

Quality of Rapport as a Setting Event for Problem Behavior:

Assessment and Intervention



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Abstract: Relationship quality (rapport) between people with developmental disabilities and their caregivers has long been suggested as an important variable influencing the likelihood of problem behavior. However, to date, the association between rapport and problem behavior has not been systematically investigated. The authors evaluated a multimethod strategy for assessing rapport and then used the assessment information to develop a multicomponent intervention for problem behavior. In Study 1, a descriptive assessment was carried out in which rapport was operationally defined, and good and poor rapport dyads consisting of staff members and participants were identified. Then, a functional analysis of each participant's problem behavior was conducted with respect to the interaction of two factors: quality of rapport and task demands. The results of the assessment study indicated that when rapport was poor, levels of problem behavior were high; when rapport was good, levels of problem behavior were low. In Study 2, the authors evaluated the effectiveness of a multicomponent intervention package designed to improve rapport between the person with disabilities and his or her caregiver. When rapport improved, participants showed a decrease in problem behavior and an increase in task completion in the presence of staff members who had previously been identified as having poor rapport with participants. The multidimensional nature of rapport assessment, as well as the unique contribution that rapport-building can make to multicomponent intervention, are discussed.

Severe problem behavior, such as aggression and self-injury, often compromises the quality of life for individuals with developmental disabilities and poses a danger to the individuals themselves, as well as others (Koegel, Koegel, & Dunlap, 1996). Therefore, much research has focused on identifying and eliminating the reinforcing consequences, such as social attention (Lovaas, Freitag, Gold, & Kassorla, 1965), tangibles (Durand & Crimmins, 1988), and escape from aversive task demands (Carr, Newsom, & Binkoff, 1980), that maintain such behavior. Research has also shown that certain discriminative stimuli (antecedents) can trigger problem behavior. These stimuli include academics, work, and social demands (Carr & Carlson, 1993; Dunlap, Kern-Dunlap, Clarke, & Robbins, 1991; Kemp & Carr, 1995). The literature has demonstrated the important role that the three-term contingency (discriminative

stimulus–response–consequence) plays in understanding and remediating problem behavior.

The three-term contingency is, itself, influenced by broad contextual factors, or *setting events*—the term used to describe a wide array of physical, social, and biological variables that determine which particular stimulus–response patterns occur at a given time (Bijou & Baer, 1978; Kantor, 1959). In illustration, our recent research (Carr, Smith, Giacini, Whelan, & Pancari, 2003) demonstrated that menstrual pain can act as a biological setting event, increasing the probability that some individuals with mental retardation or autism will exhibit aggression (the response) in the presence of a task demand (the discriminative stimulus). Further, when the biological setting event (menstrual pain) was absent, so too was the problem behavior. Some investigators (Michael, 1982) have sug-

gested that, in the situation just described, the setting event may be functioning as an establishing operation, that is, as a variable that alters the reinforcing or aversive properties of stimuli. Thus, pain (the setting event) makes the task (the discriminative stimulus) more aversive than it would normally be. Therefore, to the extent that aggressive behavior (the response) is successful in terminating the task, the individual who is in a state of pain becomes more likely in the future to exhibit aggression in the presence of the task. That is, termination of the aversive task constitutes a negative reinforcer (the consequence) for the individual's problem behavior.

Biological factors are not the only category of setting events. Social factors are also important. With respect to the category of social setting events, there has been considerable discussion concerning how the quality of the relationship between two people can influence the likelihood of problem behavior. Thus, in the developmental disabilities literature, there is suggestive evidence that problem behavior is more likely to occur in the presence of nonpreferred staff members than preferred staff members, particularly when task demands are presented (Carr et al., 1994; Kemp & Carr, 1995; Demchak & Bossert, 1996). It has also been observed (Favell, Realon, & Sutton, 1996; Green & Reid, 1996) that positive interactions with staff members produce high levels of "happiness" (e.g., smiling, laughing) and low levels of "unhappiness" (e.g., crying, yelling). These reports are consistent with the notion that relationship quality (i.e., rapport) may be a key factor influencing problem behavior (Carr et al., 1994). Again, the notion of establishing operations may be pertinent. That is, rapport may function as a setting event in that good rapport acts to attenuate the aversiveness of task demands, thereby reducing the likelihood of escape-motivated problem behavior, whereas poor rapport exacerbates the aversiveness of task demands, thereby increasing the likelihood of escape-motivated problem behavior.

For many years, clinical and counseling psychologists have stressed the importance of rapport in building successful therapeutic relationships (Cornier & Hackney, 1987; Forehand & McMahon, 1981; Hembree-Kigin & McNeil, 1995; Webster-Stratton, Reid, & Hammond, 2001). Traditionally, however, rapport has been defined in subjective terms such as "likeability" (Aronson, 1984) and "empathy" (Roberts & Bouchard, 1989). Although such terms have considerable face validity, they have not been sufficiently operationalized to lend themselves to empirical analysis. Therefore, researchers within the field of developmental disabilities have focused considerable effort on designing specific rating scales to capture the quality of relationships between people with autism or mental retardation and their caregivers (Dunlap, Eno-Hieneman, Clarke, & Childs, 1995; Dunlap & Koegel, 1980; Koegel, Dyer, & Bell, 1987). These assessment methods represent a poten-

tially useful tool in evaluating the quality of rapport and its putative association with problem behavior.

The systematic evaluation of rapport is a critical first step in determining whether a relationship exists between a social setting event and a problem behavior. Should it be the case that poor rapport is associated with elevated levels of problem behavior, then it becomes important to design interventions that are effective in improving rapport. The literature has suggested three strategies that could be used to produce more positive social relationships between people with developmental disabilities and their caregivers: (a) establish support people as generalized reinforcers, (b) encourage greater responsivity to communication attempts, and (c) strengthen turn-taking (i.e., reciprocity).

Consider, first, a strategy based on generalized reinforcement. Poor rapport is often the result of a history of negative interactions between two people, especially when the interactions involve the presentation of nonpreferred or aversive demands (Carr, Magito-McLaughlin, Giacobbe-Grieco, & Smith, 2003; Kemp & Carr, 1995). For example, certain staff members may be associated with high rates of aversive demands (home chores, work tasks). Therefore, a person with disabilities may engage in aggression to escape from the staff member whose presence signals impending aversive demands. One way to weaken the conditioned aversiveness of the presence of the staff member would be to pair him or her with a wide variety of highly preferred social, activity, and tangible reinforcers. Operationally, this pairing procedure establishes the presence of the staff member as a generalized reinforcer (Skinner, 1953). The staff member, by virtue of being consistently paired with many reinforcers, becomes a discriminative stimulus for approach and social interaction rather than escape and avoidance through problem behavior. The strategy of establishing the presence of support people as a generalized reinforcer to enhance social interaction and minimize problem behavior has been successfully incorporated into multicomponent intervention packages in several previous studies (Carr, Magito-McLaughlin, et al., 2003; Carr et al., 1999; Kemp & Carr, 1995). Therefore, it is one plausible strategy for enhancing relationship quality.

A second potential strategy involves encouraging caregivers to be more responsive to attempts at social-communicative behavior made by people with developmental disabilities. When caregivers respond to these attempts, the result is an increase in social interaction (Dunst, Cushing, & Vance, 1985; Evans & Scotti, 1989). Further, the interaction can become self-perpetuating in that the behavior of one partner in the exchange may serve to reinforce the behavior of the other, thereby maintaining the interaction (Koegel, O'Dell, & Dunlap, 1988; Seifer, Clark, & Sameroff, 1991). As the partners evince greater responsivity to one another, there can be concomitant reductions in disruptive behavior (Koegel, Koegel, Hurley, &

Freya, 1992). There is also some evidence of an increase in positive statements made by caregivers within the context of the increased social interaction (Flannery, Horner, Albin, Shukla, & Heathfield, 1993). In sum, research has suggested that responsivity training may be a useful means for promoting rapport and simultaneously reducing problem behavior.

Finally, strengthening reciprocity may be an additional means for enhancing the quality of relationships. In the developmental disabilities literature, this strategy is referred to as *turn-taking*. More specifically, some research has demonstrated that teaching dyads to take turns within the context of both verbal and nonverbal exchanges results not only in an increase in socially acceptable behavior, including positive conversational exchanges, but also in a decrease in socially unacceptable behavior (Gaylord-Ross & Haring, 1987). The *context* in which turn-taking occurs constitutes a critical variable for producing positive exchanges. Specifically, contexts (in which the partners in the social dyad interact) need to be built around shared reinforcers, that is, activities and events that are described, in lay terms, as fun, enjoyable, and interesting (Carr et al., 1994). Thus, strengthening turn-taking may be an additional means for promoting positive relationships that serve to minimize problem behavior.

Given the plausibility of an association between poor rapport (relationship quality) and problem behavior, we designed two studies to address three research questions. The first study addressed the question of whether an assessment methodology that generates ratings of rapport can be used to reliably predict the likelihood of problem behavior in the presence of task demands. The second study addressed two intervention-related questions. First, will a multicomponent intervention based on generalized reinforcement, encouraging responsivity, and strengthening reciprocity improve rapport? Second, are improvements in rapport associated with decreases in problem behavior in the presence of task demands? The method and results of each study are presented, followed by a general discussion pertaining to both studies.

STUDY 1: ASSESSMENT

In this study, rapport was operationally defined, and good and poor rapport dyads were identified on the basis of staff interview, subjective rating scales, and direct observation. Each dyad consisted of a staff member and one individual diagnosed with autism and/or mental retardation according to criteria specified in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (American Psychiatric Association, 2000). Next, an assessment was made of the effects of rapport on problem behavior. Specifically, for each good and poor rapport dyad, the effects of a demands versus no-demands condition on the level of problem behavior was examined.

Method

SELECTION OF PARTICIPANTS WITH DISABILITIES

Selection of participants with disabilities was made on the basis of interviews with community residence staff who worked in a program serving people with developmental disabilities. Interview questions were designed to identify those individuals who had a history of increased behavior problems in the presence of certain staff members but not others. Specifically, staff members were interviewed about several themes and questions, affirmative answers that defined the participant inclusion criteria: (a) preference for certain staff members and not others (“Does the person have certain staff member(s) with whom he or she prefers to work, or gets along with particularly well? Does the person have certain staff member(s) with whom he or she dislikes working, or gets along with poorly?”); (b) history of serious problem behavior (“Does he or she engage in high levels of aggression or self-injury?”); and (c) evidence that the combination of certain staff members with specific task-demand situations was especially likely to evoke problem behavior (“Are there tasks that the person can complete without problem behavior when he or she is working with a certain staff member but not when he or she is working with another staff member? In general, what types of tasks cause him or her to misbehave?”).

SELECTION OF STAFF MEMBERS

Selection of staff members was based on three criteria: (a) preference ratings of staff members made by the person with disabilities, (b) self-ratings made by each staff member, and (c) ratings of specific staff members made by other staff members. Additionally, only senior staff members (i.e., staff who had worked in the home for a period of 1 year or more) were considered for inclusion in the study. This criterion was established to ensure that judgments of rapport were based on ample history and that they described a preexisting rather than emerging relationship. Each of the first three inclusion criteria are described in detail.

