was intermediate. That is, the level of initiation by students with autism was not significantly different from students with moderate disabilities (t_{obs} = 2.54) nor was it significantly different from students with severe and profound disabilities (t_{obs} = 1.61).

There was also a main effect for activity type/teacher structure, $F(4, 120) = 3.46$, $p < .01$. The frequencies of initiations across the contextual variables: recreation/nonstructured (M = 4.45), recreational/context-organized (M =4.10), recreational/teacher directed (M = 6.86), task/context-organized (M = 4.02), and task/teacher directed (M = 5.55) were analyzed using post hoc Scheffé tests. There was a significant difference between both teacher directed conditions and the other conditions with less teacher direction (t_{obs} = 3.52, $t_{crit(.05, 4,120)}$ = 3.12). There was not a significant difference between the recreational vs the task conditions (t_{obs} = .62).

Social Initiations by Nondisabled Persons. Although there was a significant main effect for activity/structure, $F(4, 120) = 6.21$, $p < .001$; there was also a significant activity/structure by location interaction, $F(8, 120) = 3.96$, $p < .001$. We therefore conducted Scheffé post hoc tests to analyze the sources of this significant interaction. Figure 1 shows the mean number of social initiations across community settings and activity structure. The overall level of social initiation by nondisabled people was lowest in community settings (M = 3.29), intermediate in school settings (M = 5.21), and highest

in the classroom (M = 6.49). Social initiation within classroom settings shows the most variability. Nonstructured recreational activities in the classroom produced the highest level of social initiation (M = 12.07). A Scheffé test indicated that nonstructured recreational activities in the classroom were significantly higher than in community and school settings (t_{obs} = 5.37, $t_{crit(.05,\ 14,195)}$ = 4.98). There was also a significant difference between nonstructured recreational activities in the classroom and task/teacher-directed and task/context-organized activities in the classroom (t_{obs} = 5.85). Community settings showed the least variability across the activity type/teacher structure variables.

Insert Figure 1 about here

Turns taken. There were main effects for disability ($F(3, 30) = 6.25$, $p < .002$) and for activity type/teacher structure, ($F(4, 120) = 4.28$, $p < .003$). As with the social initiation data, the number of turns taken varied with level of disability: students with moderate disabilities (M = 7.11), with severe disabilities (M = 3.63), with profound disabilities (M = 1.44), and with autism (M = 4.09). The main effect for activity type/teacher structure is accounted for by the relatively low number of turns taken during context-organized conditions (i.e., Task/context-organized M = 2.36; and Recreational/context-organized, M = 3.64) compared to the teacher directed conditions and the nonstructured recreation condition (recreational/teacher directed M = 6.17; task/teacher directed, M = 4.81; and recreational/nonstructured, M = 4.31), t_{obs} = 3.57, $t_{crit(.05,\ 4,120)}$ = 3.13.

Duration. A square root transformation of the duration data was done because duration data are not normally distributed. There were main effects for disability, $F(3, 30) = 4.53$, $p < .01$; location, $F(2, 30) = 6.81$, $p < .004$; and activity type/teacher structure, $F(4, 120) = 10.13$, $p < .001$. There was also a significant location X activity type/teacher

structure interaction, $F(8, 120) = 3.05$, $p < .004$. The duration data are shown in Figure 2. As indicated in the figure, the greatest source of the interaction is due to the duration of interactions in task/context-organized activities in classroom settings as opposed to school and community settings, $t_{obs} = 6.01$, $t_{crit(.05, 4,195)} = 4.98$. Within the school setting, there was a significant difference between the two teacher directed activity types (Task/teacher directed and recreation/teacher directed) and the nonstructured and context organized conditions ($t_{obs} = 4.99$).

Insert Figure 2 about here

Opportunities Utilized. Figure 3 shows the mean frequency of opportunities for interaction (top panel) and the percent of opportunities utilized (bottom panel) across locations. Opportunities utilized was calculated by dividing the number of events that included either an initiation by the student with disabilities or a nondisabled peer, by the total number of opportunities for interaction. The bottom panel indicates that within classroom contexts there are a greater percent of opportunities utilized (96%) than in either the school or community contexts (81% and 72% respectively). In contrast, the number of opportunities for interaction was lowest in the classroom ($M = 3.39$), intermediate in community settings ($M = 5.59$), and highest in the school setting ($M = 6.30$). Thus, although classroom settings had the lowest number of opportunities for interaction, nearly all opportunities within the classroom were utilized for social interaction.

Insert Figure 3 about here

Discussion

Results indicated consistent and robust effects of contextual variables on social interaction in integrated settings. The main findings of the study were: (a) Significantly more opportunities for interaction existed in community and school settings as opposed to special education classroom settings. (b) Although there were substantially more opportunities for interaction in school and community settings, when opportunities did occur in the classroom they were utilized on nearly all occasions. (c) The frequency of initiation by students with disabilities was significantly higher under teacher directed conditions than under nonstructured and context- organized conditions. (d) There was not a significant difference between recreational and task contexts on initiations by students with disabilities. (e) The frequency of social initiations by nondisabled persons was significantly higher in recreational/nonstructured contexts. (f) There were significantly fewer turns taken in context-organized conditions than in teacher directed and nonstructured conditions. (g) Task/context-organized activities in the classroom had the longest durations of interactions and these were significantly longer than task/context-organized activities in the school and community. (h) Within interactions in the school setting, teacher directed activities of both types were significantly longer in duration than nonstructured and context- organized activities.

