- Kirk, R.E. (1968). *Experimental design: Procedures for the behavioral sciences*. Belmont, CA: Brooks/Cole.
- McInnes, M., & MacNeill, J. H. (1983). *The supply of accounting graduates and the demand for public accounting recruits*. New York: AICPA.
- Schofield, P. (1978). Recruiting graduates—Some fresh answers. *Accountancy*, 89, 93-94.
- Shackleton, V. (1980). The accountant stereotype: Myth or reality? *Accountancy*, 91, 122-123.

Social Interaction Patterns Among Employees in Sheltered and Nonprofit Business Settings p. 123

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Recently, researchers have identified a number of social behaviors considered important for job success. Important social skills for entry-level employees include following instructions, clarifying instructions, providing assistance, and providing job-related information to co-workers (Buehler, 1969; Johnson & Mithaug, 1978; Rusch, Schutz, & Agran, 1982; Salzberg, Agran, & Lignugaris/Kraft, in press). Researchers have also recognized that these behaviors must be examined in the context in which they occur in the workplace (Berkson & Romer, 1980; Brody & Stoneman, 1977).

The context of a social interaction might be described in terms of the *job setting* in which the interaction occurs (e.g., restaurant, production line), the *general activity* within which the interaction occurs (e.g., during lunch, break, or during work), the number and kinds of people participating in the interaction, and its length. Hersen, Eisler, and Miller (1974), referring to the limited generalization effects found in the assertiveness literature, suggested that adequate social performance requires response skills as well as knowledge about the context in which these responses

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p. 124
are appropriate. That is, appropriate social interactions are those that conform to social norms and conventions that are dependent on context (Morrison & Bellack, 1981).

Work trainers and vocational counselors could use information about the context of social interactions in the workplace when designing social skills training programs. Information that would be of interest includes (a) how much social interaction occurs during breaks and work, (b) how much social interaction occurs in pairs compared to larger groups, and (c) what are the durations of social interactions during breaks and work. The purpose of this research was to examine social interactions and their social context during work and breaks in sheltered and nonsheltered work settings.

A few studies have addressed social interactions either during breaks or during work (Berkson & Romer, 1980; Levy & Gloscoe, 1984; Lignugaris/Kraft, Rule, Salzberg, & Stowitschek, 1986). Berkson and his colleagues observed social interaction patterns of developmentally disabled workers exclusively during lunch and breaks in four sheltered workshops. The workers observed interacted with co-workers most of the time. Their interactions were largely in pairs and occurred with a number of different co-workers. In addition, the types and amounts of social interaction among employees were stable across sheltered work settings during lunch and break times. In another study, Levy and Gloscoe (1984) observed handicapped workers in two sheltered workshops and nonhandicapped workers in a large factory exclusively during work times. High rates of conversation were recorded for both groups while workers performed assembly tasks or worked on production lines.

Social interaction patterns during both breaks and work were not examined in either of these studies. Thus, there is limited knowledge of how the social interaction patterns during break and work times might be similar or different. Further, it is not currently known if similar amounts and types of social interaction occur in sheltered and nonsheltered work settings. An optimal data base to prepare developmentally disabled individuals for work should include information about social interactions in work situations with nonhandicapped as well as handicapped individuals (Levy & Gloscoe, 1984; Lignugaris/Kraft et al., 1986; Rusch, 1979; Schutz & Rusch, 1982).

In this study we examined social interactions during breaks and work in sheltered and nonsheltered work settings. In the first study, social interactions of developmentally disabled workers were examined during breaks and work in two sheltered workshops. In the second study, the social interactions of both handicapped and nonhandicapped employees were studied in the same nonsheltered work setting.

STUDY 1: METHOD

In this study, the social interactions of developmentally disabled workers were examined during breaks and work. Workers' initiation patterns and

p. 125
the general structure of workers' conversations were studied as well as the social context for these interactions.

Participants

Thirty developmentally disabled workers were observed. In 26 cases, participants' classifications were based on full-scale WAIS IQ scores. In 4 cases the basis for the diagnosis was not specified.

