

## WORK PROCESS AND QUALITY OF CARE IN EARLY CHILDHOOD EDUCATION: THE ROLE OF JOB CRAFTING

CARRIE LEANA  
University of Pittsburgh

EILEEN APPELBAUM  
Rutgers University

IRYNA SHEVCHUK  
University of Pittsburgh

**In this study we conducted performance assessments in 62 childcare centers and surveyed 232 teachers and aides, to examine the extent to which workers crafted their jobs and how such crafting affected classroom quality. Results show that individual and collaborative job crafting are distinct constructs; work discretion is related to both; and collaborative crafting is positively related to performance, particularly for less experienced teachers. Further, collaborative crafting is associated with stronger satisfaction and commitment and, for better teachers, stronger job attachment. We demonstrate that organizational research can contribute to the public interest via policy designs for high-quality early education.**

For nearly 60 years, studies of how employees experience their jobs have centered largely on the effects of job design and management practices on employee attitudes and behaviors. The constraints of a job, as prescribed by management, are seen as shaping what employees do and feel at work. Such an approach acknowledges that sometimes employees have latitude to engage in individual discretionary behaviors; however, the purpose of these behaviors, as understood and studied in both the literatures on high-performance work (e.g., Ichniowski, Shaw, & Prenzushi, 1997) and organizational behavior (e.g., Hackman & Oldham, 1976), has been to improve upon the tasks or role specified in job descriptions; correct dysfunctional elements; solve problems or overcome barriers to productivity; and/or encourage positive work attitudes and behaviors that increase organizational effectiveness (see, e.g., Appelbaum, Bailey, Berg, & Kalleberg, 2000; Batt, 1999; Frese, Kring, Soose, & Zempel, 1996; Staw & Boettger, 1990).

Recently, Wrzesniewski and Dutton (2001) proposed a different lens through which to view employees' work behaviors. They argued that "job

boundaries, the meaning of work, and work identities are not fully determined by formal job requirements" (2001: 179). Instead, individuals often alter the task and relational boundaries of their jobs, and these actions shape how they understand the purpose of their work and define themselves as workers. Although the traditional view of work has placed managers in the role of crafting jobs for others, Wrzesniewski and Dutton (2001) focused squarely on individual employees and how they enact the role of job crafter for themselves.

Earlier research by Morrison and Phelps (1999) on employees' discretionary efforts to improve work practice (what they labeled "taking charge") aligns well with Wrzesniewski and Dutton's (2001) approach. More recently, Griffin, Neal, and Parker (2007) argued that the changing nature of work has challenged traditional models of work performance and led researchers to focus more on employees' discretionary and extra-role behaviors. They further noted the important role of context—particularly the degree of unpredictability and interdependence inherent in work—in determining how much and what kind of job crafting might affect individual and organizational outcomes.

In this study, we examine job crafting among childcare teachers and aides in center-based preschool education programs.<sup>1</sup> We address how

---

We thank Christie Hudson, Sherry Cleary, Anushri Rawat, Sharon Ryan, Debra Lancaster, and Karen White for assistance with data collection. We also thank Guest Editor Chip Hunter, as well as three anonymous reviewers, for their very helpful suggestions for improving the manuscript. This research was supported by the University of Pittsburgh Research Council and the Schumann Fund for New Jersey.

---

<sup>1</sup> Here we use, "center" to describe a facility that is open for set hours and provides a regular system of care and educational activities for children. This is distinct

childcare workers craft their jobs and the effects of such behavior on outcomes of policy interest ranging from workers' turnover intentions (intentions to quit) to the quality of care they provide. Our research has a twofold objective. First, we seek to extend theory and research on job crafting. Here we focus on what Wrzesniewski and Dutton labeled "task crafting"—the active role that an employee plays in altering the boundaries of her job and shaping actual work practice. We expand upon Wrzesniewski and Dutton's (2001) model of job crafting by examining not just individual crafting behavior but also collaborative crafting among workers who together customize how their work is organized and enacted. We conducted our research in childcare centers and preschool classrooms, contexts that we argue are particularly appropriate for the study of job crafting because ongoing improvisation is inherent in the work.

Second, we seek to make explicit the relevance of this research to policy and practice. The economic benefits of investing in high-quality early care and education are increasingly evident (Dickens, Sawhill, & Tebbs, 2006; Rolnick & Grunewald, 2003). However, little research has been directed at how work process in childcare classrooms affects teacher performance and the quality of care. In the absence of this type of scholarly work, policy makers have fallen back on the kindergarten through fifth grade (K-5) professional teacher model (developed for a very different type of classroom) in designing the regulations and incentives that govern childcare centers. Our research begins to fill these gaps in knowledge about work in preschool classrooms and can offer direction for policy makers as they encourage or mandate practices intended to raise the quality of care.