First, consider the preference ratings made by the person with disabilities. To meet this criterion, a staff member had to be consistently chosen by the participant with disabilities as someone with whom he or she preferred to work. A choice paradigm was used to determine preference, rather than an interview, because participants had severe communication deficits. Staffing patterns in the home were such that six staff members were assigned to work Sunday through Wednesday morning, and six different staff members were assigned to work Wednesday afternoon through Saturday. Within each of the two staffing groups, participants were offered the opportunity to choose one of two staff members to work with on a given

day. Participants were given an initial verbal cue (i.e., “Who would you like to work with today, Chris or Carl?”), and prompted to make a choice. Choice could be communicated by the participant verbally (i.e., stating the person’s name), gesturally (i.e., signing the person’s name; pointing to the person or to a visual representation [i.e., a photo] of the person), or through actions (i.e., approaching the person, taking the person’s hand, and leading him or her to the task area). If the participant chose to work with a given staff member, then, the next work day, the staff member selected (e.g., Chris) was paired with a different staff member (e.g., Reya) and the procedure was repeated. Staff members were paired with all other staff members in the six-person grouping. For example, after the choice was made between Chris and Carl, Chris was then paired with Reya, Alex, Eric, and Kathleen. Thus, because there were six staff members in each group, a total of five choice trials was available to evaluate the participant’s preference for a given staff member. If a staff member was chosen in four to five out of five trials, then that staff member was assessed further for possible inclusion in the “good rapport” dyad. If the staff member was chosen on zero to one out of five trials, then he or she was eliminated from participation in the “good rapport” dyad and was instead assessed further for inclusion in the “poor rapport” dyad.

Second, consider the self-ratings made by each staff member. To meet this criterion, a staff member had to have rated him- or herself as feeling highly satisfied with the relationship (i.e., ratings of 4 or 5 on a rapport scale). Rapport was operationalized using a Likert-type scale containing descriptors developed in previous research (Dunlap et al., 1995). Figure 1 shows the scale used in the present study. Self-ratings of rapport were made on a 6-point scale, ranging from 0, *relationship is unsatisfying*, to 5, *relationship is satisfying*. Self-ratings of 4 or 5 (indicating that the staff member was *highly satisfied* with the relationship) were used as the definition of good rapport. Self-ratings of 0 to 3 (indicating that the staff member was *highly unsatisfied* with the relationship or *neutral*) resulted in the elimination of the staff member from participation in a good rapport dyad.

Finally, consider ratings of specific staff members that were made by other staff members. To meet this criterion, a staff member had to have been consistently ranked by other staff members as being in the 50th percentile or above with respect to relationship quality (good rapport) with the participant, relative to all staff working in the home. Thus, the percentile ranking constituted a third inclusion criterion. Each staff member was given a list of all staff members presently working in the home and asked, “Think for a moment about (name of participant with disabilities). In your opinion, of everyone working in the home, which staff member works best with (name), (i.e., who gets along well and works most effectively with [name])?” Each staff member was told to write a “1” next

to the name of the staff member seen as having the best relationship with the identified participant. Probes then continued: “Now, think of another staff member who you would rank next in order as working extremely well with (name of participant), and write a “2” next to his/her name.” Probes continued in this manner until all staff members working in the home were rank ordered in terms of perceived relationship quality. As noted, good rapport staff members were designated as those who consistently ranked in the 50th percentile or above, relative to all other staff members working in the home. In contrast, ratings below the 50th percentile resulted in the elimination of the staff member from participation in a good rapport dyad.

In sum, staff members in the good rapport dyads met each of three criteria: (a) they were consistently preferred (i.e., chosen in 4 out of 5 trials) by the participants with disabilities; (b) they had high self-ratings (i.e., 4 or 5 on the rapport scale); and (c) they were ranked by their fellow staff members as being in the 50th percentile or above, relative to other staff in the home. Staff members in the poor rapport dyads met each of three criteria: (a) they were rarely, if ever, preferred (i.e., chosen in 0–1 of 5 trials) by the participants; (b) they had neutral to low self-ratings (i.e., 0–3 on the rapport scale); and (c) they ranked below the 50th percentile on rankings made by fellow staff members. Across the three criteria, staff members who had the highest scores were recruited for the good rapport dyads, and staff members who had the lowest scores were recruited for the poor rapport dyads.

Tables 1A and 1B provide a summary of the demographic characteristics of staff members and participants who met the selection criteria and shows the level of rapport based on these criteria.

FUNCTIONAL ANALYSIS PROBES

To assess the combined effect of rapport and task demands on problem behavior, we superimposed a demands versus no demands condition, in a reversal design, on the good rapport and poor rapport pairings. This procedure yielded four probe conditions: poor rapport plus demands (PR + D), poor rapport plus no demands (PR + ND), good rapport plus demands (GR + D), and good rapport plus no demands (GR + ND). Each session lasted approximately 10 to 30 min (i.e., the period of time needed to carry out the task demands) and occurred during the course of normal routines that staff identified (during the earlier participant selection interview) as being problematic. Each of the conditions was repeated 10 times to yield a total of 40 assessment sessions for each participant. The order of the four conditions was presented in a randomized design. Because observations were naturalistic, different staff members might be assigned to work with a participant on any given day. For this reason, it was not possible to achieve exact counterbalancing of the four study conditions. How-

Home: _____ Date: _____ Staff member: _____

Please circle the number that best represents the overall quality of the relationship between you and _____ *as of today*.

UNSATISFYING

SATISFYING

0-----1-----2-----3-----4-----5

The majority of my interactions with this person are awkward, unpleasant, and stressful. I do not feel particularly close to this person, and oftentimes, it is difficult for us to find any "common ground." (Score 0 or 1, depending on the extent to which you find the relationship unsatisfying.)

The majority of my interactions with this person are neutral, that is, not particularly good or bad. While I like this person, I don't feel particularly close or "connected" to this person in any meaningful way. (Score 2 or 3, depending on perceived level of connectedness.)

The majority of my interactions with this person are enjoyable, satisfying, and interesting. Together, we share a warm, open, balanced relationship. I find that we have a lot in common and enjoy each other's company. (Score 4 or 5, depending on the extent to which you find the relationship satisfying.)

Figure 1. Scale used in present study.

ever, no more than three sessions of a given condition were run consecutively at any point during the study. This procedure was followed to approximate counterbalancing so that each type of study condition followed every other type of condition about equally often.

In the demands conditions (PR + D, GR + D), the participant was required to carry out a routine task/activity,

such as eating a meal, vacuuming, or engaging in a delivery job (see Table 1A). Assigned tasks were chosen from the information generated in prior staff interviews in which staff members reported that these particular tasks were highly associated with problem behavior. Importantly, the tasks identified by staff were those that the participants had already mastered, indicating that the issue was one of

Table 1A. Summary of Participant Characteristics and Task Demands

Participant name	Age	Diagnosis	IQ ^a	Problem behavior	Task/Demand
Joan	36	Autism; severe mental retardation	below 35 (est.)	Aggression, self-injury	Eating a meal
Steve	28	Autism; profound mental retardation	below 20	Self-injury	Vacuuming
John	39	Autism; profound mental retardation	below 20	Self-injury	Delivery job

^aBased on Thorndike, R. L., Hagen, E. P., & Sattler, J. M. (1986). *Stanford-Binet Intelligence Scale—Fourth edition*. Itasca, IL: Riverside Publishing.

Table 1B. Summary of Staff Member Characteristics

Staff member name	Age	Yrs. of contact with participant	Dyad partner	Level of rapport
Alex	25	3 years, 2 months	Joan Steve	Poor Good
Carl	28	3 years, 6 months	Joan Steve	Good Poor
Kathleen	24	1 year	Joan	Poor
Reya	25	2 years, 1 month	Joan	Good
Chris	28	1 year, 1 month	Steve	Poor
Gary	40	4 years, 11 months	John	Poor
Keith	30	5 years, 8 months	John	Good
Jay	24	2 years, 4 months	John	Good

cooperation rather than task acquisition. Tasks were broken down into specific steps to ensure consistency among staff members across trials.

All sessions were conducted within the natural context of the person's ongoing task routine. For example, eating took place at mealtimes, vacuuming occurred during chore times, and paid work activities took place as work was made available (i.e., on a contractual basis). Each task was broken down into 10 consecutive steps that, together, defined the task. At the start (first step) of the task (e.g., vacuuming), a general verbal cue was presented by the staff person (e.g., "Please vacuum."). If the participant responded correctly to this cue within 1 minute, by going to the closet for the vacuum, the staff person provided positive feedback related to the task step (e.g., "O.K., you got the vacuum out of the closet."). If the participant did not respond or made an incorrect response (e.g., walked away or went to the wrong closet), a sequence of consequences was used. First, the staff member provided corrective feedback and presented a verbal cue that was specific to the task step (e.g., "No, the vacuum is in this closet."). If the participant failed to respond correctly to the verbal cue, the staff member added a gestural prompt to the verbal cue (e.g., he or she pointed to the closet where the vacuum was

stored). If the gestural prompt failed, the staff member added a physical prompt to the verbal cue (e.g., the staff member physically guided the participant toward the closet and assisted him or her in obtaining the vacuum).

The procedure just described was repeated for the remaining nine task steps (i.e., brings vacuum to location, unwinds cord, plugs in, turns on vacuum, vacuums area thoroughly, turns off vacuum and unplugs, wraps cord around handle, returns vacuum to closet area, places vacuum in closet, and closes door; see Note 1). As noted earlier, the tasks were ones that the participants had already mastered. Therefore, prompts were immediately discontinued for each task step that a participant had previously completed successfully. Thus, whenever the participant subsequently initiated the task step, specific verbal cues or prompts were not presented. A participant who spontaneously completed all the steps of a task would receive positive feedback for each step that was done but no other support.

The session continued until all 10 steps of the task sequence were completed or until the participant displayed an episode of serious problem behavior (i.e., aggression, self-injury). To minimize potential harm to participants and staff, we terminated sessions immediately upon the

occurrence of problem behavior. Problem behavior was operationalized as follows: Aggression included any episode of hitting, slapping, punching, grabbing, scratching, spitting, kicking, biting, pushing, choking, charging/headbutting, throwing objects in a directed manner, or pulling another's hair; self-injury included any episode of biting oneself, hitting, slapping, or punching oneself repeatedly (i.e., more than once), banging one's head on hard or sharp surfaces, throwing oneself to the floor, or pulling out one's own hair. The general procedure for dealing with instances of problem behavior involved adhering to agency guidelines that specified a "cooling off" period followed by a return to task. For example, if Joan became aggressive during mealtime, staff escorted her away from the table to a quiet area where she remained until she displayed no further aggression for a period of 5 min. At that point, she was returned to the dining area to complete the meal.

In the no-demands conditions (PR + ND, GR + ND), the participant was not required to carry out any assigned tasks but was instead permitted to engage in a leisure activity of his or her choosing (e.g., watching TV, listening to music, relaxing). Session length was yoked to the duration of previously run demands sessions. For example, if during a previous demands session, the participant had completed his or her identified task (e.g., vacuuming) in 10 min and 38 s, then, in the no-demands condition that followed, the participant was likewise observed for 10 min and 38 s of leisure time. This procedure was used so that session lengths were approximately equal across both demands and no-demands sessions, and, therefore, session length per se could be ruled out as a variable controlling problem behavior.