In terms of opportunities for interactions, school and community environments have more naturally occurring opportunities for interaction. However the importance of this finding is tempered by the finding that the percentage of interactions actually utilized is substantially higher with classroom settings. A possible implication of this finding is that nondisabled people within community and school settings might be encouraged to utilize more frequently the richness that exists within these environments.

The longest durations of interaction occurred in the classroom settings, especially when the interactions were teacher directed around accomplishing a specific task. For example, an activity such as working together with a nondisabled peer to prepare a snack

such as making popcorn, with the teacher present and prompting social exchanges would be very likely to produce high levels of initiations by the disabled student (frequently prompted), as well as the longest durations of interaction. This finding is paralleled by the findings within the school setting that showed teacher directed activities, whether task oriented or recreational in nature, had the longest durations of interaction.

Interestingly, while the social behavior of students with disabilities was increased by the presence of a teacher who provided direction, the opposite was true for the nondisabled peers. The frequency of social initiation by nondisabled peers was highest within recreational activities that were nonstructured by teachers. For example, peers tended to show the highest degree of initiation when engaged in activities such as eating lunch together, walking to class together, or playing games when teachers were not present. It is possible the presence of teachers was somewhat distracting to the peers who may look to teachers to prompt interaction. It is also possible that nondisabled students felt they could interact more freely when not observed by teachers.

An implication of these data, that peers initiate more interaction in unstructured recreational times while students with disabilities initiate more frequently with teacher direction, is that an optimally habilitative integration program should maintain a balance between multiple contexts for interaction. It is appropriate to design and maintain activities under teacher direction that serve to prompt and model interactive behavior directly for students with disabilities. It is equally important to design and maintain social interaction programs that create times for students with and without disabilities to simply interact recreationally without the possible inhibiting effects of the presence of teachers on the behavior of nondisabled students.

The role of task versus recreational activity structures did not play a strongly determining role in accounting for social interaction in these settings. Although for nondisabled peers, nonstructured recreational activities set the occasion for their highest number of initiations, this variable did not strongly influence other social interaction

variables. Task versus recreational activity structures were not significantly related to opportunities for interaction. For the duration data, there was a significant interaction between location and activity structure, but this was accounted for by the higher duration of tasks that were context-organized in the classroom compared to the same activity structure within the school and community as well as a significant difference between teacher directed activities (whether task or recreational) and nonstructured and context-organized conditions. Similarly, Scheffé tests of the interactions within the initiation data for students with disabilities and the turns taken data indicated that the task versus recreation comparisons were not significant.

However, it may be an error to discount the importance of task versus recreational activity structures in subsequent research. First, the identification of variables that influence initiation by nondisabled persons are clearly of the utmost importance in increasing levels of social interaction (cf. Brinker & Thorpe, 1986) and these findings indicate that recreational nonstructured activities promote the responding of nondisabled peers. Second, the lack of detection of a greater number of significant findings concerning this variable might be due to the exclusively quantitative nature of the interaction variables assessed (i.e., initiation, durations, turns taken, and opportunities). More qualitative ratings that ask questions such as degree of enjoyment of the activities, and attitudes toward increasing interactions and friendship may have yielded different results. Importantly, as the values within the field shift to a greater concern with the support of friendship rather than focusing on frequencies and patterns of interactions as analyzed here, these types of data will be critical to consider.

There were few surprises with the data that analyzed differences across the disability groups. Students with moderate disabilities had significantly higher levels of initiation, longer durations of interactions, and greater numbers of turns taken per interaction than did students with severe disabilities and students with profound

disabilities. Students with autism displayed an intermediate level of responding on these three variables.

The study highlights the importance of continued research of contextual variables that might affect integration efforts. Efforts which expand this area of research would benefit greatly from the development and use of more precise terms for describing and categorizing contextual variables. For example, the term, setting events has been used by Kantor (1959) and others with multiple meanings including: a) variables that affect motivation (e.g., hunger), b) molar events that precede the context where measurement occurs (i.e., a temporal relation between contexts, settings, or events), as well as c) events that are co-incident with responses assessed. Similarly, the definition of what constitutes a contextual variable is frequently discernable only after reading an individual study's definition of the term. Development of greater precision and standardization in terms such as contextual variables or setting events might both facilitate better communication among researchers in this area and clarify the nature of the variables of interest in our models.

In summary, this study demonstrates that contextual variables influence social interaction in integrated settings. The identification of such contextual variables is important because these variables describe directly observable and replicable activities and support structures. Thus, these variables show potential for not only describing and predicting social interaction, but provide a means for developing interventions to increase social integration.

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