In addressing our twin objectives, we weave together discussions of theory and practice as follows: First, we discuss the public policy interest in child care and the growing involvement of government and business in expanding both the quality and availability of early childhood education in the United States. Here we also describe the job of U.S. childcare worker and the paradox of its offering high work discretion in many instances but low pay and low status. Second, we develop our theory and hypotheses. We briefly describe the theory of job crafting as articulated by Wrzesniewski and Dutton (2001), focusing on proximal rather than the more distal predictors of crafting. In addition, drawing on research describing communities of

practice (Brown & Duguid, 1991; Orr, 1990), we extend job crafting theory by considering how employees working together might collaboratively craft their jobs. We develop hypotheses regarding the conditions under which each type of job crafting—individual or collaborative—will be more likely, and the potential consequences of each. Next, we describe and report on the results of our research conducted with 232 teachers and aides in 62 diverse childcare centers. Finally, we conclude with a discussion of how our findings inform both organization theory and future public policy.

### PUBLIC POLICY INTEREST IN CHILDCARE WORK

Child care is an issue of emerging prominence in public policy debates. Quality child care is important not just to families and children, but also to employers and to regional and national economies. Effective childcare systems provide young children with a nurturing environment to foster their academic and social growth (Lamb, 1998; Shonkoff & Phillips, 2000). High-quality care and a stable childcare teaching workforce are associated with better educational and developmental outcomes for children from all backgrounds, but the effects are especially pronounced for children in low-income families or those at risk for low educational performance (Barnett, 1995; Bellm, Burton, Whitebook, Broatch, & Young, 2002; Helburn, 1995; Howes, Phillips, & Whitebook, 1992a; Peisner-Feinberg et al., 1999).

Research shows that high-quality, center-based preschool programs have positive effects on children's brain development and cognitive and language skills, and provide a foundation for school success (Shonkoff & Phillips, 2000). Such programs also improve noncognitive skills such as perseverance and motivation and establish a basis for skill acquisition later in life (Heckman, 2006). Additionally, children from such programs are less likely to be placed in special education classes or, as teenagers, become pregnant or engage in criminal or other risky activities (Committee for Economic Development, 2006).

Parents also benefit from quality child care. In large part the rise in mothers' employment has driven the trend toward increasing access to pre-K programs. In 2006, 59.5 percent of mothers in married-couple families and nearly two-thirds of single mothers with a child under six years of age were employed (Bureau of Labor Statistics, 2007). In the 2005-06 academic year, 57 percent of U.S. children three to six years of age not yet in kindergarten—nearly 4.5 million children—attended a center-

---

from home-based or family care, which is provided from a caregiver's personal home.

based childcare program (Federal Interagency Forum on Child and Family Statistics, 2006).

Research also has demonstrated macroeconomic benefits of quality child care. The effects of high-quality care persist into adulthood, raising educational and earnings levels, reducing socially undesirable behaviors, and providing benefits to society ranging from increased tax revenues, decreased public expenditures on crime and public assistance programs, and stronger economic growth (Committee for Economic Development, 2006; Dickens, Sawhill, & Tebbs, 2006; Lynch, 2004). Children enrolled in high-quality programs are more likely to complete high school and obtain higher educational degrees (Lynch, 2004). As adults, they also show higher earnings and higher rates of home ownership, as well as lower rates of reliance on public assistance and other social services (Schweinhart, 1993).

Finally, the availability of quality child care benefits business in the form of lower rates of employee absenteeism and turnover and higher levels of educational attainment in the workforce (Rolnik & Grunewald, 2003). It increases parents'—and especially mothers'—commitment to employment (Gornick & Meyers, 2003) and can improve parents' job performance (Milkovich & Gomez, 1976; Milliken, Dutton, & Beyer, 1990; Shellenback, 2004). Access to quality child care thus allows adults to fully participate in the workforce.