Once timing began, staff were free to interact with the participant in a manner that was consistent with the natural context in which the observation occurred (e.g., if the participant was watching television, the staff member might comment on the program). However, no demands were made during the observation period. As in the demands condition, sessions were terminated immediately upon the occurrence of problem behavior.

EXPERIMENTAL DESIGN

As noted, during the functional analysis probes, a reversal design (demands versus no demands) was superimposed on good rapport versus bad rapport to generate the four experimental conditions (PR + D, GR + D, PR + ND, GR + ND) that were carried out in counterbalanced order.

RESPONSE RECORDING

Latency to Onset of Problem Behavior

During direct observation sessions, the researcher (primary observer) stood approximately 2.4 m away from the

participant and staff member and held a digital stopwatch to record the actual time elapsed in the session. In the demands condition, timing began when the staff member gave the initial verbal cue for the task to begin (e.g., "Please vacuum."); timing ended upon either (a) the occurrence of problem behavior (i.e., aggression, self-injury) or (b) completion of the final task step, for the case in which no problem behavior occurred. In the no-demands condition, timing began when the observer signaled to the staff member that the observation period was about to begin; timing ended upon either (a) the occurrence of problem behavior or (b) the completion of the predetermined (yoked) time period. Once timing ended, the observer wrote down the actual time (in minutes and seconds) that had elapsed during the session and recorded the reason for session termination (i.e., problem behavior observed, task completed, or yoked interval expired). This information was used to derive data related to task duration and latency to onset of problem behavior (i.e., the amount of time that expired before the onset of problem behavior).

Measures of Task Completion

In the demands conditions (PR + D, GR + D), the observer recorded task completion by placing a check mark next to each of the 10 task steps identified in the task analysis as they were completed by the participant. Data were then converted to percentage of task steps completed. Level of task completion was defined as the number of steps performed prior to session termination (due either to problem behavior or the successful completion of the task) divided by the total number of steps in the task sequence, multiplied by 100 to yield a percentage.

RELIABILITY

During 45 out of the 120 assessment sessions (38% across the three participants), a second observer was present for reliability measurement. The second observer was either a community residence manager or a staff member who had no direct involvement in the study. A binary reliability index (i.e., the observers scored either perfect agreement or no agreement) was used for number of steps completed, duration of task, and occurrence/nonoccurrence of problem behavior. During demands sessions, perfect agreement was scored if both observers (a) recorded the same number of steps completed, (b) recorded the same task duration (within 5 s), and (c) agreed on the reason for session termination (i.e., problem behavior observed or task completed). During no-demands sessions, perfect agreement was scored if both observers (a) recorded the same session duration (within 5 s) and (b) agreed on the reason for session termination (i.e., problem behavior observed or yoked interval expired). If no problem behavior occurred, both observers had to agree that the task had been successfully completed, and they had to agree on the time at

which the session ended (within 5 s); if problem behavior did occur, both observers had to note its occurrence, agree on the type of problem behavior observed (i.e., aggression, self-injury, or both), and agree on the time (within 5 s) of its occurrence. Using the method described, mean interrater reliability was 98% for the assessment phase (i.e., 44 out of 45 sessions yielded perfect agreement).

Results

LATENCY TO ONSET OF PROBLEM BEHAVIOR

Figure 2 shows the results for the functional analysis of the relationship between rapport and problem behavior. Although, as noted, a counterbalanced design was used across the four experimental conditions, the data have been grouped by condition for ease of comparison.

First, consider the demands conditions (PR + D and GR + D). When participants were asked to work with poor rapport staff members (PR + D), most demand sessions ended early due to problem behavior (i.e., as indicated by the solid bars, 28 out of 30 sessions were terminated). The average latency to onset of problem behavior was 3.2 min for Joan, 5.2 min for Steve, and 3.2 min for John. For all three participants, the amount of time that elapsed before problem behavior occurred was almost always less than the amount of time needed to complete the activity. In contrast, consider the good rapport plus demands condition (GR + D). When a participant was working with a staff member who was identified as having good rapport with him or her, few problem behaviors occurred when demands were presented. This outcome is illustrated by the small number of sessions terminated due to problem behavior (i.e., as indicated by the solid bars, only 4 out of 30 sessions were terminated across participants). Participants were also able to engage in the activity for longer periods of time without demonstrating problem behavior. On average, Joan spent 14.3 min eating a meal, Steve spent 7.2 min vacuuming, and John spent 19.6 min delivering fliers.

Next, consider the no-demands conditions (PR + ND and GR + ND). Recall that an attempt was made to yoke the duration of the demands and no-demands sessions across the good rapport and poor rapport conditions. This was done to demonstrate that participant behavior was a function of the presence versus absence of task demands plus rapport and not simply the amount of time that the participant was in the experimental situation. As can be seen in Table 2, our attempt to yoke the duration of demand versus no-demand sessions was successful for both the good and poor rapport conditions. Figure 2 shows that problem behaviors were rare in the no-demands conditions, regardless of whether the participant was working with a good rapport or poor rapport staff member. This outcome is indicated by the small number of sessions terminated due to problem behavior in the poor rapport plus

no demands (PR + ND) condition (i.e., only 3 out of 30 yoked sessions were terminated) and in the good rapport plus no demands (GR + ND) condition (i.e., only 1 out of 30 yoked sessions was terminated).

MEASURES OF TASK COMPLETION

Figure 3 presents data on measures of task performance (i.e., percentage of task steps completed) during demands sessions (PR + D, GR + D). The figure shows that when a participant was working with staff members in the poor rapport condition (left side of the figure), he or she was rarely able to complete the target tasks (i.e., only 2 out of 30 sessions, indicated by the open bars). In contrast, when a participant was working with staff members in the good rapport condition (right side of the figure), he or she was able to complete the target tasks on most occasions (i.e., 26 out of 30 sessions, indicated by the open bars). In the poor rapport condition, on average, participants completed only 35.6% of the steps in the task sequence. In the good rapport condition, on average, participants completed 92.6% of the task steps. The figure also shows that two of the staff members (Carl and Alex) had good rapport with one participant but poor rapport with another. For each of these staff members, problem behavior was rare when they were involved in a good rapport dyad but frequent when they were involved in a poor rapport dyad.

STUDY 2: INTERVENTION

The purpose of the intervention study was to provide staff members and participants in poor rapport dyads with strategies to build or enhance rapport. At the time of intervention, employee turnover resulted in the loss of two staff intervention candidates (Kathleen and Chris). The remaining staff members in the poor rapport dyads (i.e., Alex, who was identified as having poor rapport with Joan; Carl, who was identified as having poor rapport with Steve; and Gary, who was identified as having poor rapport with John) participated in the intervention study.

Method

The protocol began with a formal baseline (i.e., preintervention) phase, in which demands were presented by the staff member who had been identified as having poor rapport with the participant. In the baseline phase, all procedures and measures were identical to those previously described in the assessment study for the PR + D condition (i.e., the only condition relevant to intervention). Baseline was followed by a series of rapport-building staff training sessions (i.e., intervention) carried out over a period of 10 to 13 weeks across participants. Each staff member in the poor rapport dyad received training and coaching from the researcher until "performance to criteria" standards were

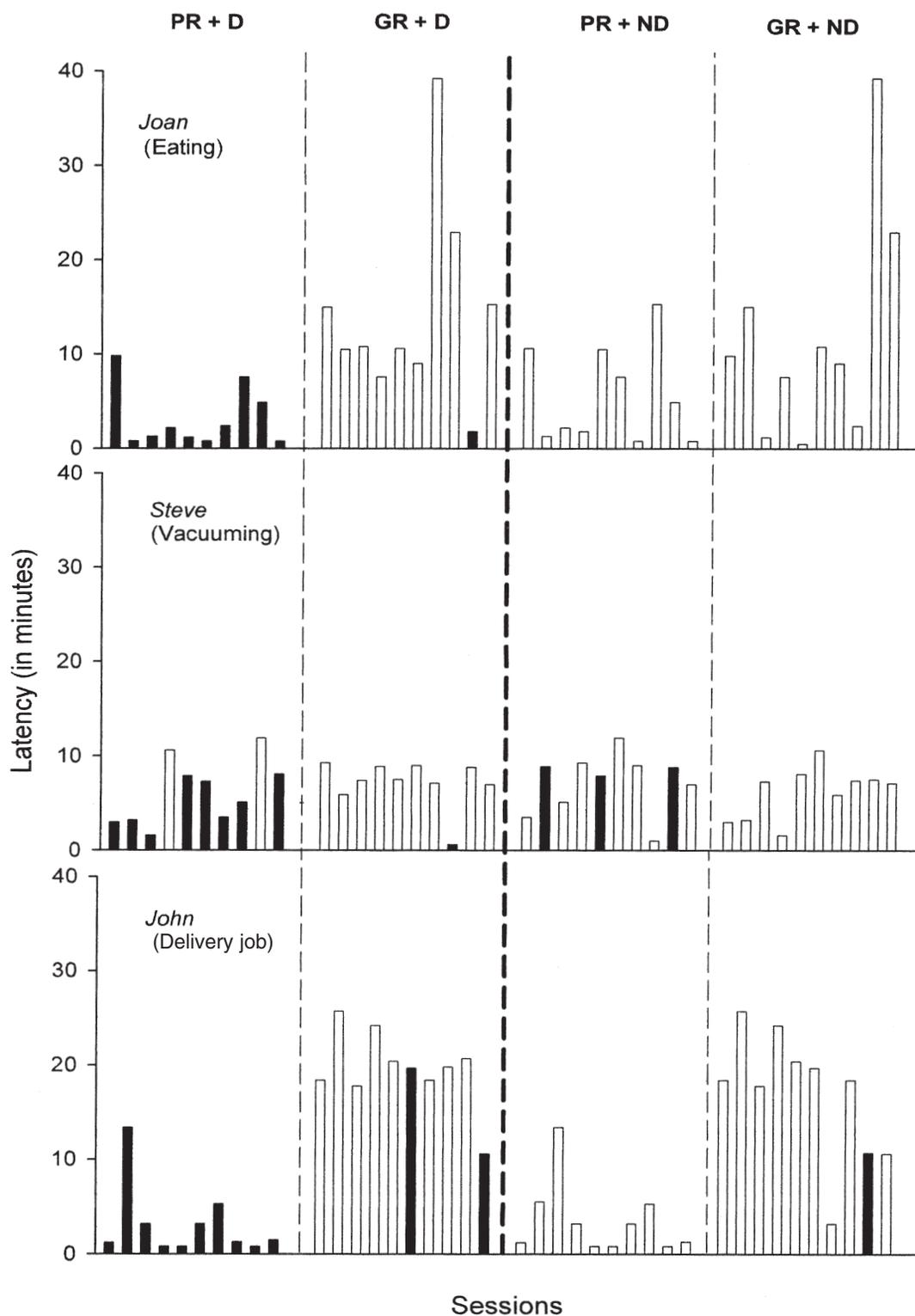


Figure 2. Functional analysis data for each participant. The solid bars indicate that the session was terminated due to problem behavior and, therefore, represent latency to onset of problem behavior. The open bars indicate that the session was successfully completed without problem behavior and, therefore, represent the duration of the successful session. Although the two rapport conditions (good vs. poor) were counterbalanced for each participant, data are grouped by rapport condition for ease of comparison. PR + D = poor rapport plus demands; GR + D = good rapport plus demands; PR + ND = poor rapport plus no demands; GR + ND = good rapport plus no demands.