In two sheltered workshops 18 male workers and 12 female workers were observed. The target workers were 17 to 50 years old (mean age = 30) and had been in these workshops for an average of 3 years with a range of 4 months to 9 years. The workers chosen for observation were those who, according to supervisors, had the highest production rate in the workshops and, in the supervisors' opinion, were most likely to be placed on work crews or in competitive employment sites.

Setting

Observations took place at two sheltered workshops. In both workshops the targeted workers were assigned assembly tasks and production-line work. Thus, targeted workers were generally in close proximity to co-workers and had ample opportunity for social interaction. Breaks were generally taken in hallways outside the work area or outdoors. Observations during breaks and work were conducted both in the mornings and afternoons.

Measure

A social interaction observation system, developed for this project, was used to describe (a) the social context of workers' interactions, (b) the workers' initiation patterns, and (c) the general structure of workers' interactions. The social context of interactions included information concerning (a) workers' on-task behavior, (b) whether there was opportunity for social interaction, (c) whether a supervisor was present, and (d) conversational groupings (i.e., pairs versus larger groups). Information on initiation patterns included who participated in an interaction, whether an initiation was responded to, and the direction of the initiation, that is, whether the targeted worker or others initiated the conversation. Finally, the general structure of conversation was described by the number of 15-second intervals that passed during an interaction and by the extent to which workers participated in the interaction.

Procedure

Each worker was observed in 5- to 10-minute observation periods for a minimum of 30 minutes during breaks and 60 minutes during work times.

No worker was observed more than twice a day. Thus, each worker was observed for a minimum of 5 days.

Observers were equipped with a cassette tape recorder with a 15-second interval tape and a small earplug. They were stationed 5 to 10 feet from workers during each observation. During each 15-second interval, observers recorded verbal and physical initiations to and from the targeted worker. Participants in paired social interactions were identified either as targeted workers, co-workers, supervisors, or others (e.g., customers). When more than two individuals participated in an interaction, the participants were identified as a group.

For each interval, it was noted whether an interaction continued into the next interval as well as whether the targeted worker verbally or physically participated in the interaction. An interaction ended when a 6-second pause occurred in the conversation, or, in the case of paired interactions, when the participants changed. In addition, observers recorded whether the supervisor was present for any part of the interval and whether the targeted individual had an opportunity to interact. For observations during work, observers recorded at the beginning of each interval whether the participant was on or off task or waiting for additional work materials.

Observer training. Observers participated in two phases of training. In the first phase, they learned to use the social interaction observation system by observing videotaped work situations and recording workers' social interactions. In the second phase, observers recorded workers' interactions during breaks and work in actual work settings. A training criterion of 80% agreement with at least two other observers for two consecutive observation sessions in a work setting was required before beginning the study. Observers required 1 to 3 months of training to reach this criterion. In addition, agreement among observers was rechecked after vacations or other long breaks.

Participant orientation. Prior to data collection, an orientation procedure was conducted for each participant. After informed consent was obtained, trial observations were conducted to allow workers to become accustomed to the observation process. Each participant was observed for 5 to 10 minutes at a time. Actual data collection began after a minimum of three trial observations.

Reliability

Reliability was assessed by a second observer who simultaneously, but independently, observed and recorded the social interactions of workers. Reliability observations were conducted for approximately 30% of all observations across participants, settings, and times of day.

Reliability indices were calculated for each code category during both work and break observations by dividing the number of agreements for each observation by agreements plus disagreements and multiplying the dividend by 100. To prevent artificially high scores for low rate behaviors,

only those intervals in which one of the observers recorded an occurrence of a behavior were used to count intervals of agreement. The reliability index for each code category was as follows: supervisor presence, 94% at break, 98% at work; opportunity for interaction, 99% at break and at work; waiting for work materials, 98%; on or off task, 99%; direction of initiation, 58% at break, 61% at work; and, continuing interactions, 90% at break, 78% at work.

The mean reliability index for observations during breaks was 90% or above except for agreement on initiations, which was relatively low. This was due to differences either in observers' estimates of the 6-second pause that defined the end of one interaction and the beginning of a new interaction or differences in the direction of initiations. In general, sessions with low scores were ones in which little interaction occurred. The mean reliability index across recording categories was 85% during breaks and 88% during work.