### Quality of Care

Despite these findings about the importance of high-quality care and changing employment patterns, other research has documented mediocre quality and high turnover rates in many childcare centers (Cost, Quality, and Child Outcomes Study Team, 1995; Manlove & Guzell, 1997; Whitebook & Sakai, 2003). Thirty-eight states have begun to take action to address this situation and to increase access to quality care by publicly funding preschool. Oklahoma, Georgia, and Florida offer voluntary pre-K to all four-year olds. New Jersey offers it to all three- and four-year-olds living in low-income communities (Barnett, Hustedt, Hawkinson, & Robin, 2007). Public funding carries with it regulations concerning educational requirements for teachers, adult-child ratios, and maximum class sizes that are generally thought to enhance the quality of care.

Earlier research suggested that quality is higher when preschool teachers have higher levels of formal education (Howes, Phillips, & Whitebook, 1992b; Phillipsen, Burchinal, Howes, & Cryer, 1997). More recent research, however, has chal-

lenged this connection. A major study of the relationship between teachers' qualifications (measured as years of education, highest degree attained, college major, state teaching certification, and Child Development Associate [CDA] credential) and classroom quality in state-funded pre-K classes showed no consistent relationship between teacher qualifications and classroom quality (Early et al., 2006). A series of common analyses using comparable data from seven major studies examined the links among lead teacher educational degree and college major, classroom quality, and children's academic skills and yielded mainly null or contradictory associations (Early et al., 2007).<sup>2</sup> The researchers concluded that "policies focused solely on increasing teachers' education will not suffice for improving classroom quality or maximizing children's academic gains" (Early et al., 2007: 558).

Two papers by Blau (1997, 2000) provide insight into these counterintuitive results. Inputs such as staff-child ratio and teacher educational attainment are correlated with childcare quality, yet the effects of these inputs on quality are confounded in most studies with unobserved characteristics of centers and classrooms as instructional settings. Using the blunt tool of a fixed effects model to control for unobserved differences among childcare centers, Blau found that most or all of the apparent effects of staff-child ratio and teacher qualifications on classroom quality were eliminated. This is an important result. It suggests that it is essential, from a policy perspective, to identify and measure the sources of heterogeneity in classroom quality in order to improve pre-K education.

There are several potential sources of such heterogeneity, including, importantly, the improvisational nature of the work as teachers adjust to the unique and unpredictable needs of very young children. Center childcare licensing requirements in most states require child-staff ratios of 10:1 or 12:1 for three- and four-year-olds, and a maximum of 20 or 24 children in a class (<http://nrc.uchsc.edu/STATES/states.htm>, accessed May 2008).<sup>3</sup> As a result, work in center-based childcare programs is often performed interdependently, with teams of teachers and teacher aides jointly attending to the education of children in their care. Consequently, childcare workers have ample opportunity to col-

<sup>2</sup> Similar results have been found for the effects of teacher education, certification, and training on student performance in K–12 education (Cochran-Smith & Zeichner, 2005; Hanushek, 1986 [cited in Early et al., 2007]).

<sup>3</sup> New Jersey regulations current as of June 12, 2007; Pennsylvania regulations current as of February 14, 2008.

laboratively carry out their work. This key feature of center-based classrooms, which contrasts sharply with the experiences of teachers in most K–5 classrooms, has been ignored in studies of childcare quality. Instead, studies of the quality of care, including those cited above, typically rely on the K–5 model and focus on the characteristics and qualifications of a lead teacher and, less often, other classroom staff. Although such teacher human capital may be important, this focus is overly narrow and may hinder development of effective public policy because it does not capture the individual and collaborative improvisation that is essential to quality child care.

### Work Organization in Childcare Classrooms

Classroom staff in childcare centers provides basic care and education for young children. Staff is responsible for helping children with such activities as eating, toileting, napping, dressing for outdoor play, lining up or changing places for activities, tying shoelaces, and cleaning up spills, and for keeping children and play areas clean and safe. Staff is also responsible for introducing the children, through play and developmentally appropriate interactive activities, to mathematics, language, science, and social studies, as well as for building social skills.<sup>4</sup>

Curriculum in a childcare center is usually determined by the center director or other administrative staff, although the work itself is rarely routine. Implementation of the curriculum may sometimes be closely supervised and monitored, almost scripted. Far more often, however, implementation is left to classroom personnel, who prepare lesson plans, choose thematic activities, ensure that appropriate materials are on hand, and arrange play areas to encourage children to explore themes. Creative activities, small group lessons, individual instruction, and “circle time” for whole groups occur daily. Classroom staff must anticipate and prevent problems, deal fairly and firmly with disruptive children, and see that children don’t hurt themselves or others. Childcare workers must communicate effectively with children, parents,

coworkers, and supervisors, and must maintain records of each child’s activities and progress.