Table 2. Duration of Yoked Sessions Across Participants

Name/Condition	Level of rapport			
	Good rapport		Poor rapport	
	<i>M</i>	Range	<i>M</i>	Range
Joan				
Demands	14:16	1:47–39:14	3:04	0:08–9:45
No demands	12:54	1:09–39:14	4:32	0:16–10:38
Steve				
Demands	7:09	0:34–9:16	6:13	1:35–11:58
No demands	6:14	1:35–10:38	7:14	1:00–11:58
John				
Demands	19:34	17:47–25:42	3:05	0:30–13:24
No demands	18:55	10:40–25:42	3:29	0:30–13:24

Note. All numbers shown are given in minutes and seconds. Thus, 14:16 means 14 minutes, 16 seconds.

met with respect to each of three intervention procedures that were introduced sequentially. Staff received up to eight sessions of coaching in noncontingent presentation of reinforcers to establish the presence of staff as a generalized reinforcer. Next, they received up to five sessions of responsivity training to increase their overall responsiveness to communicative attempts. Finally, they received up to four sessions of training and coaching in turn-taking/reciprocity to facilitate equal sharing in activities. Intervention was followed by a postintervention phase that was procedurally identical to the preintervention phase in that staff, once again, presented demands to the participant. Formal observations during preintervention (baseline) and postintervention were conducted approximately 2 to 3 times per week for 6 to 8 weeks by the researcher, who also served as the observer. Next, we describe each of the three procedures that constituted intervention.

NONCONTINGENT PRESENTATION OF POSITIVE REINFORCERS

During the first intervention procedure, staff members in the poor rapport dyads were trained in the noncontingent presentation of positive reinforcers (Carr et al., 1994; Kemp & Carr, 1995). This procedure was designed to strengthen approach behavior (to staff members of each dyad) on the part of the participant. Strongly preferred stimuli were identified for each participant from formal reinforcer assessment data that had been collected prior to the initiation of the present study. The procedures used to identify these reinforcers were based on methods of reinforcer sampling reported in the research literature (Dyer, 1987; Dyer, Dunlap, & Winterling, 1990; Koegel, Dyer, & Bell, 1987).

For each participant, a daily reinforcer was identified, along with a menu of occasional reinforcers that included

other items/activities that the person enjoyed (see Note 2). Daily reinforcers consisted of reinforcers that (a) were consistently chosen by the participant, (b) were easy for staff to access, and (c) were easy for staff to deliver (i.e., they did not require additional staffing, time, or monetary resources). Staff members were instructed to deliver a daily reinforcer to the participant each day that they were scheduled to work in the home. Upon arriving at the home, the staff member identified and secured an item from the participant's daily reinforcer list (e.g., for Steve, pretzels, chips, cookies, crackers) and delivered the item noncontingently (i.e., the participant was not required to perform any action in order to receive the item). After 3 to 4 sessions, the staff member was instructed to approach the participant at a distance of 0.5 m to 1 m, in order to prompt an approach response. If the participant responded (by approaching the staff member for the item), the staff member delivered the item and provided positive feedback (e.g., "Steve, I know you like pretzels."). If the participant did not approach, the staff member presented a general verbal cue (e.g., "Would you like some pretzels?") to encourage an approach response. If the participant failed to respond to the verbal cue, a visual/gestural cue (e.g., showing the person the pretzels) was added. If no approach response occurred, the staff member approached the participant and delivered the pretzels directly. Following each successful approach response, staff members were instructed to gradually increase their distance to 1 m and then 3 m, using the prompt-fading sequence just described to strengthen approach responses. Prompts were immediately discontinued if an approach response occurred. Thus, if a participant initiated an approach response at a particular distance, specific verbal cues were not presented. Participants who spontaneously approached the staff member immediately received positive feedback, along with the preferred item. Approach responses were scored using a

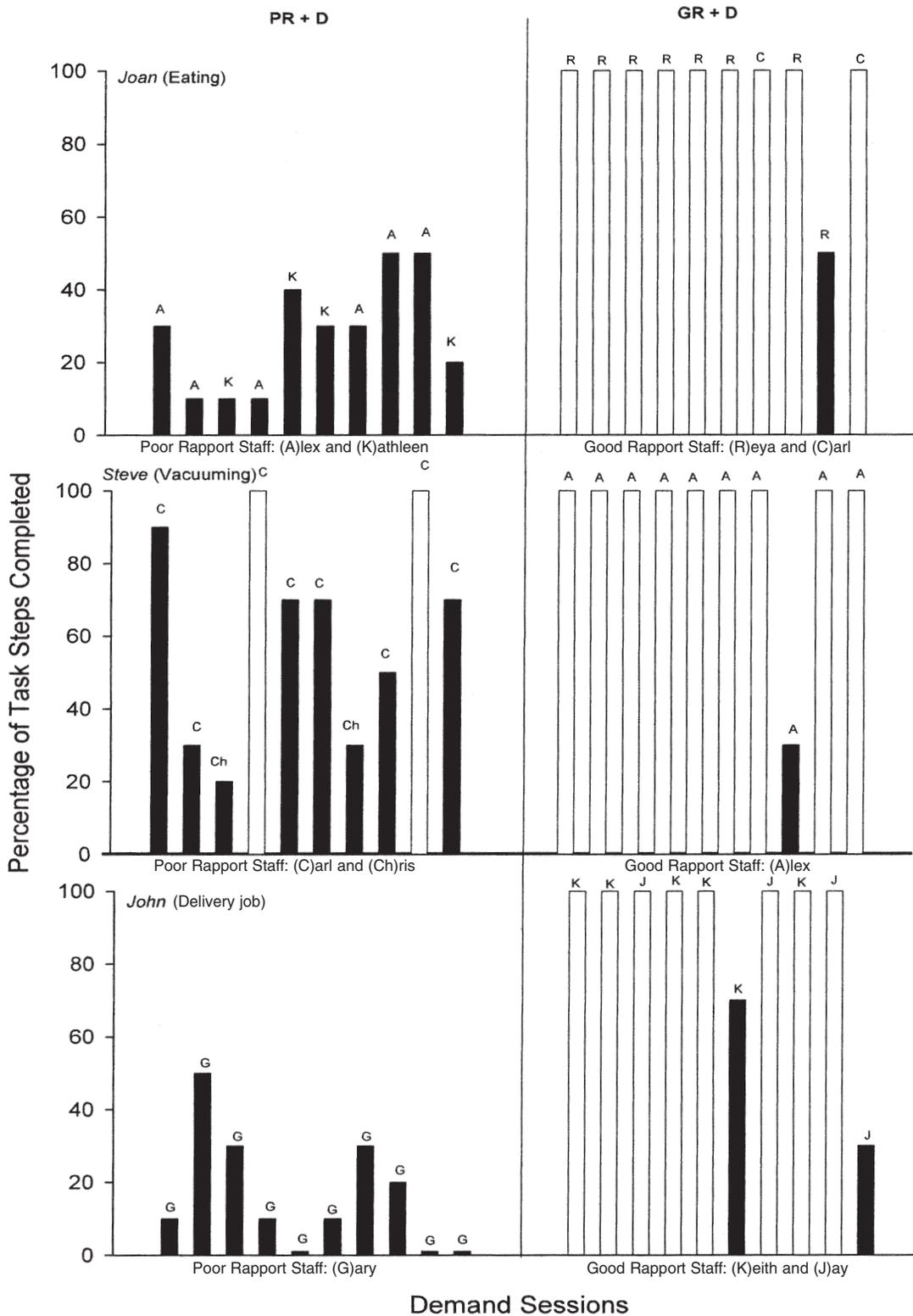


Figure 3. Measures of task performance in the assessment study. The solid bars indicate that the session was terminated due to problem behavior. The open bars indicate that the session was successfully completed without problem behavior. Although the two rapport conditions (good vs. poor) were counterbalanced for each participant, data are grouped by rapport condition for ease of comparison. PR + D = poor rapport plus demands; GR + D = good rapport plus demands. As noted along the abscissa of the figure, letters (e.g., A) refer to specific staff members (e.g., Alex).

binary index (0 = *absence of spontaneous approach*; 1 = *presence of spontaneous approach*). Intervention sessions continued until the staff member successfully established him- or herself as a discriminative stimulus for approach (i.e., the participant spontaneously approached the staff member in the absence of prompting in four out of a block of five consecutive sessions).

In addition to the daily reinforcer, staff were also encouraged to deliver an additional item (e.g., for Steve, running) from among the occasional reinforcers on the reinforcer menu. In most cases, items that were identified as “occasional reinforcers” were more difficult to access or required additional staffing, time, or monetary resources. For these reasons, although staff were encouraged to offer these items and activities, they were not required to make them available on a daily basis but rather twice a week. Consider Steve, as an example. Steve’s occasional reinforcer menu indicated that he enjoyed several activities, including taking drives, visiting places with water, running, playing basketball, eating out, attending parties, and visiting with family. Carl (the poor rapport staff person) was instructed to engage in these highly preferred activities with Steve twice a week. Carl was further instructed to sample, over time, all of the activities on the occasional reinforcer menu. This sampling was necessary because, as described later, it was the basis on which mutually preferred activities were identified for subsequent use in the turn-taking/reciprocity procedure.

RESPONSIVITY TRAINING

During the second procedure, the focus of intervention was on increasing the staff member’s responsiveness to communicative acts exhibited by the participant (Koegel et al., 1992; Koegel, O’Dell, & Dunlap, 1988). The intent of this procedure was to make the presence of the staff member a discriminative stimulus for participant-initiated social interactions, in addition to the previously established approach behavior.

To increase the staff member’s overall sensitivity to the range of possible communicative acts, and to facilitate a system of measurement/data collection for this procedure, we generated a communication profile for each participant at the start of this phase. The profile included five generic categories of communication (actions, facial expressions, gestures, vocalizations, and speech) with multiple specific exemplars for each category (see Note 3). The information contained in the communication profile was derived from interviews with community residence staff, using the *Functional Analysis Interview* (O’Neill et al., 1997) and direct observation by the senior author, who had a prior history of working with each of the participants. The profile provided a template for recording communicative acts readily exhibited by the participant. Whereas several of the exemplar items denoted “typical” communicative acts (e.g., ap-

proach, eye contact, leading staff, whining, verbal requests), other items were idiosyncratic in nature (e.g., flinching/cowering, jumping up and down, echolalia). If an idiosyncratic behavior was reported or observed to have a communicative function, it was included in a participant’s profile. Specifically, suppose that during a direct observation a staff member said, “Let’s leave” to the participant. In response, the participant sat down on the floor. When the staff member attempted to assist the participant in standing up, he or she exhibited tantrums. In contrast, if the staff member left the person alone, there were no tantrums. In this example, sitting on the floor was deemed to have the putative communicative function of “Leave me alone; I don’t want to leave now.”

Responsivity training was conducted within the context of the noncontingent reinforcement sessions described earlier. While delivering preferred stimuli, staff members were coached (i.e., prompted verbally and through modeling) by the researcher (who acted as an observer) to follow what was termed “the 3-A rule,” specifically, (a) *acknowledge* all communication attempts, (b) use the existing context to *assess* the function of the communication (i.e., the presumed reinforcer request), and (c) *address* identified needs/requests whenever feasible to do so. Interactions were scored as meeting criteria if the staff member acknowledged a communicative attempt in the absence of trainer prompting and was able to correctly assess and address the communicative act, either with or without assistance from the observer (i.e., the researcher).