STUDY 1: RESULTS

The social context of interaction, participants' initiation patterns, and the general structure of participants' interactions are presented in Table 1.

Social Context

During breaks, workers almost always had the opportunity to interact with co-workers, but seldom had the opportunity to interact with supervisors. Workers interacted with co-workers and supervisors about half the time in which they had the opportunity. Approximately half of these interactions were with pairs and half of the interactions were with three or more participants.

In contrast, during work, workers had the opportunity to interact with both co-workers and supervisors. Moreover, workers interacted half as often during work as on breaks. Social interactions during work were primarily in pairs. Approximately one-third of the participants' interactions included three or more workers.

Further analyses were conducted using a *t* test for correlated samples (Ferguson, 1981) to compare social context dimensions during break to those during work. Statistically significant differences were found between the percentage of intervals during breaks and during work in which interactions occurred ($t = 7.82, p < .05$), in which supervisors were present ($t = 15.44, p < .05$), and in which paired ($t = 4.14, p < .05$) or larger group interactions ($t = 4.40, p < .05$) took place. That is, participants generally interacted half as often during work as during breaks. Supervisors were present more during work than during breaks. Finally, proportionally more intervals of paired interaction occurred during work and proportionally more intervals of group interaction occurred during breaks.

p. 128

TABLE 1
Social Interactions During
Break and Work in Two Sheltered Workshops

Characteristics of interaction	Percentage of time intervals during break		Percentage of time intervals during work	
	M	SD	M	SD
Social context of interactions				
Opportunity for interaction	99	1	99	3
Interaction	54	25	25	18*
Supervisor presence	12	13	80	21*
Paired interactions	46	21	64	22*
Group interactions	53	21	35	20*
Worker engaged in a job task			99	2
Initiation pattern				
Target worker initiations	53	16	48	21
Co-worker initiations to the target worker	42	17	44	17
Supervisor initiations to the target worker	3	5	8	11*
Target worker initiations that were not responded to	11	15	25	25*
Initiations to the target worker not responded to	9	12	15	13
Structure of interactions				
Percentage of continuing interactions	73	15	64	19*
Percentage of intervals in which the target worker spoke or touched	75	14	75	14
Percentage of intervals in group interaction in which the target worker spoke or touched	74	21	69	23

* *t* test for correlated samples significant at $p < .05$.

Initiation Pattern

During breaks and work approximately half of the interactions were initiated by the targeted workers and half by the co-workers. Few interactions were initiated by supervisors during breaks or during work. Although targeted workers initiated interactions about half the time, some of those initiations were not responded to by co-workers or supervisors. Workers' initiations were not responded to more often during work than during breaks ($t = 3.69$, $p < .05$). In addition, workers initiated fewer interactions at work (.22 initiations per minute) than on breaks (.50 initiations per minute; $t = 2.95$, $p < .05$).

Structure of Interactions

During breaks, interactions lasted an average of 4.34 intervals ($SD = 2.08$), or approximately one minute. In contrast, interactions during work were

p. 129

significantly shorter, lasting an average of 2.41 intervals ($SD = 1.06$), or approximately 30 seconds ($t = 5.29$, $p < .05$). During both breaks and work, the large standard deviations suggest great variability in the mean length of interactions across workers. In addition, during both breaks and work about two-thirds of the interactions continued beyond a single reciprocation.

In summary, workers in these settings were active initiators and active participants in paired and group interactions during break and work. The large standard deviations across variables indicate substantial differences among targeted workers in the amount of socializing. The average interaction profile, however, indicates that workers interacted more during breaks than during work. The break time was also characterized by more group interaction than paired interaction. In these workshops, interactions during work were often brief but they generally entailed more than a single conversational turn for each participant. In break and work situations, targeted workers initiated conversations about as often as their co-workers.

STUDY 2: METHOD

It has been suggested that to be successful developmentally disabled individuals must be taught to produce, attend, manage time, and socially interact at levels that characterize employment settings (Lignugaris/Kraft et al., 1986; Rusch, 1979). Information obtained in sheltered workshops suggests considerable variability in how often workers socially interact during breaks and at work. In a recent study, Lignugaris/Kraft et al. (1986) suggested that there is similar variation in how frequently individuals conversed with co-workers and supervisors in a nonprofit business setting. In that research, however, participants were observed only during work. Moreover, research was limited to examining two context variables: (a) who the participants interacted with and (b) how often interactions occurred. The purpose of this study was to extend that research by examining a broad array of context variables during break as well as during work.