Typically two or three adults—a lead teacher and one or two assistant teachers or aides—staff a childcare classroom, and tasks are divided among them in a variety of ways. At one extreme, there can be a sharp split in roles in which a lead teacher engages the children in creative and educational activities while an assistant/aide is responsible for meeting the children’s physical needs and attending to cleanliness and safety. At the other extreme are co-teaching situations in which the lead teacher develops lesson plans and helps the aide understand what is developmentally appropriate for the children, but the adults function as equal collaborators in educating and caring for the children, dealing with behavior problems, and communicating with parents, the center director, and other center staff. Thus, classroom personnel tend to have substantial latitude in how they allocate tasks among themselves and in the amount of initiative they exercise in helping the children learn through play and interactive activities. In these ways, childcare classrooms are fertile ground for both individual and collaborative job crafting, and represent an important context in which to examine job crafting theory.

### INDIVIDUAL AND COLLABORATIVE JOB CRAFTING

Job crafting describes the active role that individuals play in altering the boundaries of their jobs and shaping actual work practice. According to Wrzesniewski and Dutton (2001), job crafting enables individuals to shape their own work identities and work roles through personal construction of their jobs and the execution of the work. Job crafting is employee- (versus management-) initiated and constitutes a form of proactive behavior at work (Grant & Ashford, 2008). It is largely informal and is not found in a written job description. Instead, it reflects an employee’s efforts to make a job a better fit to his or her own preferences and competencies.

Wrzesniewski and Dutton (2001) described job crafting as an individual activity that employees undertake by themselves to better match their own needs, aspirations, and circumstances to their jobs. However, Orr (1996) and others (Brown & Duguid, 1991; Orlikowski, 1996) have shown that job crafting can also be a collaborative activity carried out by informal groups of employees—“communities of practice”—in which members jointly determine how to alter the work to meet their shared objectives. Individuals in work groups typically experi-

---

<sup>4</sup> Our descriptions of the nature of the work are based on interviews and focus groups conducted with teachers and aides early in our research, as well as on observation of classroom staff at sites included in this study. We verified our observations with more general descriptions of the occupational category and typical work environment compiled by the U.S. Department of Labor (<http://www.bls.gov/oco/dc05069.htm>, accessed September 2007).

ence common events, engage in similar work processes, communicate and interact regularly, and share knowledge. Thus, it is reasonable to expect that they may also collaboratively craft task boundaries and work practices (Ghitulescu, 2006). Such collaborative crafting may be discreet (e.g., making an explicit agreement regarding who will complete particular aspects of a task), but according to Orr (1996) and others, more often it is an ongoing and implicit process whereby work practice is developed and shared informally among workers. Collaborative job crafting involves joint effort among employees in the service of changing work process. Thus, it is not the work of an individual agent as described by Wrzesniewski and Dutton, but instead is the work of a dyad or group of employees who together make “physical and cognitive changes . . . in the task or relational boundaries of their work” (2001: 179).

Individual and collaborative job crafting are not mutually exclusive and, indeed, individuals can engage in both. The larger work environment and the nature of the job itself can encourage one form of job crafting while having a neutral influence, or even constraining, the other. For example, employees who work alone or whose jobs are unaffected by those of coworkers (e.g., tax preparer) see no need (and have little opportunity) to engage in collaborative job crafting. Conversely, employees whose jobs are deeply embedded in the social context of work and/or highly dependent on the work of others (e.g., operating room nurse), may engage in a good deal of collaborative job crafting but see little need or opportunity for individual crafting. The primary point here is that employees’ perceptions of the work environment, the characteristics of the job itself and, to a lesser degree, an individual’s preferences and orientation toward the work strongly influence the incidence and strength of both individual and collaborative job crafting.

## HYPOTHESES

### Predictors of Job Crafting

In answering the question of why some workers engage in more job crafting than others, Wrzesniewski and Dutton (2001) offered a range of proximal and distal predictors. They identified individual differences (e.g., needs for control and affiliation) as distal antecedents of job crafting, and perceived work discretion, task interdependence, and individual work orientation as more proximal predictors. We argue here that the status of an individual’s job, as well as the quality of social ties

with peers, also affect individual and/or collaborative job crafting.