To illustrate this phase of intervention for Joan, during periods of jokes and conversation (i.e., noncontingent reinforcement), the staff member (Alex) was prompted to attend to Joan’s communicative attempts that were highlighted in her communication profile (e.g., making eye contact, laughing, nodding head, using words, joking). One day during an interaction, Joan laughed at Alex’s joke (i.e., she demonstrated a putative communicative act). Alex replied, “You’re laughing” (i.e., he spontaneously *acknowledged* Joan’s communication) and then asked, “Do you like my joke?” (i.e., he *assessed* Joan’s need/request for continuing the interaction). When Joan replied “yes,” Alex further elaborated on the joke (i.e., he *addressed* the need/request that was identified). On another day, Joan walked away during a conversation (i.e., she demonstrated a putative communicative act). Alex replied, “You’re walking away” (i.e., he *acknowledged* Joan’s communicative act); “I guess we’ve talked enough” (i.e., he *assessed* Joan’s need/request for a break in activity); “Maybe we can talk again later” (i.e., Alex *addressed* the need/request that was identified by discontinuing the activity). On both of these occasions, Alex spontaneously acknowledged the communicative act and was able to correctly assess and address the need/request without assistance from the observer.

If during the observation period a communicative attempt was noted by the observer but the staff member did

not acknowledge it, the observer paused for a period of 5 s and then gave the staff member a verbal prompt to respond. That is, a time delay procedure (Halle, Baer, & Spradlin, 1981) was used as the method for fading prompts. Over sessions, the observer's prompts were faded out completely. In illustration, on one occasion, Joan was opening and closing the doors of the refrigerator and pantry while intermittently looking at the staff. The staff member (Alex) failed to *acknowledge* this behavior. Therefore, the observer coached Alex by modeling the correct responsivity sequence: acknowledge ("Joan, you're opening and closing the doors."), assess ("Are you hungry?"), and address ("Let's get a small snack because we don't want to spoil your dinner."). On another occasion, Alex acknowledged this behavior but made an incorrect *assessment* ("Joan, stop playing with the doors and bothering everyone."). The observer provided a verbal prompt to the staff person ("Alex, she's not playing with the doors; she's probably hungry. So, ask her, 'Are you hungry?'"). Finally, on a different occasion, Alex correctly acknowledged and assessed the behavior but failed to *address* it ("Joan, you know you can't eat now; dinner is almost ready."). Again, the observer provided a verbal prompt ("Alex, you must address her needs in some way. So tell her she can only have a small snack because dinner is almost ready.").

The intervention procedure just described continued until the staff member reached a high level of responsivity (i.e., the staff member acknowledged a minimum of 80% of the participant's communicative attempts in the absence of trainer prompting and was able to correctly assess and address the behavior in four sessions out of a block of five consecutive sessions). At that point, formal staff instruction ceased, but staff were told to continue the procedure as opportunities presented themselves in the context of natural activities in the home.

TURN-TAKING AND RECIPROCITY

The third and final intervention procedure involved teaching turn-taking skills to dyad members (Hunt, Alwell, & Goetz, 1988; James & Egel, 1986) in the context of a mutually preferred activity. Each participant's occasional reinforcer list (identified in the initial noncontingent reinforcement procedure) served as the basis for assessing common interests between dyad members. To identify activities that were mutually preferred by the staff member and the participant in the dyad, staff members were asked to select a subset of participant activities that they also enjoyed. (Recall that staff members had earlier sampled all of the activities on the reinforcer menu with the participant.) In illustration, Joan's occasional reinforcer menu indicated that she enjoyed being pampered (e.g., hair, makeup), listening to music, singing, shopping, going for walks in the park, playing recreational sports, eating out at fast-food restaurants, going out for dessert, attending parties, cook-

ing and baking, and visiting friends. When Alex was asked to choose activities from Joan's reinforcer menu that he also enjoyed, he showed little interest or enthusiasm for several of the items. However, Alex did enjoy eating out at fast-food restaurants and going out for dessert. In fact, Alex announced that he had worked at a Friendly's ice cream parlor in the past and was a "big fan" of their dessert menu. Because going out to Friendly's was an activity that both Alex and Joan enjoyed, this activity was identified as the context for teaching turn-taking/reciprocity skills.

The turn-taking procedure involved developing a task analysis to produce a sequence of 10 clearly defined steps comprising the mutually preferred activity (see Note 4) and then prompting members of the dyad to share equally in the sequence of steps related to the activity. Following an initial baseline session, staff members received coaching from the observer to facilitate turn-taking interactions with the participants. Staff members were shown a scripted interaction generated by the senior author and received verbal prompting, modeling, and feedback to facilitate shared interaction. The performance of a dyad on each activity step was given a rating of 0 to 2 points, depending on the overall quality of the interaction during the step. Because there were 10 activity steps, the maximum possible score was 20. A 0 was scored if there was no observed interaction between dyad members during the step. That is, one or the other partner initiated the activity step but did not involve the other person. A 0 was also scored if the partners engaged in different activity steps without agreeing to do so. A 1 was scored if parallel interaction was noted. That is, both partners engaged in the same activity step, but there was no observed interaction between them. Finally, a 2 was scored if shared interaction was noted, either independently or with coaching. Shared interaction meant that either or both partners initiated the activity step while involving the other person (i.e., partners engaged in the same step together) or that both partners agreed up front to divide the activity step(s) equitably. These features of the procedure are illustrated next.

For Alex and Joan, the first activity step observed during their trip to Friendly's was getting vehicle keys, jackets, and money. During the baseline session, Alex grabbed the van keys and money, and took his own jacket from the closet without involving Joan. This activity step, therefore, was scored as 0 because there was no observed interaction between Alex and Joan, and both of the partners were engaging in different activities (Alex was preparing to leave, and Joan was standing in the foyer). Subsequent trips to Friendly's during intervention occurred on a weekly basis. During the first intervention session, Alex was prompted to involve Joan when preparing to leave. He got the van keys and money, took his jacket from the closet, and asked Joan to get her jacket so they could leave. Joan went to the closet for her jacket (i.e., she engaged in the same activity step) and then followed Alex out. The activity step was

scored with a 1 because although both partners engaged in the same activity step, there was no interaction between them. By the fourth trip to Friendly's, Joan offered to get both of their jackets, and Alex agreed to get the van keys and money. Joan put on her jacket and gave Alex his jacket before they departed for Friendly's (i.e., interaction). This time, the activity step was scored with a 2 because both partners agreed up front to share the activity step equitably and, in fact, did so. The procedure was repeated as necessary across the remaining nine steps that constituted the "going for dessert" activity (i.e., after getting keys/jackets/money, the remaining steps involved conversing during drive, requesting table upon entering restaurant, conversing while waiting to be served, ordering drinks, looking at menu/choosing items, placing dessert order, conversing while waiting for order to arrive, paying bill, and leaving tip).

At the end of each turn-taking session, staff members received feedback from the senior author (both positive and negative) on the quality of their interactions during the observation. The observer reviewed the total points that were awarded for the interaction and gave a brief explanation to the staff member as to why each activity step was given a particular score. Once high levels of turn-taking were achieved on the 10 activity steps (i.e., the pair achieved 16 or more out of 20 possible points, representing an 80% success rate, during four sessions out of a block of five sessions), the intervention procedure was considered complete.

As noted earlier, intervention (i.e., the complete combination of noncontingent reinforcement, responsivity training, and turn-taking) was followed by a postintervention phase in which demands were again presented to the participant by the staff member. Postintervention measures of rapport (i.e., preference ratings of staff members made by the person with disabilities, staff member self-ratings, and ratings of specific staff members by other staff members) were obtained at the conclusion of the study to determine whether intervention had indeed produced changes in the perceived level of rapport.

EXPERIMENTAL DESIGN

During the intervention phase, a multiple-baseline design was implemented across participants in the three poor rapport dyads to evaluate the effects of the rapport-building interventions. Further, in order to determine whether the level of problem behavior of the poor rapport dyads had become more normative following intervention, probes were also conducted for comparison purposes with good rapport staff members (i.e., normative comparison dyads) during baseline and postintervention sessions using the exact same procedures and tasks employed with the poor rapport dyads.

RESPONSE RECORDING

Independent Variable Measures

During the series of staff training sessions on rapport-building (i.e., intervention), the researcher who coached the staff member recorded ancillary data on the interventions that were applied. These data, related to the three intervention procedures, served as a measure of independent variable integrity. During staff training in noncontingent reinforcement, the researcher checked off items on the participant's reinforcer menu that were delivered by the staff member during each training session. During the second training procedure (responsivity training), the researcher recorded tally marks on the participant's communication profile to indicate (a) the number of communicative acts that were observed and (b) the number of communicative acts that were acknowledged, assessed, and addressed by the staff member. These tallies were then used to calculate a ratio of communicative attempts *acknowledged, assessed, and addressed* to communicative attempts *observed*. During the third training procedure (turn-taking/reciprocity), the researcher recorded ratings of social interactions (i.e., 0, 1, or 2) that best characterized the quality of each interaction step, using the operational definitions for turn-taking that were described previously.

Dependent Variable Measures

During formal data collection, we followed the exact response recording procedures outlined in the assessment study and collected data on two dependent measures: (a) latency to onset of problem behavior and (b) measures of task completion. Formal data were taken during the preintervention (baseline) and postintervention phases of the study but not during intervention training per se.

RELIABILITY

Independent Variable Measures

Reliability measures were collected on independent variable integrity during approximately one third of all baseline plus staff training sessions (see Table 3). Of the 24 sessions related to noncontingent reinforcement, a second observer was present for 8 sessions (33%) to verify the delivery of preferred reinforcers. Agreement was scored if both the researcher and the second observer checked off the same items on the reinforcer checklist, indicating that those items were indeed delivered by the staff member. Using this criterion, agreement was noted in 7 out of 8 sessions (88%). Of the 17 sessions related to responsivity, a second observer was present for 6 sessions (35%) to verify the staff member's level of responsivity to communication attempts. Using the communication profile, agreement was scored if both the researcher and the second observer arrived at the same ratio of communicative attempts ac-

Table 3A. Ancillary Training Data for Rapport-Building Sessions: Noncontingent Reinforcement/Building Generalized Reinforcers

Dyad names	Baseline	Intervention session							
		1	2	3	4	5	6	7	8
<i>Joan and Alex</i>	0	1	0	1	0	1	1	1 ^a	—
<i>Steve and Carl</i>	0	0	0	1	1	1	1 ^a	—	—
<i>John and Gary</i>	0	0	1	0	1	1	0	1	1 ^a

Note. Scores are reported as a binary index: 0 = absence of spontaneous approach; 1 = spontaneous approach. Dashes indicate no session run; criteria already met. The dyad member who had a disability is shown in *italics*. The dyad member without a disability is shown in regular type.

^aSession in which criterion performance was met.

