

Social Integration in Employment Settings: Application of Intergroup Contact Theory

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Abstract

This study used a survey of 106 employment specialists to test the ability of intergroup contact theory to explain social integration outcomes of employees with disabilities. Contact theory suggests that coworkers are more accepting of employees with disabilities if they have sufficient opportunities to interact with them, equal status and interdependent working relationships, and supervisors who support equality and acceptance. The contact model and an expanded model that includes workplace culture significantly predicted not only coworker attitudes toward employees with disabilities but also the employees' level of social participation and feelings of social support. In addition, outcome dependency moderated the relation between the vocational competence of employees with disabilities and coworker attitudes toward them. Study findings have practical implications for facilitating social relationships in the supported workplace.

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Supported employment has opened up a new world of employment possibilities for many people with significant disabilities who previously had been excluded from the competitive labor force (Kiernan & Schalock, 1997; Rusch, 1990; Wehman, Revell, & Kregel, 1998). Supported employment also provides a vehicle for secondary students with disabilities to gain authentic work experience, experience that is empirically linked to future employment success (Benz, Lindstrom, & Yovanoff, 2000; Phelps & Hanley-Maxwell, 1997). A valued outcome of supported employment and school-to-work transition services is social integration (Davis, 1994; Halpern, 1993; Wehman & Moon, 1987). Interpersonal relationships and social inclusion are recognized as important indicators of quality of life for persons with intellectual disabilities (Schalock, 2000). In addition, meta-analytic reviews of the literature on coworker support and workplace climate indicate that social relationships with coworkers contribute to improved work performance, job satisfaction, and job longevity (Carr, Schmidt, Ford, & DeShon, 2003; Chiaburu & Harrison, 2008).

A common criticism of supported employment is that although greater numbers of people with

disabilities are obtaining employment in integrated community work settings, many remain socially segregated from their coworkers (Hagner, Butterworth, & Keith, 1995; Mank, 1994; Murphy & Rogan, 1994; Wehman & Kregel, 1995). Social integration requires more than the physical presence of an employee with a disability at the job site; the employee must also be valued as a coworker and as a person and included in the social activities of the workplace (Chadsey-Rusch & Heal, 1995; Nisbet & Callahan, 1987). Despite the high value placed on social integration, employees with disabilities are often isolated at their job sites—working in rooms all alone, with work schedules that do not correspond to those of coworkers, doing tasks that do not require communication with others at the job site. Such situations present a challenge to employment specialists attempting to facilitate social interaction between the employees with disabilities and their coworkers.

Strategies for Promoting Social Integration

Strategies designed to facilitate the social integration of employees with disabilities have

ranged from interventions to improve the employees' social skills to directly encouraging coworkers to interact with them (for reviews, see Chadsey, 2007; Chadsey & Beyer, 2001; Storey & Lengyel, 1992). The most commonly used interventions have attempted to change the social behaviors of employees with disabilities. Frequently targeted behaviors include initiating greetings, asking and answering questions, requesting assistance, turn taking, and decreasing inappropriate behavior. Although social skills training has had some success, particularly for increasing or decreasing the frequency of a target behavior, skills learned in the training setting often do not transfer to new settings or situations.

A second type of intervention strategy for promoting social integration is enlisting coworker involvement in instruction and support. Coworkers and supervisors have been used as mentors, skills trainers, consultants, and advocates for inclusion. Coworker interventions have garnered considerable attention because coworkers are often viewed as the most natural form of support available at the worksite. However, the available research evidence regarding the effectiveness of these strategies has been mixed (Chadsey & Beyer, 2001). An underlying assumption of social skills interventions and coworker interventions appears to be that direct efforts by an employment specialist to change the behavior of individuals in the work setting facilitate social interaction and the development of relationships among coworkers.

A third type of strategy—one that has received relatively less research attention—targets workplace characteristics and job design as a means of promoting social integration. These *workplace contact* strategies focus on the context and the structure of contact between employees with disabilities and their nondisabled coworkers. The *context* of contact refers to characteristics of a setting, including the norms that operate within the setting. Developing a job at a company where the employer fully endorses hiring individuals with disabilities and where employees frequently offer assistance to one another exemplifies this strategy. Much of the research in this area has focused on *workplace culture*—the set of shared meanings, expectations, values, and assumptions that governs workplace behavior and how it is interpreted (e.g., Butterworth, Hagner, Helm, & Whelley, 2000; Hagner, 1989, 2000). For example, research by Butterworth et al. (2000) suggested that employees

with disabilities are more likely to be included and supported at work if their workplaces have clearly identified times and places for workers to socialize, employees spend time together outside of work, and employers use a personal management style that fosters teambuilding. According to Hagner (1999), it is “participation in the workplace culture that gives concrete meaning to the term ‘inclusion’ as a goal for employees with disabilities” (p. 1).

In addition to investigating these general workplace characteristics, researchers have examined the structure of contact in the workplace (e.g., Chambless, 1996; Hagner, 2000; Mank, Cioffi, & Yovanoff, 1997; Parent, Kregel, & Wehman, 2007). The structure of *contact* refers to characteristics of workplace relationships between employees with disabilities and their coworkers. Examples of this intervention strategy include structuring a job so that the employee (a) has a job description and work schedule similar to that of other employees, (b) works cooperatively with coworkers to complete tasks, and (c) follows the same chain of command as other employees. The focus of workplace contact strategies is not to directly change the social behavior of people with disabilities or their coworkers but on job selection and design as an indirect means of facilitating social relationships.

The research literature provides a list of workplace contact variables associated with successful social integration of employees with disabilities. What appears to be missing is a theoretical framework for organizing and understanding these findings. The next section presents one such theoretical framework that may prove useful in integrating past work and guiding future research and practice in this area.

Intergroup Contact Theory

First articulated by Allport in 1954, intergroup contact theory posits that attitudes toward members of a negatively stereotyped outgroup, such as people with disabilities, can become more positive after direct interpersonal contact with members of the outgroup. Allport recognized, however, that intergroup contact alone is not always sufficient to automatically lead to the social acceptance of negatively stereotyped individuals. He and other researchers (Amir, 1976; Cook, 1978; Pettigrew, 1971, 1998; Rothbart & John, 1985) have identified several conditions that enhance the positive effects of contact on intergroup relations. After half

a century of research on contact theory (for reviews, see Brewer & Brown, 1998; Pettigrew, 1998), contact has been found to produce favorable attitudes toward outgroup members in situations marked by four key conditions:

1. *Opportunity to interact.* Situations with high acquaintance potential promote intimate contact between individuals that enhances the development of meaningful relationships (Cook, 1978). Stated explicitly, contact must be of sufficient frequency, duration, and closeness to facilitate the development of intergroup (e.g., disabled–nondisabled) friendships (Brewer & Brown, 1998).
2. *Equal status.* The way ingroup members perceive their status relative to the status of an outgroup member can strongly influence the outcome of the interaction; situations that promote equal status interactions lead to more positive attitudes (Amir, 1976). A common stereotype of outgroups is that their members have an inferior ability to perform various tasks. If members of the outgroup occupy lower status positions within the contact situation, preexisting stereotypes about the inferior abilities of outgroup members are likely to be reinforced rather than weakened (E. G. Cohen, 1984). On the other hand, contact under conditions of equal status should lead to less prejudiced beliefs if outgroup members repeatedly demonstrate task competence.
3. *Outcome dependency.* According to Allport (1954), “It is the cooperative striving for the goal that engenders solidarity” (p. 276). This statement suggests that when members of different groups are dependent on one another to reach mutually desired goals, they have instrumental reasons to get along and work together toward achieving their shared goals.
4. *Authority support.* Intergroup contact is more successful when those in positions of authority unequivocally endorse the goal of integration (Brewer & Brown, 1998). Authority support for integration establishes norms of acceptance, equality, and tolerance (Pettigrew, 1998).