**Discretion.** Extant theory suggests a positive relationship between work discretion and individual customization of work (Freese et al., 1996; Staw & Boettger, 1990; Wrzesniewski & Dutton, 2001). The perception that one has discretion in how to define and implement tasks should promote individual choice with respect to how work is conceptualized and carried out. Work discretion also fosters feelings of self-determination by increasing feelings of agency (Spreitzer & Sonenshein, 2003). Thus, the argument for a positive relationship between perceived discretion and individual job crafting is both well-established and robust, and we expect it to also hold for childcare workers.

The dynamics that link discretion and individual job crafting should, in this setting, also apply to discretion and collaborative job crafting. As previously described, it is unusual for a teacher to work alone in a childcare classroom and, in many states, teacher aides are explicitly forbidden from being alone with the children without a teacher present. Instead, in nonhome settings childcare workers are typically grouped into two or three teachers and assistant teachers/aides per classroom, where they work side-by-side to care for the children.

Previous research on autonomous work teams in other settings (e.g., Wall, Kemp, Jackson & Clegg, 1986) also lends support for the relationship between work discretion and collective improvisation. Indeed, the fundamental assumption underlying the theory of autonomous work groups is that higher-quality work and better decision making will result from granting discretion to teams of workers who then make decisions collaboratively about how to carry out the work (see Leana and Florkowski [1992] for a review). For these same reasons, we expected work discretion to be associated with collaborative as well as individual job crafting in childcare centers.

*Hypotheses 1a and 1b. Childcare workers who report more discretion in their work more frequently engage in (a) individual and (b) collaborative job crafting behaviors than workers reporting less work discretion.*

**Interdependence.** Task interdependence should be positively associated with collaborative job crafting and negatively associated with individual job crafting. Increased task interdependence leads individuals to spend more time coordinating their own work with that of others (Wageman, 1995). Interdependence should facilitate the development of joint routines to solve problems through collaborative negotiation over how work gets done. Thus,

task interdependence should be associated with more collaborative job crafting among childcare workers.

At the same time, task interdependence constrains individuals by decreasing their sense of control over work and their opportunities for individually exploring new ways of carrying it out (Wrzesniewski & Dutton, 2001). Employees who are more interdependent with others at work will be constrained in their job behaviors because they need to time their actions in relation to others, as well as tailor any modifications they might want to make in their own work activity so that it does not disrupt the work of others. Thus, task interdependence should be associated with less individual job crafting among childcare workers.

*Hypotheses 2a and 2b. Childcare workers who report more interdependence in their work (a) less frequently engage in individual job crafting behaviors and (b) more frequently engage in collaborative job crafting behaviors than workers who report less work interdependence.*

**Calling versus job or career work orientation.** Wrzesniewski and Dutton (2001) argued that employees revise their jobs to fit their individual work orientations and motivations. Drawing on Amabile, Hill, Hennessey, and Tighe (1994) and Bellah, Madsen, Sullivan, Swindler, and Tipton (1985), Wrzesniewski and Dutton (2001) argued that individuals who are motivated intrinsically or by a “calling” to their work (i.e., they work for enjoyment and/or to serve the larger social good) may engage in more expansive job crafting than individuals who are more extrinsically oriented—that is, motivated by money (showing a “job orientation”) or advancement (a “career orientation”). Moreover, Wrzesniewski, McCauley, Rozin, and Schwartz (1997) reported that across a wide range of occupations, a significant portion of workers report that they are “called” to their work, even in routine jobs. Mittal, Rosen, and Leana (2009) found such a distribution in their study of nursing assistants, whose job is similar to child care in that it is low-paid, low-status care work. We expected the same distinctions to hold for childcare workers, along with the same positive relationship predicted by Bellah et al. (1985), Amabile et al. (1994), and Wrzesniewski and Dutton (2001) between calling and job crafting.

*Hypotheses 3a and 3b. Childcare workers with a calling orientation toward their work more frequently engage in (a) individual and (b) collaborative job crafting behaviors than workers with job or career orientations.*

**Supportive supervision.** Clearly, supervisors can affect the extent to which employees craft their jobs. From the heyday of scientific management theory to the present, the clear purpose behind supervision characterized by close monitoring and regimentation has been to *decrease* opportunities for employees to tailor their jobs to their own ideas and preferences. As Wrzesniewski and Dutton (2001) noted, close supervision encourages conformity rather than innovation and impedes opportunities for job crafting.