Table 3B. Ancillary Training Data for Rapport-Building Sessions: Responsivity Training for Communication Attempts

Dyad names	Baseline (%)	Intervention session				
		1 (%)	2 (%)	3 (%)	4 (%)	5 (%)
<i>Joan and Alex</i>	5/9 (56)	29/36 (81)	30/37 (81)	30/33 (91)	26/29 ^a (90)	—
<i>Steve and Carl</i>	6/9 (67)	9/11 (82)	20/24 (83)	22/29 (76)	32/35 (91)	31/31 ^a (100)
<i>John and Gary</i>	10/19 (53)	22/27 (81)	13/16 (81)	23/24 (96)	24/30 (80)	23/26 ^a (88)

Note. Scores are reported as # of communicative attempts acknowledged, assessed, and addressed, divided by the total # of communicative attempts. Corresponding %s are in parentheses. Dashes indicate no session run; criteria already met. The dyad member who had a disability is shown in *italics*. The dyad member without a disability is shown in regular type.

^aSession in which criterion performance was met.

Table 3C. Ancillary Training Data for Rapport-Building Sessions: Turn-Taking/Reciprocity

Dyad names	Baseline (%)	Intervention session				
		1 (%)	2 (%)	3 (%)	4 (%)	5 (%)
<i>Joan and Alex</i>	8/20 (40)	8/20 (40)	16/20 (80)	19/20 (95)	20/20 ^a (100)	—
<i>Steve and Carl</i>	8/20 (40)	18/20 (90)	16/20 (80)	16/20 (80)	16/20 ^a (80)	— (80)
<i>John and Gary</i>	20/20 (100)	17/20 (85)	20/20 (100)	20/20 (100)	20/20 ^a (100)	—

Note. The dyad member who had a disability is shown in *italics*. The dyad member without a disability is shown in regular type. Scores are reported as # of points earned divided by # of points available. Corresponding %s are in parentheses. Dashes indicate no session run; criteria already met.

^aSession in which criterion performance was met.

knowledge, assessed, and addressed to communicative attempts observed by the staff member. Using this criterion, agreement was noted in 5 out of 6 sessions (83%). Finally, of the 15 sessions related to turn-taking/reciprocity, a second observer was present for 6 sessions (40%) to verify the

presence of turn-taking and reciprocity during the staff member’s interaction with the participant. Agreement was scored if, on their ratings of the scripted interactions, the total number of points scored by the researcher and the second observer were within one point of each other. Us-

ing this criterion, agreement was noted in 5 out of 6 sessions (83%).

Dependent Variable Measures

The total number of sessions across baseline and intervention in Study 2 was 72. Of the 72 sessions, 42 involved the participants from the poor rapport dyads who had received training, and 30 sessions involved the participants from the good rapport dyads who functioned as a normative comparison. During 28 out of the 72 sessions (39%), a second observer was present for reliability measurement. Following the procedures outlined in Study 1, perfect agreement was scored if both observers (a) recorded the same number of steps completed, (b) recorded the same task duration (within 5 s), and (c) agreed on the reason for session termination (i.e., problem behavior observed or task completed without problem behavior). Using the method described, mean interrater reliability was 96% for the intervention phase (i.e., 27 out of 28 sessions yielded perfect agreement) across participants.

Results

INDEPENDENT VARIABLE INTEGRITY

Table 3 provides ancillary data on rapport-building sessions that were conducted during the 10- to 13-week training period of the study. As noted, the number of rapport-building sessions was based on meeting "performance to criteria" standards with respect to each of the intervention components. The data in Table 3 illustrate the acquisition of these skills by staff members.

Section A of Table 3 summarizes data for training sessions in the noncontingent daily reinforcement component of the intervention. As noted earlier, approach responses were scored using a binary index (0 = *absence of spontaneous approach*; 1 = *presence of spontaneous approach*). In baseline, none of the three participants demonstrated spontaneous approach behavior toward the staff member in the dyad. Within 6 to 8 training sessions, however, staff members in all three dyads successfully established themselves as discriminative stimuli for approach (i.e., participants spontaneously approached the staff member in the absence of prompting during four out of a block of five consecutive sessions), thereby meeting the performance criterion.

Section B of Table 3 summarizes data for training sessions in the responsivity component of the intervention. Data are reported as the percentage of communicative attempts acknowledged, assessed, and addressed by the staff member (i.e., the number of communicative attempts acknowledged, assessed, and addressed divided by the total number of communicative attempts observed). In baseline, the percentage of communicative attempts acknowledged, assessed, and addressed by staff members in all

three dyads was relatively low (i.e., 56%, 67%, and 53%, respectively). Further, the participants made relatively few communicative attempts overall. Within four to five training sessions, staff members in all three dyads reached a high level of responsivity in the absence of trainer prompting (i.e., the staff member acknowledged, assessed, and addressed a minimum of 80% of the participant's communicative acts during four out of a block of five consecutive sessions). Further, increased responsivity on the part of the staff member was associated with an increase in overall communicative attempts on the part of the person with disabilities. In baseline, participants exhibited a mean of only 12.3 communicative attempts per session (range: 9–19 attempts). However, during subsequent training sessions, which were equal in length to baseline, participants exhibited a mean of 27.8 communicative attempts (range: 11–36 attempts).

Finally, Section C of Table 3 summarizes data for training sessions in the turn-taking component of the intervention. As noted earlier, during turn-taking, activity steps were given 0 to 2 points, depending on the overall quality of the interaction during a given step. Data for turn-taking are reported as the percentage of points earned during the activity (i.e., the number of points earned divided by the total number of points possible). In illustration, Joan and Alex could engage in the 10 activity steps for "eating out" (e.g., get keys, conversing during drive to Friendly's, entering and requesting table, and so on), which meant that they could have achieved a maximum of 20 possible points on this activity. For 2 of the 3 dyads, turn-taking ratios were low during baseline (i.e., 8 out of 20 points, or 40% earned). For the third participant, high levels of turn-taking were noted in baseline (100%) and throughout the intervention, although, as previously noted, that dyad had scored poorly on both noncontingent reinforcement and responsivity. Within three to four sessions, all three dyads met criterion by achieving or maintaining high levels of turn-taking on the 10 activity steps (i.e., the pair achieved 16 or more out of 20 possible points, representing an 80% success rate, for four out of a block of five consecutive sessions).

MEASURES OF RAPPORT

As noted in Study 1, identification of staff members for inclusion in the good and poor rapport dyads was based on three criteria: (a) preference ratings of staff members made by the person with disabilities, (b) self-ratings made by each staff member, and (c) ratings of specific staff members made by other staff members (peer ratings). Data on these three measures of rapport are shown in Table 4. Poor rapport staff members who interacted with given participants are identified by a double asterisk, and good rapport staff members who interacted with the same participants are identified by a single asterisk and are shown for com-

Table 4A. Measures of Rapport (Pre- and Postintervention): Joan

Staff	Condition	Participant rating (# chosen/trials)		Self-rating (Likert 0–5)		Peer rating (Mean percentile rank)	
		Pre	Post	Pre	Post	Pre	Post
Reya	Good rapport	9/9	—	5	—	96th	—
Carl ^a	Good rapport	7/9	4/5	4	4	83rd	78th
Kathleen	Poor rapport	1/9	—	3	—	39th	—
Alex ^b	Poor rapport	0/9	3/5	3	4	11th	22nd

Note. Dashes indicate no session run; criteria already met. The dyad member who had a disability is shown in *italics*. The dyad member without a disability is shown in regular type.

^aComparison dyad (good rapport). ^bIntervention dyad (poor rapport).

Table 4B. Measures of Rapport (Pre- and Postintervention): Steve

Staff	Condition	Participant rating (# chosen/trials)		Self-rating (Likert 0–5)		Peer rating (Mean percentile rank)	
		Pre	Post	Pre	Post	Pre	Post
Alex ^a	Good rapport	8/8	5/5	5	5	86th	83rd
Chris	Poor rapport	1/8	—	3	—	39th	—
Carl ^b	Poor rapport	0/8	3/5	2	4	44th	65th

Note. Dashes indicate no session run; criteria already met. The dyad member who had a disability is shown in *italics*. The dyad member without a disability is shown in regular type.

^aComparison dyad (good rapport). ^bIntervention dyad (poor rapport).

Table 4C. Measures of Rapport (Pre- and Postintervention): John

Staff	Condition	Participant rating (# chosen/trials)		Self-rating (Likert 0–5)		Peer rating (Mean percentile rank)	
		Pre	Post	Pre	Post	Pre	Post
Keith ^a	Good rapport	7/7	5/7	5	5	79th	72nd
Jay	Good rapport	6/7	—	4	—	73rd	—
Gary ^b	Poor rapport	0/7	3/7	3	4	15th	31st

Note. Dashes indicate no session run; criteria already met. The dyad member who had a disability is shown in *italics*. The dyad member without a disability is shown in regular type.

^aComparison dyad (good rapport). ^bIntervention dyad (poor rapport).

parison purposes. An absence of asterisks indicates that the staff member did not participate in the intervention phase of the study (even though they had participated in the assessment phase). Columns marked “pre” summarize ratings that were taken at the outset of the study, prior to the rapport-building intervention. Columns marked “post” summarize ratings that were taken at the end of the study, following the rapport-building intervention.

Table 4 (column 3) shows that prior to intervention, staff members in the poor rapport intervention dyads were not chosen by the participants on any trial. In contrast, fol-

lowing intervention, the same three staff members were chosen on approximately half of the available trials. Joan chose to work with Alex on 3 out of 5 (60%) trials, Steve chose to work with Carl on 3 out of 5 (60%) trials, and John chose to work with Gary on 3 out of 7 (43%) trials. On the Likert-type self-rating scale (Table 4, column 4), all three staff members in the poor rapport intervention dyads (double asterisks) showed modest improvements in level of satisfaction in their relationships with the participants (i.e., self-ratings for Alex, Carl, and Gary were 3, 2, and 3 prior to intervention but increased to 4, 4, and 4, re-

spectively, following intervention). On the peer rating scale (Table 4, column 5), all three staff members in the poor rapport intervention dyads (double asterisks) showed modest gains following intervention. Prior to intervention, on average, Alex was ranked in the 11th percentile relative to his peers; following intervention, his mean percentile ranking increased to the 22nd percentile. Prior to intervention, Carl was ranked in the 44th percentile, on average, relative to his peers; following intervention, Carl's mean percentile ranking increased to the 65th percentile. Likewise, prior to intervention, on average, Gary was ranked in the 15th percentile relative to his peers; following intervention, Gary's mean percentile ranking increased to the 31st percentile.