The tenets of contact theory were derived largely from experience with intergroup relations in real-world contexts. Spurred initially by the racial desegregation efforts of the 1950s (Amir, 1976), the most extensive application of contact theory has been the implementation of cooperative learning

programs in racially desegregated classrooms (Brewer & Brown, 1998). Cooperative learning methods incorporate the basic principles of intergroup contact theory: face-to-face contact and cooperation across racial lines, equal-status roles for students of different races, and explicit teacher support for racial integration. Research reviews (D. Johnson, Johnson, & Maruyama 1984; Slavin, 1985) have indicated that cooperative learning in racially integrated classrooms is associated with increased liking for classmates, increased cross-ethnic interactions, and a generalized reduction in ethnic prejudice.

Intergroup contact theory has since been applied to a diverse range of social groups, such as groups with racial, ethnic, cultural, religious, physical, intellectual, political, and status differences. The effects of contact have been studied in the domains of housing, schooling, employment, recreation, and travel and tourism. In a recent meta-analysis of 203 studies examining the effect of intergroup contact on prejudice, Pettigrew and Tropp (2006) found that the 134 samples that optimized Allport’s (1954) conditions of contact yielded significantly greater reductions of prejudice than did other samples.

Contact theory offers a framework for addressing the attitudinal barriers to inclusion that must be removed if people with disabilities are to become full participating members of their communities. As intergroup contact theory predicts, contact alone is not always sufficient to ensure the acceptance of people with disabilities by other members of society. Research has indicated that contact sometimes leads to better attitudes, sometimes leads to greater prejudice, and sometimes appears to have little overall impact on attitudes (see Yucker, 1988, for a review). For example, the mainstreaming efforts of the 1970s were predicated on the assumption that placing students with disabilities in general education classrooms would facilitate positive relationships between students with disabilities and their nondisabled peers. However, reviews of the mainstreaming literature (Corman & Gottlieb, 1978; Gottlieb, Corman, & Curci, 1984) found that mere physical proximity between students with disabilities and their nondisabled peers was often not associated with an increase in the social acceptance of the students with disabilities. Due to the contradictory evidence from the mainstreaming literature, attention soon turned to intergroup contact theory as a guide for

Table 1 Conditions of Contact in the Integrated Workplace

Condition of contact	Definition	Examples
Opportunity to interact	Opportunities exist for employees with disabilities to become acquainted with coworkers	Proximal work areas; similar work schedules, break times, and locations
Equal status	Employees with disabilities have equal status relationships with nondisabled employees at the worksite	Similar job descriptions and responsibilities; similar compensation packages; same chain of command
Outcome dependency	Employees with disabilities have interdependent working relationships with coworkers	Shared work goals and tasks; teamwork
Authority support	Management and direct supervisors unequivocally support the integration of employees with disabilities at the worksite	Supervisors take full responsibility for employees with disabilities and include them in staff meetings and company-sponsored social activities

structuring intergroup interactions to promote social acceptance in the newly integrated classrooms (D. Johnson & Johnson, 1984). Many of the cooperative learning strategies that had been used in racially desegregated classrooms in the 1950s and 1960s were successfully used to integrate students with disabilities in general education classrooms (for a review, see D. Johnson & Johnson, 1989). A study by Piercy, Wilton, and Townsend (2002) demonstrated that the power of cooperative contact to improve attitudes toward students with disabilities extends to attitudes toward students with moderate–severe intellectual disabilities.

Present Application: Social Integration of Employees With Disabilities

Intergroup contact theory is an empirically supported theory, with potentially significant implications for supported employment and school-to-work transition practice. Although intergroup contact theory has been applied to work settings (Pettigrew & Tropp, 2006), we do not know of any studies that have assessed the ability of the theory to explain coworker attitudes toward employees with disabilities in community work settings. Intergroup contact theory predicts that contact in work settings will lead to favorable attitudes toward employees with disabilities when the qualifying conditions of contact are met. Table 1 presents definitions of the qualifying conditions of contact

as they apply to integrated employment settings. Also presented are examples of characteristics of workplace contact that satisfy each condition.

The primary objective of this study was to test the ability of intergroup contact theory to explain variability in the social integration outcomes of employees with disabilities. The social integration outcomes assessed were those identified by Chadsey-Rusch and Heal (1995) in their factor-analytic study of how transition experts think about social integration outcomes and interventions in employment settings: social participation (an employee's participation in social activities with coworkers), workplace acceptance (coworkers' acceptance of the employee as a fellow worker or colleague), personal acceptance (coworkers' feelings of wanting to get to know the employee better or develop a closer personal relationship with him or her), and feelings of social support (an employee's satisfaction with his/her level of interaction and relationships with others at work). Contact theory provides specific predictions for the two attitudinal dimensions of the Chadsey-Rusch and Heal model, workplace acceptance and personal acceptance. The other two social integration outcomes, social participation and feelings of social support, are not measures of attitude and, therefore, are not directly addressed by contact theory. Nevertheless, we anticipated that the qualifying conditions of contact would be associated with greater levels of social participation and feelings of social support on

the part of employees with disabilities. Hence, we developed the following hypothesis:

Hypothesis 1: Employees with disabilities whose work situations more closely meet Allport's (1954) qualifying conditions of contact will be more socially integrated at work (i.e., intergroup contact model).

Two revisions were made to the intergroup contact model to enhance understanding and to help predict social integration in the real-world context of the integrated workplace. First, in the revised model, we took into account several individual characteristics of employees with disabilities that may be expected to impact social integration outcomes. Four characteristics—vocational competence, social competence, language level, and disability level—were added as control variables in the model. Second, because the relationship between workplace culture and social integration has been established clearly in the supported employment literature (e.g., Butterworth et al., 2000; Chadsey, 2007), we added workplace culture to the set of workplace contact variables. Compared with the intergroup contact model, we expected the revised workplace contact model to have greater practical use for guiding the provision of employment supports. The revised model focuses on (a) attributes of the work environment that can be selected rather than on characteristics of the employee with a disability, some of which are not amenable to change, and (b) alterable characteristics of work relationships. The model suggests strategies for selecting workplaces and structuring the nature of workplace contact to promote social integration. The following hypothesis addressed the workplace contact model:

Hypothesis 2: The context and structure of workplace contact will significantly improve prediction of social integration beyond that which is explained by characteristics of the employee with a disability (i.e., workplace contact model).