Participants

The developmentally disabled ($n = 17$) and nonhandicapped ($n = 16$) participants were the same as those described by Lignugaris/Kraft et al. (1986). The developmentally disabled participants were mildly to moderately retarded, according to their employment records, and were from 21 to 62 years of age (mean age = 36). They lived either independently in apartments ($n = 11$) or with their families ($n = 5$) (i.e., parents, a brother, or a sister). These individuals had been working for their present employer for an average of 4.6 years with a range of 6 months to 18 years.

p-130 The nonhandicapped participants either lived independently ($n=13$) or with their families ($n=3$). Most of the nonhandicapped participants were senior citizens (mean age=61) who had been working for their present employers for an average of 5.7 years with a range of 4 months to 17.5 years.

Setting

Observations took place at two businesses that specialize in refurbishing and selling household goods. A primary purpose of these businesses is to employ individuals who might otherwise have difficulty finding work. Thus, a large proportion of the workers are handicapped or elderly. In this respect, the work environment may differ from some other competitive work situations. These businesses are unlike sheltered workshops, however. They are more selective in their hiring process, employees earn at least the minimum wage, employees must work to rigorous production standards, and employees who do not perform satisfactorily are fired. To characterize these settings, the term nonprofit business rather than sheltered workshop or competitive business is used throughout this article.

Workers performed a variety of tasks such as loading and unloading trucks, working at stationary benches or tables (e.g., refurbishing shoes, cleaning merchandise, fixing or repairing goods, assembling furniture, and sorting clothes) or pricing goods. Observations of employees during break and work were conducted both in the mornings and afternoons.

Procedures

The recording procedures and observation system were the same as those used in the previous study. The same procedures were used to train observers and the same set of orientation procedures was employed to help participants become acclimated to being observed.

Reliability

The procedures to assess reliability were the same as those employed in the previous study. Reliability observations were conducted for approximately 30% of all observations across subjects, settings, and times of day. The reliability index for each observation category was as follows: supervisor presence, 97% at break, 96% at work; opportunity for interaction, 98% at break, 95% at work; waiting for work materials, 96%; on or off task, 97%; direction of initiation, 81% at break, 73% at work; and continuing interactions, 87% at break, 85% at work. The mean reliability across recording categories was 91% during break and 90% during work.

STUDY 2: RESULTS

p-131 The social context of interaction, the interaction patterns, and the general structure of interactions were analyzed for both developmentally disabled and nonhandicapped workers. Comparative analyses indicated that there were no significant differences in the average pattern of social interaction for developmentally disabled and nonhandicapped workers. As suggested by Lignugaris/Kraft et al. (1986), it seems that the developmentally disabled workers had adapted quite well socially to these work settings. Because there were no statistically significant differences between the measures taken on the two groups, data for handicapped and nonhandicapped workers were combined (see Table 2).

Social Context

During breaks, workers always had the opportunity to interact with either co-workers or supervisors. Workers interacted about half the time on

TABLE 2
Social Interactions During
Break and Work in Two Nonprofit Businesses

Characteristics of interaction	Percentage of time intervals during break		Percentage of time intervals during work	
	M	SD	M	SD
Social context of interactions				
Opportunity for interaction	100		100	
Interaction	46	26	26	20*
Supervisor presence	32	30	39	31
Paired interactions	58	24	76	16*
Group interactions	38	21	23	16*
Worker engaged in a job task			100	4
Initiation pattern				
Target worker initiations	51	19	50	16
Co-worker initiations to the target worker	44	20	42	17
Supervisor initiations to the target worker	4	7	7	9*
Target worker initiations that were not responded to	14	21	14	14
Initiations to the target worker not responded to	9	19	8	12
Structure of interactions				
Percentage of continuing interactions	75	16	67	16*
Percentage of intervals in which the target worker spoke or touched	80	17	82	11
Percentage of intervals in group interaction in which the target worker spoke or touched	75	26	70	28

* t test for correlated samples significant at $p < .05$.