LATENCY TO ONSET OF PROBLEM BEHAVIOR

Figure 4 presents multiple baseline data for intervention impact on latency to problem behavior or to successful task completion without problem behavior. Following intervention, there was an increase in latency to problem behavior occurring in the context of the demands. In the first dyad (Joan and Alex), 3 out of 3 baseline sessions (100%) were terminated due to problem behavior (solid bars). Prior to intervention, Joan reliably showed problem behavior within a few seconds of sitting down for a meal with Alex (average latency: 0.8 min; range: 0.5–1.5 min). After the rapport-building interventions, Joan ate a meal with Alex, on average, for 11.2 minutes (range: 4.5–15 min). In 6 out of 11 sessions (55% of the sessions), Joan completed her entire meal without showing problem behavior (as shown by the open bars in the figure). When problem behavior did occur, it typically erupted toward the end of the meal when Joan was asked to clear her place setting. In the second dyad (Steve and Carl), 5 out of 5 baseline sessions (100%) were terminated due to problem behavior. Prior to intervention, Steve reliably showed problem behavior when Carl asked him to vacuum (average latency: 1.4 min; range: 0.5–4.7 min). Following rapport-building, Steve participated in vacuuming with Carl, on average, for 7.7 min (range: 3.5–10.8 min). In 6 out of 9 sessions (67%), Steve completed the entire task sequence without showing problem behavior. Again, when problem behavior did occur, it typically occurred at a later point in the session than was the case for baseline. Finally, in the third dyad (John and Gary), 7 out of 7 baseline sessions (100%) were terminated due to problem behavior. Prior to the intervention, John reliably showed problem behavior when Gary asked him to get ready for work (average latency: 1.2 min; range: 0.5–4.6 min). Following rapport-building, John was able to deliver fliers, on average, for 14.9 minutes (range: 4.5–22 min) with Gary. In 4 out of 7 sessions (57%), John was able to complete the delivery route without showing problem behavior. Again, when problem behavior did

occur, it typically occurred at a later point in the session than was the case for baseline.

MEASURES OF TASK COMPLETION

Figure 5 presents the multiple baseline data for intervention impact with respect to the poor rapport dyads on measures of task performance (percentage task steps completed). Figure 5 also shows data for the good rapport dyads who, of course, were not involved in the intervention but who, for comparison purposes, were probed during the same baseline and intervention time periods as the poor rapport dyads. In each poor rapport dyad, there were improvements in task completion following intervention. Specifically, in baseline (solid circles), participants completed, on average, only 8% of the task steps (range 0%–50%) when working with a staff member who was identified as having poor rapport with the participant. Across the 3 dyads, 0 out of 15 baseline sessions (0%) resulted in successful task completion, session termination being due to the occurrence of severe problem behavior (i.e., aggression and self-injury). In contrast, data for the good rapport staff (open circles) show that, in baseline, on average, participants completed 96% of the task steps (range 40%–100%); furthermore, 14 out of 15 baseline sessions resulted in task completion (93%). Following the rapport-building interventions, participants' task performance with poor rapport staff members increased to levels that were more similar to those obtained for the good rapport dyads. On average, participants were now able to complete 87% of the task steps (range 30%–100%) while working with staff members who had previously been identified as having poor rapport with the participant. In the normative comparison group (good rapport dyads), participants completed 94% of the task steps on average. Furthermore, following intervention for the poor rapport dyads, more than half of the sessions (i.e., 16 out of 27 sessions, or 59%) resulted in task completion (range 70%–100%). In the normative comparison group, 12 out of 15 sessions (80%) resulted in task completion.

GENERAL DISCUSSION

A hallmark of traditional clinical practice has been an emphasis on the importance of establishing rapport between client and intervention agent to promote successful outcomes (Cornier & Hackney, 1987; Hembree-Kigin & McNeil, 1995). In the field of disabilities, anecdotal and case reports have suggested that rates of inappropriate behavior (e.g., aggression, self-injury) increase in the presence of nonpreferred staff and decrease in the presence of preferred staff, particularly when task demands or requests for actions are presented (Haring, 1991; Koegel et al., 1996; Lucyshyn, Dunlap, & Albin, 2002; Meyer & Evans, 1989;

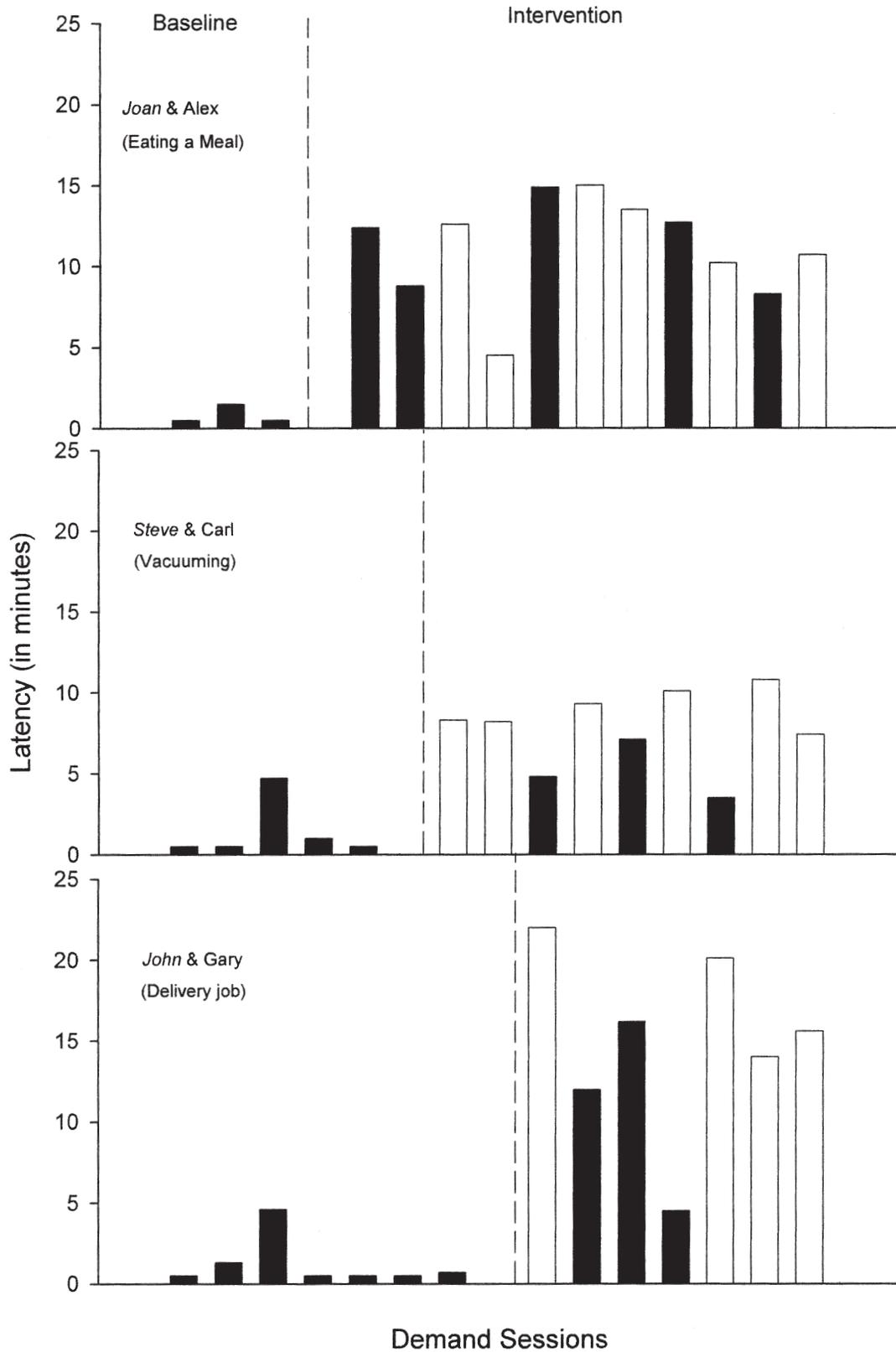


Figure 4. Latency to onset of problem behavior or successful completion without problem behavior (poor rapport dyads). The solid bars indicate that the session was terminated due to problem behavior. The open bars indicate that the session was successfully completed without problem behavior. *Note.* The dyad member who had a disability is shown in italics. The dyad member without a disability is shown in regular type.

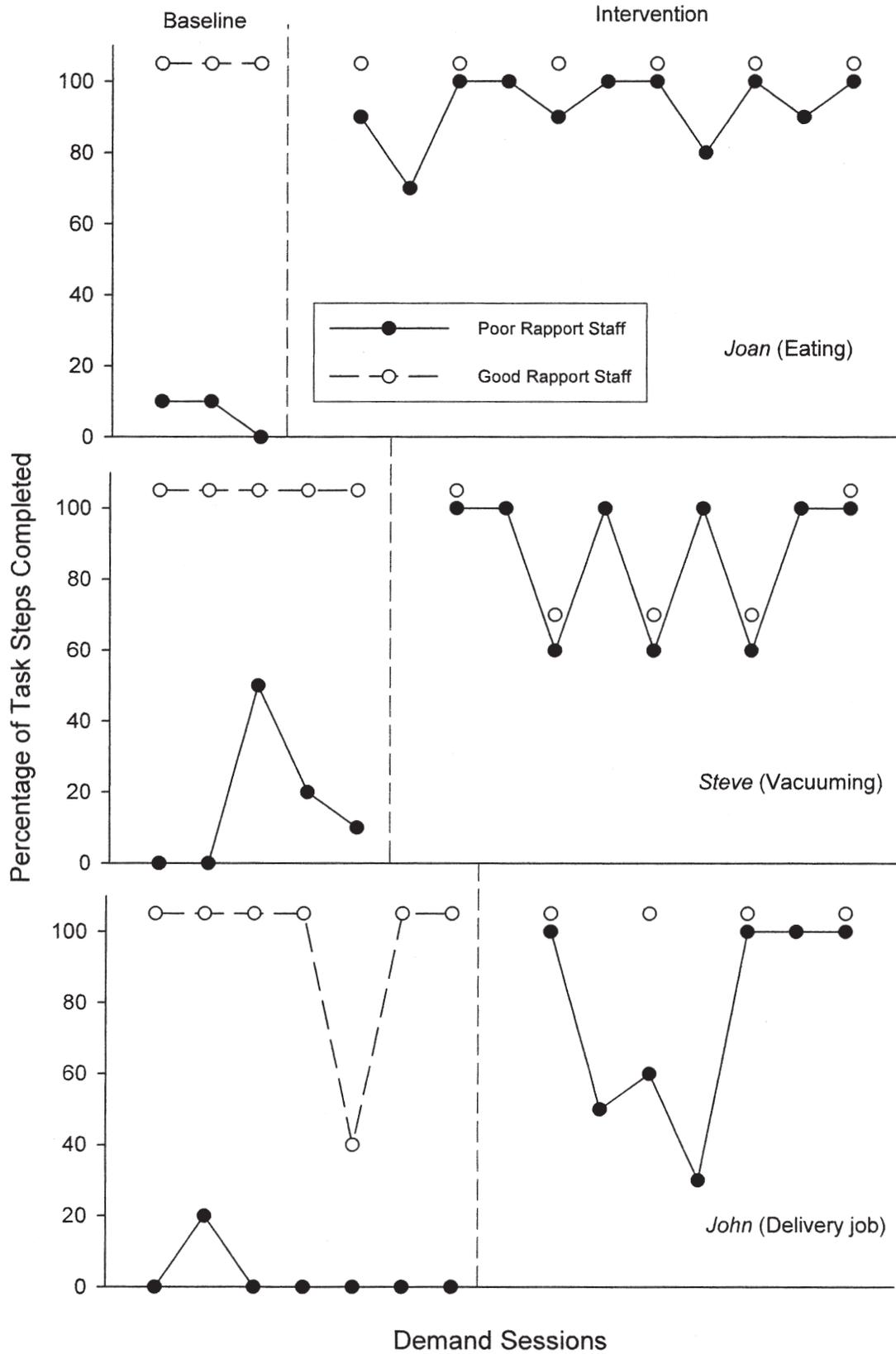


Figure 5. Percentage of task steps completed for poor (solid circles) versus good (open circles) rapport dyads prior to and after intervention. Symbols for good rapport staff have been slightly displaced for ease of reading.