In general, the more closely the contact situation approximates the qualifying conditions, the greater the likelihood employees with disabilities will be accepted by their peers at work. An exception is the requirement that for outcome dependency to lead to increased social acceptance, the outcome of the cooperative endeavor must be positive (Blanchard, Weigel, & Cook, 1975). Fiske and her colleagues (Erber & Fiske, 1984; Fiske & Neuberg, 1990; Fiske & Taylor, 1991) have advanced a continuum model of impression forma-

tion that provides an explanation for this requirement. The model posits that the role of outcome dependency in impression formation is often mediated by accuracy motivation. Therefore, one who is outcome dependent on another will be motivated to form an accurate impression of the other person so that the other person's behavior is predictable. If the outcome-dependent person feels he or she can accurately predict the other person's behavior, he or she will have a greater sense of control over his/her own outcomes. Following this line of reasoning, an outcome-dependent coworker should be motivated to form an accurate impression of an employee with a disability. Accuracy motivation will not necessarily result in a person-based impression of the employee that is more positive than the impression based on the category label (e.g., *intellectually disabled*). Rather, the resulting person-based impression may be evaluatively the same, more positive, or more negative depending on the perception of the employee's actual characteristics. In the task-oriented work situation, the characteristics of most relevance are those that provide information about the employee's productivity. Thus, Fiske's model of impression formation predicts that the perceived vocational competence of an employee with a disability will play a greater role in determining overall acceptance of the employee for coworkers who are outcome-dependent compared with coworkers who are not outcome dependent. Application of Fiske's continuum model of impression formation to the present context resulted in the following hypothesis:

Hypothesis 3: Outcome dependency will moderate the strength of the relationship between an employee's vocational competence and coworker attitudes toward him/her. Specifically, the relationship between an employee's vocational competence and coworker attitudes towards him/her will be stronger for outcome-dependent coworkers than for non-outcome-dependent coworkers.

In the present study, we extend the social integration research literature in several ways. Previous research seeking to uncover factors predictive of coworker attitudes and social integration has rarely relied on theory from mainstream social psychology (Yuker, 1994; but see Chadsey & Sheldon, 1998). The present research, by contrast, was based on a longstanding and empirically supported theory that provided a cogent framework for identifying workplace variables related to the

social integration of employees with disabilities. At the theoretical level, support for Hypothesis 1 would extend the generalizability of intergroup contact theory to inclusive employment settings. The tools and techniques of the theory could then be used to enhance the social integration of employees with disabilities. In addition, the study advanced and tested an expanded model of workplace contact that has particular relevance to the integrated work setting. Last, the present research provided a test of Fiske's continuum model of impression formation (Fiske & Neuberg, 1990).

Method

Data presented here were collected as part of a larger study designed to explore the relationship between characteristics of workplace contact and the social integration of employees with disabilities. The larger study involved multisite, cross-sectional data collection from three participant samples: employees with disabilities ($n = 98$), their nondisabled coworkers ($n = 78$), and their employment specialists ($n = 106$). In this article, we present survey results for the employment specialist sample only.

Participants

Participants were 106 employment specialists, 48 of whom were employed across 13 high school transition programs and 58 of whom were employed across 16 adult supported employment programs. Participants were recruited from a convenience sample of high school transition programs and supported employment programs that serve persons with developmental disabilities in Indiana. Professional staff from the University Center for Excellence in Developmental Disabilities at Indiana University facilitated contacts with programs that receive training and technical assistance from the center. Recruitment efforts with 29 of 43 programs resulted in study participation. The contact persons for two programs declined to participate, citing a lack of staff time; eight site contacts agreed to participate but no surveys were returned; and four sites had no eligible employment specialists. Most participating sites were located in the southern half of the state. Nineteen programs served urban areas and 10 programs served rural areas.

Employment specialists were eligible to participate in the study if they (a) had a minimum of 6

months experience providing employment support services and (b) were currently working with at least 2 employees with disabilities. Eighty-three percent of 127 eligible employment specialists who attended an informational session about the study completed a survey. Lack of time was the only reason given by several of the 21 eligible employment specialists who attended an informational session but did not complete a survey. Most participating employment specialists were women (89%), Caucasian (92%), and worked in urban areas (74%). With regard to age, 2 (2%) participants identified themselves as 18–22 years old, 27 (26%) as 23–30, 24 (23%) as 31–40, 32 (30%) as 41–50, 20 (19%) as over 50, and 1 (1%) did not respond to this question. The mean number of months employment specialists had been providing employment support services was 39.9 ($Mdn = 30.0$, $SD = 37.1$). The mean number of employees with disabilities whom the employment specialists had supported was 44.5 ($Mdn = 28.5$, $SD = 42.2$).

Focus Persons

The target population of the study was transition-age youth with disabilities and adult supported employees with developmental disabilities working in individual community jobs. Data on 212 workers with disabilities were collected from the employment specialists. Demographic and employment characteristics of the sample can be found in Table 2. The sample consisted of nearly equal numbers of transition-age youth ($n = 96$) and adult supported employees ($n = 116$). The majority of employees were Caucasian, lived with family, and communicated clearly using sentences. Nearly three fourths of the workers (72%) were reported to have a label of "mental retardation" and one third (31%) were reported to have multiple disabilities. The most commonly noted secondary disability was communication disorder (10%). Target workers had been employed for an average of 18 months. They performed predominantly part-time, service-oriented work in small companies for roughly \$1 above minimum wage. Thirty-nine of the transition-age youth were completing unpaid work experiences. (For ease of presentation, hereafter, both paid and unpaid workers are referred to as *employees*.) The demographic and employment characteristics of the sample were, in general, comparable with those reported by national data sources and large-scale studies with similar target populations available at

Table 2 Distribution of Demographic and Employment Characteristics for Employees with Disabilities ($N = 212$)

Characteristic	<i>n</i>	%
Gender		
Male	115	54
Female	97	46
Race^a		
Caucasian	184	90
African American	19	9
Other	2	1
Age		
17 or under	32	15
18–21	79	37
22–30	28	13
31–40	35	17
Over 40	38	18
Primary disability label		
Mild MR	94	44
Moderate MR	49	23
MR: severity unspecified	8	4
Learning disabilities	16	8
Autism	13	6
Emotional–behavior disorder	11	5
Cerebral palsy	9	4
Other ^b	12	6
Communication ability		
Speaks clearly in sentences	150	71
Speaks unclearly in sentences	47	22
Uses key words, manual signs, pictures, sounds, or gestures	15	7
Living situation		
Family home	140	66
Home: with supports	29	14
Home: independent	22	10
Group home	19	9
Foster home	2	1
Type of work		
Food service	57	27
Janitorial–housekeeping	39	18
Retail	27	13
Clerical–office	22	10
Grocery	21	10
Other service	21	10