8-132
breaks and about a quarter of the time during work. Approximately 60% of the interactions during break were between pairs and about 40% of the interactions were with three or more participants. In contrast, approximately three-quarters of the social interactions observed at work were between pairs and one-quarter included three or more participants.

The social context of interactions in these settings was similar to that in the workshop settings. The data are comparable both in terms of the percentage of intervals in which interaction occurred and in the conversational groupings (paired or group interactions). Statistically significant differences (t test for correlated samples, Ferguson, 1981) were found between breaks and work in: (a) the amount of interaction that occurred during breaks and work ($t=5.41$, $p<.05$), (b) the occurrence of paired interaction ($t=3.36$, $p<.05$), and (c) the occurrence of group interactions ($t=-2.97$, $p<.05$). The social context during breaks was characterized by more frequent interaction than at work. Proportionally more intervals of group interaction took place on break than at work. In contrast, proportionally more intervals of paired interaction occurred at work than on break.

Initiation Pattern

The workers in these settings initiated interactions about as often as those in the sheltered workshops. That is, during break and at work, approximately half of the interactions were initiated by targeted workers and half by co-workers. Few interactions were initiated by supervisors. Furthermore, a small proportion of workers' initiations were not responded to on break or at work.

Targeted workers initiated new interactions about once every 2 1/2 minutes during breaks and work. In general, the initiation pattern of these workers was similar to that observed in Study 1.

Structure of Interactions

The general structure of interactions in these work settings was similar to that observed in Study 1. Workers' interactions lasted an average of 4.29 intervals ($SD=2.00$) (or approximately 1 minute) during breaks and 2.36 intervals ($SD=1.07$) (or approximately 30 seconds) during work. Interactions during breaks were significantly longer than interactions during work ($t=-5.89$, $p<.05$). In addition, more interactions during breaks than during work continued beyond a single reciprocation ($t=-3.32$, $p<.05$).

In summary, these data indicate that the average interaction profile in these nonprofit businesses was similar to that in the sheltered workshops observed in Study 1. In general, workers were active initiators and active participants in paired and group interactions during breaks and work. In addition, the large standard deviations across variables suggest differences in the amount of socializing across participants.

Interactions during breaks occurred more often and were of longer duration than those during work. Interactions between pairs occurred more often during work than breaks. In contrast, group interactions were observed more often during breaks.

DISCUSSION

The results of these studies extend our knowledge about social interaction patterns of developmentally disabled and nonhandicapped workers in sheltered and nonprofit business settings. Based on these findings, several broad generalizations about social behaviors at work may be suggested. First, developmentally delayed individuals are generally active interactors during breaks and work in sheltered and nonsheltered settings. In these work sites, there was little difference in the average social interaction pattern of handicapped and nonhandicapped workers in the same employment setting. Second, in both sheltered and nonprofit business settings, there are large individual differences in the amount of social interaction that takes place. Third, for the most part, more social interaction occurs during break than during work. During breaks, the social milieu of these work sites was characterized by frequent interactions that often involved more than one conversational turn for the participants. In contrast, work times were characterized by shorter, fewer, and primarily paired interactions.

Observational research in business settings is relatively rare. The process of observation may have affected the character of the interactions observed. To minimize the effects of observers intruding in the work place, an orientation procedure was employed to help the participants adjust to being observed. Nevertheless, the observation process may have suppressed interaction for some individuals. For example, supervisors may have avoided target workers during observation periods. The supervisors in both studies initiated interactions infrequently even though they were present most of the time in the sheltered work settings and slightly less than half the time in the integrated work settings. Foss and Petersen (1981) have suggested, however, that supervisor interactions are critical to success on the job.