Touchette, MacDonald, & Langer, 1985). A number of multi-component intervention studies have capitalized on these findings by including rapport-building as part of the intervention package (e.g., Carr et al., 1994; Carr et al., 1999; Carr et al., 1993; Kemp & Carr, 1995). However, the effects of rapport-building per se cannot be determined, given the multicomponent nature of such studies. In contrast, the present investigation focused on the unique contribution of rapport-building by presenting an empirical method for assessing rapport and providing systematic documentation on the impact of a rapport-building intervention on problem behavior.

Assessment

Study 1 used a multimethod approach to address the difficulties inherent in the study of rapport (Altman, 1990; Favell et al., 1996; Haring, 1991; Tickle-Degnen & Rosenthal, 1990). Five sources of data (i.e., staff preference ratings made by the person with disabilities, self-ratings of staff members, ratings made by staff peers, direct observation of latency to problem behavior, and direct observation of task performance) were examined in an attempt to evaluate the rapport construct.

First, consider the staff preference ratings made by the person with disabilities. Judgments of the person with disabilities appeared to be an important and meaningful indicator of rapport. Thus, Table 4 shows that prior to intervention, staff members who were identified as having poor rapport with a participant were not selected by the participant on any choice trial. That is, when given a choice of whom to work with, participants were consistent in choosing someone other than the poor rapport staff members. Following intervention, however, as participants had an opportunity to develop new social interaction histories with poor rapport staff, participants were more inclined to choose staff whom they had previously rejected. Thus, choice behavior on the part of the person with disabilities appeared to be a sensitive indicator of rapport.

Next, consider self-ratings of staff members. Overall, these ratings (using the Likert-type rapport scale) appeared to be somewhat less sensitive as an indicator of rapport. Of the five staff members who were identified as having poor rapport with participants at the outset of the study, none characterized their relationships with participants as unsatisfying (i.e., no staff member's self-ratings fell in the range of 0–1). Despite virtually all other sources of data suggesting problems in the relationship (i.e., participants consistently chose not to work with the staff member; peers consistently ranked the particular staff member as “least preferred” for the participant; and problem behaviors consistently occurred during direct observations of routine activities), staff seemed reluctant to express their dissatisfaction when completing the self-

rating scales. This finding is likely a social desirability artifact. That is, staff may have been motivated to have others view them in a positive light. Therefore, they typically characterized their relationships as “neutral” (self-ratings in the 2–3 range), rather than unsatisfying. Interestingly, all five staff members who were identified as having good rapport with participants (as reflected by preference ratings) rated their relationships as highly satisfying rather than neutral (i.e., self-ratings fell in the range of 4–5).

Peer ratings served as the third source of data on rapport. When significant others in the home (i.e., coworkers, group home administrators) were asked to rank-order staff members in terms of perceived quality of relationship with participants, peers who were part of the “social system” in the home were readily able to render judgments. Furthermore, these judgments appeared to be good indicators of rapport. Specifically, prior to intervention, all five staff members who were identified as having poor rapport with participants were consistently ranked below the 50th percentile by their peers, relative to all other staff working in the home. In contrast, all five staff members who were identified as having good rapport with participants were consistently ranked above the 50th percentile. All three staff members who were involved in intervention received more favorable rankings from their peers following intervention. For one staff member (Carl), these differences were considerable (i.e., Carl's mean percentile ranking increased from the 44th percentile to the 65th percentile; thus, his ranking, now greater than the 50th percentile, met the criterion for good rapport). For the remaining two staff members, these differences were more modest (i.e., Alex's mean percentile ranking increased from the 11th percentile to the 22nd percentile; Gary's mean percentile ranking increased from the 15th percentile to the 31st percentile). As noted earlier, rapport was examined only briefly and in limited situations (i.e., only in selected demand contexts) throughout the study. Therefore, it would not have been unusual for coworkers to perceive only small changes in the quality of relationships under these circumstances.

Finally, direct observation of latency to problem behavior and direct observation of task completion constituted the remaining two sources of data relevant to the impact of rapport-building. In the present study, the occurrence of problem behavior (i.e., aggression, self-injury) as reflected in measures of latency and task completion was an observable, measurable, and reliable indicator of the impact of rapport. Importantly, these indicators showed improvement following rapport-building.

Taken together, these findings suggest that the use of multiple methods of assessment may provide a strategy for studying ambiguous context variables, such as rapport. Too often, these variables are treated merely as interesting points for discussion, rather than as meaningful experimental variables. The major objective of the first study was

to explore rapport from multiple perspectives; that is, from the perspectives of the staff member, the participant, and the researcher. The inherent difficulties in studying rapport necessitated a combination of assessment strategies. Importantly, direct observation served as a means of producing quantitative information to validate and support the use of less conventional (i.e., subjective ratings) procedures, allowing for both the measurement and manipulation of rapport over time.

Study 1 also documented a strong inverse relationship between level of rapport and problem behavior. For all three participants, few problem behaviors occurred when demands were presented by a preferred (good rapport) staff member. That is, all three participants were able to engage in assigned tasks for longer periods of time (Figure 2) and to consistently achieve task completion while working with the good rapport staff member (Figure 3). In contrast, during work periods with nonpreferred staff (poor rapport), all three participants demonstrated increased problem behaviors when demands were presented. That is, the participants engaged in assigned tasks for shorter periods of time and rarely achieved task completion in the absence of problem behavior.

Intervention

In Study 2, following the multicomponent intervention (i.e., pairing staff members with strongly preferred reinforcers, building responsivity, and enhancing turn-taking), participants showed improved relationships with their previously nonpreferred providers (Table 4). Specifically, all three staff members were now more likely to be selected by the participants as work partners; all three staff members showed increased levels of personal satisfaction in their relationships with participants; and all three staff members were rank-ordered more favorably by staff peers in the home following intervention. As relationships improved, there was a concomitant increase in the number of sessions successfully completed without problem behavior in the presence of staff members who had previously been described as having poor rapport (see Figure 4) and in the percentage of task steps completed (see Figure 5). However, these data also show that rapport-building was not a cure for problem behavior. That is, while the intervention had an ameliorative effect on behavior, it did not result in the *total* elimination of problem behavior for any of the participants (see Figures 4, 5). These findings can be better understood within the context of several factors.

First, although the intervention used in the present study was relatively brief (i.e., rapport-building sessions lasted between 10 to 13 weeks), the negative histories that were associated with each dyad were quite extensive (i.e., all three poor rapport staff members who were involved in the intervention had between 3 to 5 years of contact with

the participants at the time of the study). Thus, lengthy negative histories may have compromised the overall impact of the relatively brief intervention. Future studies may find that it is both plausible and prudent to use rapport-building interventions proactively with new staff members who have not yet developed a negative history with the person whom they are supporting. Thus, at one level, rapport-building appears to be an important means of repairing existing relationships (i.e., long-term relationships between staff members and people with disabilities, in which rapport is lacking). At another level, these interventions may have a preventive function; that is, they could plausibly preempt the development of problem behavior by increasing positive social interactions at the beginning of new relationships. Ultimately, an increased understanding of rapport may lead to a better matching of staff members and people with disabilities. Relationships that are based on shared interests and mutually reinforcing activities may in fact be beneficial to both partners in the relationship. Clearly, one future research priority is to determine whether problem behavior can be prevented and positive outcomes achieved when rapport-building is implemented proactively.

Second, the present study was conducted within a circumscribed setting (i.e., in the context of very specific demands). Thus, the intervention was not implemented consistently in all situations throughout the day (i.e., in other work, leisure, home, academic, and community settings). Given this limited scope, it is possible that the full effects of a rapport-based intervention were attenuated by not applying the intervention more broadly. Future research should therefore incorporate a broader examination of context to determine whether meaningful relationship changes are enhanced when programmed generalization is instituted across a range of situations. Since positive social relationships contribute to quality of life and are necessary for functional participation in many activities, planned modifications of social interactions across different contexts may be an important aspect of achieving the goal of integrated lifestyles for people with severe handicaps (Haring, 1991).

Third, only a single strategy for remediating problem behavior (i.e., rapport-building) was examined in the present intervention. Although the absence of other intervention components allowed for a demonstration of the unique contribution of rapport, research on positive behavior support has strongly suggested that effective intervention involves the application of multiple procedures across multiple situations over long periods of time (e.g., Carr & Carlson, 1993; Carr et al., 1994; Carr et al., 1999; Kemp & Carr, 1995). Thus, whereas behavioral interventions designed to enhance rapport between participants and their support agents have shown promise for ameliorating problem behavior, clinically, one would not typically apply these interventions in isolation.

Conceptualizing the Process

The findings from the present study could be interpreted as showing that rapport modulated the aversiveness of task demands, effectively functioning as a setting event (Michael, 1982). Specifically, poor rapport may have increased the aversiveness of the demands, resulting in an increase in escape-related problem behavior. In contrast, good rapport may have decreased the aversiveness of the demands, resulting in a decrease in escape-related problem behavior. It would be interesting, in future research, to investigate whether rapport impacts effectiveness of other well-established interventions described in the literature (e.g., choice, behavioral momentum, functional communication training). For example, in the area of communication, a person with disabilities might be more inclined to demonstrate escape-related communication (e.g., requests for breaks) than attention-related communication (e.g., requests for attention) in the presence of poor rapport staff. However, in the presence of good rapport staff, the opposite might be true (e.g., the person would be more inclined to request attention than to request a break). The findings from the present study raise the possibility that the acquisition of other life skills besides communication (e.g., activities of daily living, leisure and recreation, vocational competency) could be impeded or facilitated, based, in part, on the quality of rapport present in social interactions (Haring, 1991; Meyer & Evans, 1989).

Concluding Comment

Our purpose was *not* to demonstrate that building rapport per se eliminates problem behavior. Rather, we sought to determine whether rapport, often used as one component of a multicomponent intervention strategy, makes a unique contribution to the remediation of problem behavior. The data from the present study suggest that it does.

For many years, two contrasting points of view have been expressed on the issue of rapport. Some have implied that rapport may be central (i.e., a key characteristic of providers is the quality of the relationships they have with the people whom they are paid to support; if relationships are good, then a major step has been taken toward the resolution of problem behavior; Egan, 1975). Others have implied that rapport, although of interest, may be somewhat incidental (i.e., the key characteristic of providers is their ability to manage contingencies and redesign environments; if these strategies are applied, problem behavior will not occur; Bijou & Baer, 1978). The present study suggests that the truth lies somewhere between these two points of view. That is, rapport can make a unique contribution to multicomponent intervention for problem behavior. However, in the absence of other components, rapport-building per se does not result in the complete elimination of problem behavior. The lesson is clear: Good

clinical practice means multicomponent intervention, and one of these components involves building rapport.

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AUTHORS' NOTES

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NOTES

1. A complete summary of the 10 task steps for each participant is available from the authors.
2. The complete list of daily and occasional reinforcers for each participant is available from the authors.
3. The complete communication profile used to observe participants is available from the authors.
4. A complete description of the 10 activity steps that comprised the scripted interaction for each dyad is available from the authors.

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