Table 2 Continued

Characteristic	<i>n</i>	%
Assembly–manufacturing	14	7
Other	11	5
No. company employees		
2–25	96	45
26–50	41	19
51–100	30	14
>100	45	21
Compensation		
Paid	173	82
Unpaid	39	18
	<i>M</i>	<i>SD</i>
Hr worked/week	17.4	9.6
Job tenure (months)	18.0	21.5
Hourly wage (\$) ^c	6.13	0.95
Onsite job support (%)	22.5	31.6

^a $n = 205$ for race. ^bIncluded in the *other* category are brain injury ($n = 6$), Down syndrome ($n = 4$), severe–profound intellectual disability ($n = 1$), and schizophrenia ($n = 1$). ^cThe 39 unpaid positions were not included in the calculation of mean hourly wage.

the time of the study (Hayward & Schmidt-Davis, 2000; Luecking & Fabian, 2000; Morgan, Ellerd, Jensen, & Taylor, 2000; U.S. Department of Education, 2001; Wehman, Revell, & Kregel, 1998; Yamaki & Fujiura, 2002).

Employment Specialist Survey

Instrument development. We designed a survey to gather information about variables of interest in the study. We developed scales to measure four conditions of contact (opportunity to interact, equal status, outcome dependency, and authority support), four additional variables hypothesized to influence social integration (vocational competence, social competence, workplace culture, and coworker interventions), and four dimensions of social integration, derived from Chadsey-Rusch and Heal's (1995) original work (social participation, workplace acceptance, personal acceptance, and feelings of social support). Most scale items were measured on a 4-point Likert rating scale with

response options ranging from 1 (*strongly agree* or *very often/always*) to 4 (*strongly disagree* or *rarely/never*). Scales included both positively and negatively worded items interspersed to avoid the establishment of response sets. All scale items were scored such that higher scores represented higher levels of a variable. Instrument development proceeded in three stages: (a) review of the extant literature (Boles, Griggs, Walker, Schalock, & Calkins, 1990; Butterworth & Strauch, 1994; Chadsey-Rusch & Heal, 1995; Chambless, 1996; Hagner, 2000; Mank et al., 1997; McNair & Rusch, 1992; Parent, Kregel, Wehman, & Metzler, 1991; Shafer, Rice, Metzler, & Haring, 1989) and initial item and scale development, (b) expert review and pretesting, and (c) piloting and instrument revision. Scales were modified following pretesting and piloting to bolster the reliability and validity of study measures (DeVellis, 1991). The instrument development process is further detailed in Novak (2002).

Final survey instrument. The final version of the survey contained 238 items. The first section requested demographic and employment information about the employment specialist and defined criteria for selecting employees with disabilities about whom to provide data. Employment specialists were instructed to select 2 employees with whom they were currently working, 1 who had very good social relationships with others at work and 1 who was socially isolated at work. To ensure that the employees had had sufficient time to become acquainted with their coworkers, they must have been continuously employed in their current positions for at least 2 months. The second survey section contained two counterbalanced item sets: one set referenced the socially included employee and the other set referenced the socially isolated employee. Both item sets were divided into 10 subsections: employee demographic and disability information, workplace characteristics, employee characteristics, supervisor support, job design, social participation, employee's feelings about work, coworker attitudes, job development and employment specialist interventions, and typicalness of employment situation.

Construct Measurement

Factor analysis using maximum likelihood extraction with varimax rotation was used to identify underlying variables, or factors, that

explained the pattern of correlations within sets of scale items (Tabachnick & Fidell, 1996). Separate analyses were conducted for predictor and criterion item sets. Bartlett's test of sphericity and the Kaiser-Meyer-Okin measure of sampling adequacy indicated that the data were suitable for factor analysis. In general, items with a minimum factor loading of .40 were considered eligible for inclusion in a scale. Items were removed from the analysis if they had (a) a low factor loading on the construct they were designed to measure or (b) loadings of .40 or higher on two or more factors (i.e., dual loadings).

Predictor variables. Forty-one of 65 items designed to measure eight predictor variables (opportunity to interact, equal status, outcome dependency, authority support, vocational competence, social competence, workplace culture, and coworker interventions) loaded on the factors in a manner consistent with the hypothesized underlying factor structure. The model explained 50% of the variance in scores. Twenty items were dropped due to loadings below .40 on all factors or dual loadings. Two items loaded on factors they were not originally designed to measure ("work schedule is typical to that of nondisabled employees" and "actively helps other employees reach their work goals"), but because their item loadings were considered meaningful, the items were retained. Two items that did not load cleanly onto a single factor were retained due their centrality to the hypothesized underlying construct ("hourly pay is typical to that of nondisabled employees" and percentage work hours employee received onsite job support). Items composing each predictor variable are listed in Table 3.

Criterion variables. Twenty-four items designed to measure the four criterion variables (social participation, workplace acceptance, personal acceptance, and feelings of social support) were factor analyzed. The initial factor solution identified three distinct factors with eigenvalues greater than 1.0. In the three-factor model, items designed to measure workplace acceptance and personal acceptance loaded on a single factor. The three-factor model captured 52% of the variance in scores and fit the data better than the proposed four-factor model. Therefore, items measuring workplace acceptance and personal acceptance were combined to create a single factor labeled Coworker Attitudes. Eight items were dropped from the analysis due to low or

dual loadings. Items constituting each criterion variable are listed in Table 4.

The factor analyses for the predictor and criterion variables resulted in satisfactory factor solutions, with conceptual clarity existing in the dimensions suggested by the solutions. Therefore, factor-based scales were derived for use in subsequent statistical analyses (Kim & Mueller, 1978). Statistical assumptions of normality, linearity, homoscedasticity, and independence of residuals for the newly created composite variables were largely supported (Novak, 2002). The internal consistency of the final version of each scale was assessed using Cronbach's alpha. The mean scale alpha was .83, with all scales yielding alphas greater than .70, indicating acceptable reliability. Alpha coefficients are listed in Tables 3 and 4.

Data Analyses

As an initial step, correlational analysis was conducted to examine the bivariate relations among study variables (see Table 5). An alpha level of .05 was used for these and all subsequent tests of significance reported in this study. All significant correlations between conditions of contact and social integration outcomes were in the predicted direction. Next, the intergroup contact model was tested using standard multiple regression analysis, with conditions of contact (opportunity to interact, equal status, outcome dependency, and authority support) entered as predictor variables in the regression equation. Separate analyses were performed for each of the three social integration outcome variables (social participation, coworker attitudes, and feelings of social support). Data on transition-age youth and adult supported employees were included together in the regression analyses. The appropriateness of calculating a common regression equation for the two groups for each model was established in Novak (2002).