We extend their reasoning here and argue that the effects of supervisory behavior go beyond just tamping down job crafting by limiting employee discretion, to also include facilitation of job crafting by employees. Supervisory actions that are developmental and supportive, such as providing helpful feedback or being available to discuss particular challenges at work, may facilitate employee learning and innovation, and thus encourage employees to reshape the boundaries of their jobs both individually and collaboratively. In this way, supportive supervision can foster job crafting behavior. Further, decades of research on leader-member exchange theory has shown that supervisors differentiate among employees, being more supportive toward some than toward others on the basis of factors like trust and past employee performance (Graen & Cashman, 1975; Sparrowe & Liden, 1997). Thus, we hypothesized that supervisor effects are experienced at the level of the individual teacher rather than the center as a whole.

*Hypotheses 4a and 4b. Childcare workers who report more supportive supervision more frequently engage in (a) individual and (b) collaborative job crafting behaviors than workers reporting less supportive supervision.*

**Social ties.** Interpersonal relations at work, which unfold over time through social and task interaction, are the foundation of collective action (Weick, 1979). Thus, we expected that the frequency and closeness of an employee’s interaction with peers—that is, the strength of his social ties at work—would positively predict collaborative job crafting. As Nahapiet and Ghoshal (1998) argued, social ties provide direction for individual action, opportunities for learning through knowledge sharing and transformation among employees, and a safe environment in which to innovate (Caldwell & O’Reilly, 2003; Edmondson, 1999).

Childcare workers who report strong ties with colleagues should be more likely to collaboratively design their jobs to meet their common objectives and circumstances. Social ties should be less important to individual job crafting as these are be-

haviors undertaken by a worker acting alone, and thus relationships with others at work may not be a factor in the individual's decisions about changing job boundaries.

*Hypothesis 5. Childcare workers who report stronger social ties with their peers more frequently engage in collaborative job crafting behaviors than workers reporting weaker social ties.*

**Status.** Individuals in any occupation can undertake job crafting, and indeed, Wrzesniewski and Dutton (2001) focused on crafting in lower-status occupations such as janitor and hair dresser. At the same time, we expected to see differences in job crafting based on the status of a person's occupational group in an organization. Individuals occupying higher-status jobs (e.g., nurse versus janitor in a hospital; professor versus administrative assistant in a university) should experience more complexity in their work and, because of the higher educational and skill requirements of such positions, an enhanced sense of mastery and entitlement to exercise their own judgment in defining how the work is carried out.

Following Treiman (1977) and Ganseboom and Treiman (1996), here we use "status" to denote both occupational prestige and the deference from other employees that prestige confers. In childcare centers, implicit hierarchical differences are associated with status, in that teachers often have some control over the activities undertaken by assistants and aides (Abbott, 1981). Individuals occupying higher-status positions also may feel more responsibility for constructive change, which may promote individual job crafting (Fuller, Marler, & Hester, 2006; Morrison & Phelps, 1999). For these reasons, we expected teachers to engage in more frequent individual crafting than aides.

For aides, job crafting should be less prevalent in the absence of collaboration with a classroom teacher since aides are less able to change the boundaries of their work independent of the teacher (i.e., engage in individual job crafting). Teachers, however, are able to make decisions about the boundaries of their own jobs without necessarily collaborating with aides. Higher status confers greater rights and responsibility on teachers (Levin, 1993), enhancing both their opportunity and their motivation for individual job crafting. Teachers also tend to have more complex and less predictable work—conditions that should enhance their perceptions that individual judgment and improvisation are essential parts of their jobs.

*Hypothesis 6. Childcare teachers more frequently engage in individual job crafting behaviors than assistant teachers and aides.*

### Job Crafting and Work Outcomes

Wrzesniewski and Dutton (2001) were agnostic regarding the outcomes of job crafting for organizations, arguing that its effects on organizational performance are indirect and/or ambiguous and are not the prime motivation behind job crafting in any case. Although organizational impact is not the only or even the primary intent of individual or collaborative job crafting, such behaviors nonetheless can affect organizational performance (see Griffin et al., 2007). To the extent that changes in task boundaries result in smoother functioning, better communication, and/or more efficient collaboration among employees in a work unit, these changes can be expected to have a positive effect on group and organizational performance. Even when employees craft their jobs with the primary intention of reducing their own effort or workloads, their organization can benefit in the form of increased efficiency or productivity. At the same time, job crafting can have a detrimental effect on achieving operational goals and organizational performance. If each worker is customizing her job to meet her own skills and preferences, learning may be impaired and coordination made more difficult. If the work is highly routine, job crafting may dampen efficiency.