A number of social-vocational training programs, such as *Becoming Independent* (Appolloni & Westaway, 1978), *Don't Get Fired* (Anema, 1979), and *Pathways Toward Independence* (The Nisonger Center, 1975) address important work skills such as seeking assistance and providing work-related information. Few programs, however, address important interaction skills for breaks or prescribe the context in which social-vocational training should occur. The information from the present studies suggests that group interaction as well as paired interaction may often occur in production environments. Individuals who are to be placed in production settings may be better equipped to adapt socially if they have

p-134
the skills to interact in groups as well as in pairs. It may also be important to teach developmentally disabled workers to acknowledge initiations from co-workers and supervisors when they are learning to follow directions or to respond to criticism. In the nonprofit businesses examined in Study 2, most initiations by targeted workers were responded to by co-workers or supervisors. Similarly, targeted workers usually responded to initiations from others.

Although information about interaction patterns will be useful in building a data base with which to prepare developmentally disabled individuals for work, such information is not sufficient. Knowledge of the content of the social interactions that take place in nonsheltered employment settings during breaks and work is likely to be even more important (Salzberg et al., in press).

In summary, supervisors and competitive employers have suggested a number of social skills important for employment success (Buehler, 1969; Langford & Salzberg, 1982; Rusch et al., 1982). There is little empirical information, however, that describes how often specific social behaviors actually are required in the work place, the social vocational contexts in which they occur most often, and the parameters that define competent responses. Additional research that addresses these issues is important to improve work-training programs for developmentally disabled people.

REFERENCES

- Anema, D. (1979). *Don't get fired*. Hayward, CA: Janus.
- Appolloni, T., & Westaway, A. (1978). *Becoming independent*. Bellevue, WA: Edmark.
- Berkson, G., & Romer, D. (1980). Social ecology of supervised communal facilities for mentally disabled adults: I. *American Journal of Mental Deficiency*, 85, 219-228.
- Brody, G.H., & Stoneman, Z. (1977). Social competencies in the developmentally disabled. *Mental Retardation*, 15, 41-43.
- Buehler, R.E. (1969). Job-related behavior rating scale. *Training and Development Journal*, 23, 14-20.
- Ferguson, G.A. (1981). *Statistical analysis in psychology and education*. New York: McGraw-Hill.
- Foss, G., & Peterson, S. (1981). Social-interpersonal skills relevant to job tenure for mentally retarded adults. *Mental Retardation*, 19, 103-106.
- Hersen, M., Eisler, R.M., & Miller, P.M. (1974). An experimental analysis of generalization in assertive training. *Behavior Research and Therapy*, 12, 295-310.
- Johnson, J.L., & Mithaug, D.E. (1978). A replication of sheltered workshop entry requirements. *Journal of the Association for the Severely Handicapped*, 3, 116-122.
- Langford, C., & Salzberg, C.L. (1982). *Developing socially valid teaching targets for fast food restaurants*. Unpublished manuscript, Utah State University, Department of Special Education.
- Levy, S., & Gloscoe, F.P. (1984, April). *An evaluation of work-related social skills in handicapped and nonhandicapped employees*. Paper presented at the annual meeting of the Council for Exceptional Children, Washington, DC.
- Lignugaris/Kraft, B., Rule, S., Salzberg, C.L., & Stowitschek, J.J. (1986). A descriptive analysis of social interpersonal skills among handicapped and nonhandicapped adults in an employment setting. *Journal of Employment Counseling*, 23, 20-31.

- Morrison, R.L., & Bellack, A.S. (1981). The role of social perception in social skill. *Behavior Therapy*, 12, 69-79.
- The Nisonger Center. (1975). *Pathways Toward Independence*. Columbus: Ohio State University.
- Rusch, F.R. (1979). Toward the validation of social/vocational survival skills. *Mental Retardation*, 17, 153-144.
- Rusch, F.R., Schutz, R.P., & Agran, M. (1982). Validating entry-level survival skills for service occupations: Implications for curriculum development. *Journal of the Association for the Severely Handicapped*, 8, 32-41.
- Salzberg, C.L., Agran, M., & Lignugaris/Kraft, B. (in press). Behaviors that contribute to entry-level employment: A profile of five jobs. *Applied Research in Mental Retardation*.
- Schutz, R.P., & Rusch, F.R. (1982). Competitive employment: Toward employment integration for mentally retarded persons. In K. Lynch, W. Kiernan, & J. Stark (Eds.), *Prevocational and vocational education for special needs youth* (pp. 133-159). Baltimore: Paul Brookes.