Next, the workplace contact model was tested by using hierarchical regression analyses to determine if the context and structure of workplace contact were related to social integration after controlling for four individual characteristics: language level, disability level, vocational competence, and social competence. These four control variables were assessed and statistically removed by entering them as a block in the first step of the regression models. Language level was coded with

four options, ranging from *uses sounds and gestures* (1) to *speaks clearly in sentences* (4). For disability level, mild intellectual disabilities and learning disabilities were categorized as *less severe* and all other disability labels were categorized as *more severe*. Variables measuring workplace contact (opportunity to interact, equal status, outcome dependency, authority support, and workplace culture) were entered as a block in the second step of the regression models. Control variables were entered into the regression equation first to rule out alternative explanations for an observed relationship between characteristics of workplace contact and social integration.

Because some research evidence has suggested that coworkers may be instrumental in facilitating the social integration of employees with disabilities (Lee, Storey, Anderson, Goetz, & Zivolich, 1997; Storey & Garff, 1999), the initial plan for analysis involved entering coworker interventions as a third step in the regression models to determine if preparing coworkers to support employees with disabilities would improve prediction of social integration over that explained by individual characteristics and workplace contact variables. However, a preliminary examination of the bivariate correlation matrix revealed that coworker interventions were not significantly related to any of the criterion variables. Therefore, for simplicity of presentation, the results of the three-step models are not presented here.

A moderational analysis was conducted to determine if the relationship between an employee's vocational competence and coworker attitudes toward him/her varied as a function of outcome dependency (i.e., the hypothesized moderator). An interaction between outcome dependency and vocational competence in the prediction of coworker attitudes would signal a moderator effect (cf. Baron & Kenny, 1986). For this analysis, outcome dependency was dichotomized as *outcome dependent* (scores of 3.0 or higher) and *non-outcome dependent* (scores below 3.0), and vocational competence was measured as a continuous variable. An interaction term was generated from the product of scores on outcome dependency and vocational competence. A hierarchical regression analysis was performed, with outcome dependency and vocational competence entered as a block in Step 1 and their interaction term entered in Step 2. A significant change in R^2 at Step 2 would constitute evidence of moderation (J. Cohen & Cohen, 1983).

Table 3 Means, Standard Deviations, Cronbach's Alpha Coefficients, and Factor Loading Matrix for Predictor Variables

Factors and items	Loadings							
	I	II	III	IV	V	VI	VII	VIII
I. Opportunity to interact ($M = 2.38, SD = 0.85, \alpha = .90$)								
Average no. hr worked/week (quartiles)	.67	.19	.01	.00	.00	-.02	.02	-.03
% work hr employee receives onsite job support (quartiles)	.37	.21	.03	-.02	.09	.18	-.11	.01
Works similar hr as other employees	.79	.11	.10	.05	.09	-.07	.04	-.05
Arrives at work at the same time as other employees	.68	.16	.10	.03	.03	-.02	-.08	.04
Leaves the workplace at the same time as other employees	.78	.17	.16	.03	.11	-.06	.00	-.08
Takes lunch-breaks in the same location as coworkers	.54	.09	.27	-.01	.05	.12	.02	.02
Work schedule is typical to that of nondisabled employees	.61	.31	.01	.12	.19	-.12	-.09	-.12
II. Equal status ($M = 3.02, SD = 0.87, \alpha = .90$)								
Hourly pay is typical to that of nondisabled employees	.52	.63	-.08	.05	.01	-.01	-.01	.03
Job responsibilities are typical to those of nondisabled employees	.28	.52	.23	.09	.28	-.11	-.12	-.07
Items issued to employee are typical to those of nondisabled employees	.18	.72	.17	.04	.05	.05	-.05	-.02
Dress code and appearance are typical to those of nondisabled employees	.12	.73	.13	.02	.07	.13	.01	.00
Company benefits received are typical to those of nondisabled employees	.37	.53	-.01	.08	.09	.07	-.03	.07
Chain of command followed is typical to that of nondisabled employees	.19	.70	.02	.17	.12	.11	.03	.03
Performance reviews are typical to those of nondisabled employees	.23	.57	.00	.18	.17	.16	.07	.13
III. Outcome dependency ($M = 2.64, SD = 0.64, \alpha = .83$)								
Shares common work goals and tasks with coworkers	.29	.10	.57	.09	.23	.08	-.07	.08
Individual and target coworker work as part of a team	.19	.09	.67	-.03	.09	.05	.16	-.07
Target coworker relies on work of the individual to get own work done	-.04	.00	.62	.08	-.02	.01	.05	.15
Actively helps other employees reach their work goals	.14	.03	.71	-.01	.17	.20	.07	.02
If individual does his/her job well, the target coworker's job is made easier	-.04	.11	.50	.13	.18	.04	.15	-.02
Individual and his/her coworkers work on tasks together	.20	.02	.67	.00	.10	.07	.11	.01
IV. Authority support ($M = 3.28, SD = 0.54, \alpha = .80$)								
Supervisor supports and advocates for the individual	.05	.09	.12	.67	.08	.14	.21	.19
Supervisor interacts with individual in same way she/he interacts with others	.02	.20	.24	.71	.17	.13	.10	.17
Supervisor treats individual in a manner that sets a bad example for others (R)	.06	.07	-.10	.51	.16	.03	.20	.05

Table 3 Continued

Factors and items	Loadings							
	I	II	III	IV	V	VI	VII	VIII
Supervisor takes same responsibility for individual as she/he does for others	.08	.20	.13	.56	.26	-.07	.22	.06
V. Vocational competence ($M = 2.88, SD = 0.62, \alpha = .85$)								
Does his/her fair share of the work	.11	.07	.08	.11	.63	.37	.17	.01
Meets the same standards as other workers	.17	.17	.15	.11	.76	.14	.07	-.08
Gets necessary information and materials prior to performing a job	.01	.16	.12	.14	.61	.24	.10	.02
Works or produces at a rate that equals or exceeds standards for the job	.08	.09	.23	.13	.75	.13	.05	-.10
Needs more directions than other employees at the worksite need (R)	.13	.08	.11	.10	.46	.09	-.01	-.14
VI. Social competence ($M = 2.89, SD = 0.68, \alpha = .73$)								
Has friends outside of work	-.15	.10	.12	-.09	.15	.55	.04	.02
Is liked by most people outside of the work setting	-.04	.09	.07	-.05	.21	.60	.12	.00
Lacks social awareness (R)	.03	.02	.00	.19	.13	.60	.00	.06
Interacts appropriately with coworkers in informal situations	.11	.10	.15	.18	.13	.56	.02	-.06
VII. Workplace culture ($M = 2.92, SD = 0.58, \alpha = .78$)								
Employees at the work site are positive, friendly people	-.10	.04	.18	.29	.04	.25	.49	.17
Work setting has a relaxed, laid-back atmosphere	-.11	-.07	.04	.22	.07	.02	.69	.07
Supervisory style at the work site is informal	.06	-.15	.09	.06	.07	.04	.87	.03
Employees talk socially during work time	.01	.09	.37	.13	.05	.06	.43	-.01
Workers interact with supervisor about non-work-related topics	-.07	.07	.29	.15	.07	-.05	.47	-.02
VIII. Coworker interventions ($M = 2.77, SD = 0.55, \alpha = .74$)								
Coworkers received training about employment of people with disabilities	-.03	.02	.03	-.10	.10	-.05	.05	.80
Coworkers received training specific to the support needs of the individual	-.11	.21	.00	-.05	-.03	-.16	.02	.79
Friendly coworker asked to help individual become acquainted with others	.07	-.04	-.10	.22	-.05	.13	.07	.40
Coworkers were asked to give feedback to the employee	-.05	.04	.09	.20	-.11	-.02	.03	.47
Coworkers asked for suggestions to help person become socially integrated	.01	-.07	.09	.11	-.15	.08	-.01	.46