We expect the effects of job crafting on performance to be positive in childcare work settings. As previously described, improvisation is inherent in the job if a childcare worker is to adequately meet the ever-changing needs of preschool children. Childcare workers who engage in job crafting are more likely to deeply understand the interconnections among the activities they enact and the mechanisms that relate task performance processes to quality care. They are better able to try new ways of performing their tasks and to respond to unpredictable situations—the hallmark of child care. Thus, we expected job crafting to be positive in its effects on the quality of care provided in childcare classrooms.

In addition, collaborative job crafting may be more beneficial than individual crafting in childcare settings because of the staffing structure of center-based programs (typically more than one teacher/aide in each classroom), the collaborative nature of the work, and the enhanced need for coordination these entail. Thus, although we expected both individual and collaborative crafting to be positively associated with the quality of care, we expected the effects of collaborative crafting to be stronger.

*Hypotheses 7a and 7b. More frequent (a) individual and (b) collaborative job crafting is associated with a higher quality of care in childcare classrooms.*

*Hypothesis 8. Quality of care is more strongly associated with collaborative job crafting than individual job crafting.*

For many of the same reasons that job crafting should be associated with higher-quality care, we expected it to be positively related to job satisfaction and organizational commitment among childcare workers. When employees redraw the boundaries of their jobs to fit their own conceptions of the work and the best way to carry it out, they also should be more attached to the jobs—and less likely to leave them—because the jobs have been remade, at least to some extent, to better fit the employees either individually or as a group. This idea is consistent with both Wrzesniewski and Dutton's (2001) view of individual job crafting and with the extensive literature on autonomous work groups (see, e.g., Cohen & Bailey, 1997; Guzzo & Dickson, 1996). Thus, we expected both forms of job crafting to be associated with higher job satisfaction, stronger organizational commitment, and reduced turnover intentions.

*Hypotheses 9a and 9b. More frequent (a) individual and (b) collaborative job crafting is associated with higher reported job satisfaction and organizational commitment and lower turnover intentions among childcare workers.*

### **Exploratory Questions of Concern to Public Policy**

In addition to the main effects of job crafting on work outcomes predicted in Hypotheses 7 through 9, from the perspective of public policy it is useful to consider potential interaction effects among some of the variables, particularly with regard to the stability of the childcare workforce and the quality of care provided. As stated earlier, in education and policy circles, initiatives to enhance the quality of early childhood education have been modeled largely on K–5 education practices. This means that the traditional focus has been on teacher human capital (education, experience, and certification) as the primary lever for improving the quality of childcare. As previously noted, however, the results of recent research on this question have been mixed and do not support a direct relationship between teacher human capital and the quality of care provided. This discrepancy raises the question of the circumstances under which human

capital is most effectively deployed. Is job crafting more beneficial to teachers with strong human capital (e.g., more highly educated and experienced in the field) because they are more knowledgeable about the work and thus can better invent and integrate new approaches to improve the quality of care? Or, conversely, are the hypothesized benefits of collaborative job crafting realized more strongly by teachers with lower levels of human capital because, through collaboration, they can combine their expertise with that of others and together “learn by doing”?

Both arguments are plausible, so we make no specific predictions regarding the interactive effects of human capital and job crafting on the quality of care. However, we were able to examine these questions in the current research and thereby shed some light on the mixed results reported in recent studies regarding the value of human capital in childcare by examining it in the context of job crafting.

A second issue that should be of particular concern to policy makers is the retention of teachers and aides who provide the highest-quality care to preschool children. As noted previously, mediocre quality of care and high turnover rates are significant problems in many childcare centers (Manlove & Guzella, 1997; Whitebook & Sakai, 2003) and have been the impetus for much of the legislative interest in early childhood education. Clearly, it is important not just to attract high-quality teachers to a center but also to retain them.

In the organizations literature, job performance has been shown to predict turnover intentions (e.g., Griffeth, Hom, & Gaertner, 2000; Lee, Mitchell, Sablinski, Burton, & Holtom, 2004) in that employees with better job performance are less likely to leave their jobs. We suggested earlier that job crafting helps an employee to redraw job boundaries to make it a better fit for himself individually or in collaboration with others. Thus, we hypothesized that teachers who engage in job crafting should report lower turnover intentions (Hypothesis 9). A further question is whether these effects differ depending on a teacher's level of job performance. Higher-performing teachers (i.e., those who provide higher-quality care) may report greater job attachment when they engage in job crafting because they are able to implement better ways of doing the work and, in this way, make jobs their own. At the same time, in the case of collaborative crafting, social approbation from coworkers may encourage poorer performers to withdraw from their jobs because their deficiencies are more evident when teachers collaboratively customize the work. Such relationships are speculative, however, so again we



do not propose a specific hypothesis. But because the issues of quality of care, work processes, and teacher retention are so central in policy debates, we explored them in this research.