Note. Potential range for each scale is 1 to 4. Higher mean scores indicate higher levels of a variable. (R) = item reverse coded for data analysis.

Table 4 Means, Standard Deviations, Cronbach's Alpha Coefficients, and Factor Loading Matrix for Criterion Variables

Factors and items	Loadings		
	I	II	III
I. Social participation ($M = 2.43, SD = 0.80, \alpha = .87$)			
Coworkers greet the individual on arrival to work	.54	.10	.20
Individual talks with coworkers during breaks–lunch	.73	.19	.10
Individual participates in company-sponsored events (e.g., holiday parties)	.58	.27	.04
Individual interacts with coworkers continuously throughout workday	.77	.25	.08
Individual spends time with coworkers outside of work	.42	.25	–.04
Individual participates in joking/teasing with coworkers	.80	.11	.14
Individual talks with coworkers about non–work-related topics (e.g., sports)	.75	.18	.17
II. Coworker attitudes ($M = 3.00, SD = 0.54, \alpha = .87$)			
Coworkers indicate that they like the individual as a person	.21	.55	.31
Coworkers have taken the time to get to know the individual as a person	.39	.54	.18
Coworkers indicate that they consider the individual to be a team player	.19	.83	.24
Coworkers accept the employee as an equal peer	.20	.74	.18
Coworkers treat the employee differently than they treat other workers (R)	.20	.42	.26
Coworkers indicate that they like to work with the individual	.27	.66	.30
III. Employees' feelings of social support ($M = 3.27, SD = 0.58, \alpha = .84$)			
Individual reports that coworkers do not treat him/her well (R)	–.09	.19	.71
Individual indicates that she/he is lonely at work (R)	.16	.15	.77
Individual indicates that she/he does not feel liked or accepted by coworkers (R)	.04	.25	.78
Individual is excited about going to work	.19	.13	.47
Individual generally appears satisfied with level of social inclusion at work	.23	.30	.61

Note. Potential range for each scale is 1 to 4. Higher mean scores indicate higher levels of a variable. (R) = item reverse coded for data analysis.

Results

Test of the Intergroup Contact Model

Multiple regression analyses were conducted to determine if the intergroup contact model could significantly predict social integration outcomes in the supported workplace. Consistent with the intergroup contact model (Hypothesis 1), multiple R s for regression were significantly different from zero at the .001 alpha level for social participation, $R = .60, F(4, 207) = 29.15$; coworker attitudes, $R = .56, F(4, 207) = 23.93$; and feelings of social support, $R = .41, F(4, 207) = 10.68$. Together, 36% of the variance in social participation, 32% of the variance in coworker attitudes, and 17% of the variance in feelings of social support were predictable from knowledge of scores on the five

conditions of contact. A summary of regression results is displayed in Table 6.

Test of the Workplace Contact Model

Hierarchical regression analysis was used to determine if the workplace contact model could significantly predict social integration outcomes beyond that explained by characteristics of employees with disabilities (Hypothesis 2). Vocational competence, social competence, language level, and disability level each had a significant zero-order correlation with one or more criterion variables and were, therefore, entered as a block in Step 1 of the regression equations. Step 1 multiple R was significantly different from zero at the .001 alpha level for models predicting each criterion variable: social participation, $R = .49, F(4, 207) = 16.10$;

Table 5 Zero-Order Correlations Among Variables Included in Regression Analyses

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Opportunity to interact											
2. Equal status	.57**										
3. Outcome dependency	.28**	.24**									
4. Authority support	.16*	.31**	.26**								
5. Workplace culture	-.03	.02	.29**	.44**							
6. Vocational competence	.25**	.32**	.35**	.37**	.24**						
7. Social competence	.09	.19**	.20**	.25**	.19**	.38**					
8. Language level	.27**	.22**	.16*	.05	.13	.017*	.19**				
9. Disability level	-.23**	-.19**	-.03	.10	.17*	-.05	-.08	-.28**			
10. Social participation	.38**	.35**	.51**	.33**	.42**	.25**	.47**	.20**	.00		
11. Coworker attitudes	.21**	.26**	.44**	.48**	.36**	.56**	.47**	.06	-.01	.54**	
12. Feelings of social support	-.02	.13	.20**	.41**	.27**	.34**	.50**	-.01	.17*	.31**	.53**

* $p < .05$. ** $p < .01$.

coworker attitudes, $R = .62$, $F(4, 207) = 31.98$; and feelings of social support, $R = .56$, $F(4, 207) = 23.23$. These findings indicate that employee characteristics explained a significant proportion of the variance in social integration outcomes.

Workplace contact variables (opportunity to interact, equal status, outcome dependency, authority support, and workplace culture) were entered as a block in Step 2 of the regression equations. This provided a test of whether the block of five predictor variables significantly increased R^2 above the R^2 predicted by the block of control variables in the equation. In combination, workplace contact variables accounted for significant incremental variance in social participation, $\Delta R^2 = .31$, $F_{\text{inc}}(5, 202) = 27.51$, $p < .001$; coworker attitudes, $\Delta R^2 = .11$, $F_{\text{inc}}(5, 202)$

$= 8.93$, $p < .001$; and employee feelings of social support, $\Delta R^2 = .05$, $F_{\text{inc}}(5, 202) = 3.38$, $p = .006$. A summary of regression results is displayed in Table 7.

Moderation Analysis

We hypothesized that outcome dependency moderates the strength of the relationship between vocational competence and coworker attitudes (Hypothesis 3). Specifically, we predicted that the relationship between an employee's vocational competence and coworker attitudes toward him/her would be stronger for outcome-dependent coworkers than for non-outcome-dependent workers. To test the moderator hypothesis, a hierarchical regression analysis was performed, with outcome dependency and vocational competence

Table 6 Regression Analysis Summary for Conditions of Contact Predicting Social Integration Outcomes (Intergroup Contact Model)

Predictor variable	Criterion variable (β)		
	Social participation	Coworker attitudes	Feelings of social support
Opportunity to interact	.17*	.04	-.15
Equal status	.11	.05	.07
Outcome dependency	.40**	.29**	.13
Authority support	.16**	.37**	.35**
R^2	.36**	.32**	.17**

* $p < .05$. ** $p < .01$.

Table 7 Hierarchical Regression Analysis Summary for Workplace Contact Variables Predicting Social Integration Outcomes (Workplace Contact Model)

Predictor variable	Criterion variable (β)		
	Social participation	Coworker attitudes	Feelings of social support
Step 1: Individual characteristics			
Vocational competence	-.17**	.28**	.10
Social competence	.37**	.27**	.41**
Language level	.00	-.11*	-.06
Disability level	.07	-.03	.14*
Step 2: Workplace contact variables			
Opportunity to interact	.24**	.07	-.10
Equal status	.13*	-.01	.03
Outcome dependency	.32**	.17**	.04
Authority support	.01	.20**	.21**
Workplace culture	.28**	.12*	.04
Step 1 R^2	.24**	.38**	.31**
ΔR^2	.31**	.11**	.05**
Full-model R^2	.55**	.49**	.36**

Note. Standardized regression coefficients (β) are beta weights in the full model.

* $p < .05$. ** $p < .01$.

entered as a block in Step 1 and their interaction term entered in Step 2. At Step 1, outcome dependency and vocational competence together explained significant variance in coworker attitudes, $R = .61$, $F(2, 203) = 54.18$, $p < .001$. The key finding was that the addition of the interaction term at Step 2 significantly added to the prediction of coworker attitudes, $\Delta R^2 = .02$,

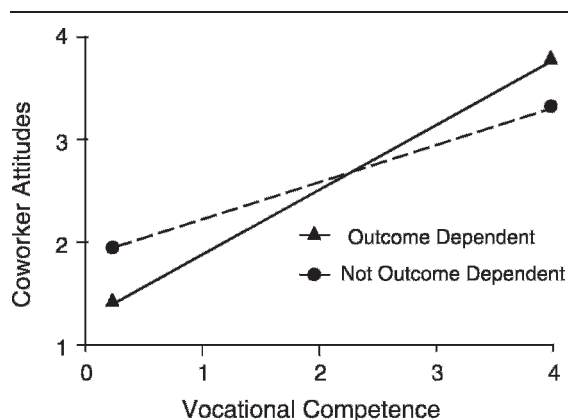


Figure 1 Coworker attitudes as a function of outcome dependency and vocational competence.

$F_{inc}(1,202) = 5.91$, $p = .02$. This significant change in R^2 at Step 2 provides evidence of moderation (J. Cohen & Cohen, 1983).

The moderator effect is graphically depicted in Figure 1. The graph illustrates that vocational competence had a significant, positive relationship with coworker attitudes for both the outcome-dependent group ($r = .57$, $p < .001$) and the non-outcome-dependent group ($r = .47$, $p < .001$); however, vocational competence was more strongly associated with coworker attitudes for the outcome-dependent group. In other words, overall, coworkers had better attitudes (based on employment specialist report) toward a vocationally competent supported employee irrespective of whether they were outcome dependent on this employee; however, coworker attitudes were more strongly influenced by the employee's job performance if they were outcome dependent on him/her.

Discussion

The findings of the present study highlight the prominent role of Allport's (1954) conditions of contact and workplace culture in facilitating the

social integration of employees with disabilities. The context and structure of contact between employees with disabilities and their nondisabled coworkers predicted not only employees' levels of social participation and feelings of social support but also coworkers' attitudes toward the employees with disabilities. The ability of workplace contact characteristics to explain these indicators of social integration was found even after controlling for the employees' level of disability, language ability, social competence, and vocational competence. The present findings are in line with a growing body of research literature documenting the relevance of workplace contact characteristics to the social integration of employees with disabilities (e.g., Butterworth et al., 2000; Chadsey, Sheldon, Horn De Bardeleben, & Cimera, 1999; Chambless, 1996; Hagner, 1989; Mank et al., 1997; Parent et al., 2007). Furthermore, the results indicate that various features of workplace contact are differentially important in accounting for the three dimensions of social integration measured in this study (social participation, coworker attitudes, and employee feelings of social support). Each of the five features described below was essential to predicting one or more social integration outcome.

The first condition of contact concerns the extent to which an employee with a disability has opportunities to interact with fellow workers. Working similar hours and in physical proximity to coworkers afford opportunities for social interaction to occur. Study results revealed that greater opportunity for interaction with coworkers was, in fact, associated with greater social participation by employees with disabilities. Social participation, as operationalized in this study, includes (a) talking about non-work-related topics (e.g., sports, families, weekend plans), (b) joking around and good-natured teasing, (c) socializing during break times, and (d) participating in company-sponsored events (e.g., holiday parties).

The second condition of contact relates to status differences between an employee with a disability and his/her coworkers. Does the employee follow the same chain of command as other workers? Are the employee's job responsibilities equal in importance to those of other workers? Is the employee's compensation package similar to that of other company employees? Employees with disabilities whose status was similar to that of coworkers were more likely to be included in the social activities of the workplace, even after

controlling for the employees' vocational and social competence. The notion of status equality used in this study overlaps with Mank et al.'s (1997) conception of typicalness. Mank et al. found that more typical patterns of job acquisition, compensation, work roles, and orientation were associated with higher levels of social interaction for supported employees. Together, these findings suggest that employees with disabilities who have more typical job situations are more likely to be socially integrated at work. This is a particularly poignant consideration given the inherent inequality created when an employee receives employment support from an outside agency.

The third condition of contact deals with the interdependency of job design. Specifically, do coworkers rely on the work of the employee with a disability to get their own work done? Outcome dependency was found to be an essential feature of workplace contact for predicting social participation and coworker acceptance of employees with disabilities. Compared with non-outcome-dependent coworkers, coworkers who were outcome dependent on an employee with a disability were more likely to socialize with and have a positive attitude toward him/her. This finding is consistent with Chambless' (1996) finding that interdependent job designs are associated with higher levels of social integration for supported employees. In addition to having a direct relationship with coworker attitudes, outcome dependency interacted with vocational competence to predict coworker attitudes. Specifically, the relationship between an employee's vocational competence and coworker attitudes toward him/her was stronger for outcome-dependent coworkers than for non-outcome-dependent coworkers. In other words, outcome dependency magnified the effect of vocational competence on coworker attitudes. For example, for coworkers who relied on an employee with a disability to complete their own work, the employee's vocational competence was key to explaining their attitudes toward him/her. For coworkers who did not directly rely on the employee with a disability, the employee's vocational competence had less of an influence on their attitudes toward him/her.

The fourth condition of contact concerns the degree of equality, tolerance, and acceptance present in the work environment. Does the direct supervisor take the same responsibility for supervising an employee with a disability that he/she

takes for supervising other workers? Does the supervisor interact with this employee in the same way as with other employees? In this study, the supervisor's stance with regard to the employee with a disability was critical to understanding the employee's level of social participation and feelings of social support as well as coworker attitudes toward the employee. These findings suggest that supervisors set the tone for the social inclusion, or exclusion, of an employee with a disability at the job site.

The final feature of workplace contact that was hypothesized to account for differences in social integration was workplace culture. *Workplace culture* refers to the social and behavioral norms of a workplace. That is, what is the typical climate or atmosphere of the workplace? Are employees positive and friendly? Do they interact and talk socially during work time? Murphy and Rogan (1994) and Hagner (2000) have suggested that cultures with these characteristics offer more possibilities for inclusion. In the present study, we found that employees with disabilities who worked in settings with positive organizational cultures were more likely to interact socially with coworkers; this relationship held even after controlling for the effects of individual characteristics. Moreover, coworkers in work settings with positive cultures were more accepting of employees with disabilities.

Implications for Theory

The results of this study provide support for the applicability of Allport's (1954) intergroup contact theory to the social integration of employees with disabilities. Results of factor analysis support the distinctiveness of four conditions of contact: opportunity to interact, equal status, outcome dependency, and authority support. The intergroup contact model significantly predicted social integration outcomes. In addition, the finding that vocational competence had a stronger association with coworker attitudes for outcome-dependent coworkers than for non-outcome-dependent coworkers lends support to Fiske's continuum model of impression formation (Fiske & Neuberg, 1990).

The results also provide support for the revised workplace contact model. The revised model takes into account several characteristics of employees with disabilities that may impact social integration and includes workplace culture in the set of contact variables. Factor analysis demonstrated that al-

though workplace culture is related to conditions of intergroup contact, it remains a distinct construct. Multiple regression analysis revealed that the conditions of workplace contact explained a significant proportion of variance in social integration outcomes in addition to the variance explained by characteristics of employees with disabilities.

Implications for Practice

The results of this study have clear implications for how to assist people with disabilities to get and keep employment and for how workplaces can best support a diverse workforce. The following practices for maximizing workplace integration are suggested for worksite selection, job design, and job training and support.

Murphy and Rogan (1994) recommended that "employment consultants consider not only the person-task match, but also the level of person-setting compatibility, the extent to which the job's social culture will be inclusive and supportive of the person being served" (p. 24). Employment specialists and job seekers must examine the attributes, or characteristics, of a potential work setting, including the physical features (e.g., layout and location of employees), coworker interactions (e.g., the extent to which they appear supportive of each other, have informal interactions during work and breaks, share job tasks, and cooperate with each other), and other aspects of the social climate, such as the employee turnover rate. The purpose of such an analysis is to identify workplaces with a positive culture and a stable workforce to maximize onsite, sustained relationships and supports. Another important factor to consider in worksite selection is whether employers actively promote workplace diversity through activities such as disability or diversity training.

The design or structure of a supported employee's job can enhance or impede opportunities for social interactions with coworkers and can impact coworkers' attitudes toward him/her. It is important to negotiate job features that ensure individuals with disabilities work in physical proximity to their coworkers so that frequent work-related and social interactions can occur naturally. In addition, to the extent possible, the supported employee's work schedule should be designed to reflect typical work hours and to encompass break and meal times to capture natural opportunities for coworker interactions. Status-enhancing work tasks that have some

type of overlap or intersection with the tasks of coworkers should be targeted. Opportunities for cooperation and interdependence within work routines should be promoted.

Given that supported employees benefit from job training and ongoing support, it is critical that internal workplace supports, often termed *natural supports*, are maximized. The typical methods, people, and resources of the workplace should be used to orient, train, and support the employee with a disability. In other words, employment specialists should adhere to the employer's typical training routines and should facilitate the involvement of worksite personnel in training the employee. Training and support may also be needed to ensure that the employee with a disability understands and follows the chain of command. The goal is to promote acceptance and "ownership" on the part of workplace personnel while increasing the supported employee's participation in social activities and feelings of social support.

Study Limitations and Recommendations for Future Research

Although this study is informative, a number of potential limitations are important to consider when interpreting the findings. First, the external validity of study findings may be limited by the nonrandom sampling procedure used. All participants were residents of Indiana, and the majority of the 212 employees with disabilities in the study had intellectual disabilities. The employee sample, although similar in most regards to available national data, may not be representative of all transition-age workers and adult supported employees. The tenets of intergroup contact theory have been shown to generalize to a diverse array of social groups; however, it is possible that replication efforts conducted in other states or with employees with other types of disabilities (e.g., mental illness, traumatic brain injury, physical disabilities) would produce different findings.

Second, the measures constructed for use in this study need to be further refined and psychometrically assessed. Although the assessment of internal consistency for each of the 11 subscales yielded acceptable alphas ($M \alpha = .83$), other measures of reliability, such as coefficients of stability and equivalence, were not calculated. Additional validity and reliability evidence would increase confidence in the study measures.

Third, the significant multiple regression results found in this study provide evidence of an association between the conditions of workplace contact and coworker attitudes toward employees with disabilities. However, because measures of coworker attitudes were taken at a single point in time, with contact already underway, the question of causality must be considered: Did contact lead to favorable attitudes or vice versa? Both directions of causality are plausible. Evidence from tests of contact effects using experimental designs, longitudinal studies, no-choice paradigms, and structural equation models has demonstrated that the contact does affect attitudes (Pettigrew & Tropp, 2006). Thus, the most plausible answer to the question of causality is that a cumulative or bidirectional process exists in which contact reduces prejudice, which, in turn, makes additional contact more likely to occur (Pettigrew, 1997). Additional research is needed to confirm the direction of causality among study variables. One research strategy that might be informative would be to use a multiple-baseline design across participants to implement a change in the conditions of contact (e.g., outcome dependency) at several worksites where employees with disabilities are socially isolated from their coworkers. Evidence of improved coworker attitudes following implementation of the intervention would provide support for a causal interpretation of findings.

Research is also needed to explicate how the structure of workplace relationships between employees with disabilities and their coworkers supports or undermines integration. Understanding the mediators of the observed relationship between the conditions of contact and social integration may provide additional insight into how employment specialists can intervene to foster a social climate conducive to inclusion. In-depth qualitative study of how the conditions of contact are exemplified within the workplaces of especially well-integrated employees with disabilities would further inform employment support practice.

Much of the previous research on correlates of attitudes toward people with disabilities has been criticized for not being underpinned by theory (Chubon, 1992; Yunker, 1994). By contrast, in the present study, we demonstrated the ability of intergroup contact theory, a longstanding social psychological theory with a strong empirical base, to explain social integration outcomes of employees with disabilities. Study findings suggest concrete

strategies for structuring workplace contact to optimize opportunities for employees with disabilities to become socially integrated at work.

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