## METHODS

### Research Setting, Sample, and Procedures

Between September 2005 and February 2006, we engaged in observations and open-ended interviews of workers at 13 childcare centers and conducted five mixed focus groups with childcare teachers and aides from various centers in two states: Pennsylvania and New Jersey. This information enabled us to better understand job crafting in the context of childcare centers and thus tailor items on a subsequent survey to our focal occupational group. The survey instrument was then pilot-tested with two groups of teachers to further enhance its readability and best capture the work variables in this context. Between April 2006 and May 2007, we administered surveys to 206 teachers and 130 aides in 32 childcare centers in New Jersey and 47 centers in Pennsylvania. Altogether, we collected survey data in 158 classrooms at 79 sites.

The sites were selected from state-issued lists of licensed childcare centers. In New Jersey, the criteria for inclusion of a childcare program in the study were that it: (1) catered to working parents and offered full-day programming; (2) offered classes for three- and four-year old children, preferably at least one of each; and (3) was not religiously based. The Pennsylvania sample was drawn using the same approach, although it included church-run programs and some federally funded Head Start programs as well. After eliminating centers that did not meet these criteria, we contacted centers on the list by geographic region to ensure we were capturing the diversity of the populations in both states. We also sampled both for-profit (32% of the total) and nonprofit (68%) centers. Eighty percent of the centers received some state subsidy to support low-income children, and 11 percent were Head Start centers or operated by public school systems.

Surveys were distributed to teachers and teaching assistants/aides working in three-year-old and four-year-old classrooms at each site in the study. To avoid oversampling from any one site, we limited data collection to no more than three classrooms per center. Whenever possible, a field researcher directly handed surveys to the teachers and aides, then collected them back later on the same day. Where that was not possible, participants were given stamped self-addressed envelopes

in which to mail surveys directly back to us. Participants were asked to fill out surveys "on their own time," which typically meant during lunch or a break, or while the children were napping. A total of 245 surveys were distributed in Pennsylvania and 126 in New Jersey; 222 were returned in Pennsylvania and 114 in New Jersey. Thus, the overall response rate was high (90.6%). Each study participant received a \$20 gift card to a national book chain (NJ) or local grocery store chain (PA), and each center received a \$25 gift card (NJ) or check (PA) as a token of our appreciation for participating in the study.

Since we were interested in examining individual and collaborative job crafting in classrooms where both were possible, we eliminated from the analysis any classroom that had only one adult assigned to it (i.e., one teacher). After missing observations were removed, the final sample comprised 232 classroom staff: 146 teachers and 86 aides. Ninety-five percent of the final sample were women, and their average age was 38 years ( $s.d. = 13.1$ ). The average job tenure for participants was 4.88 years ( $s.d. = 4.87$ ).

Performance was assessed by independent observers in at least one three-year-old classroom and one four-year-old classroom in each participating center (a very few centers had only a four-year old or a mixed-age classroom). Trained observers conducted the evaluations using the Early Childhood Environmental Rating Scale-Revised (ECERS-R; Harms, Clifford, & Cryer, 2005). The ECERS-R measures global or overall process quality with 43 items in seven subscales that assess the physical environment of a classroom and the warmth of interaction between the teacher and a child. It is a standard measure of preschool classroom structure and process in which trained raters spend approximately four hours observing aspects of the environment, activities, and teacher-child interaction within the classroom. It has been used to measure quality of care in numerous studies (e.g., Blau, 1997; Early et al., 2007; Pianta et al., 2005) and is the most widely used measure in research on program practices in early childhood education (Frede, Jung, Barnett, Lamy, & Figueras, 2007). Indeed, several states now use the ECERS-R to assess quality as either a voluntary or mandatory part of their childcare licensing and/or reimbursement policy (Cassidy, Hestenes, Hegde, Hestenes, & Mims, 2005).

### Measures

**Individual job crafting.** Drawing on both a review of the extant literature and information pro-

vided in our early interviews and focus groups, we devised six items to assess ways in which childcare workers might voluntarily craft their jobs. We adapted four items from earlier work by Wrzesniewski (2003) and Morrison and Phelps (1999), and developed two items for this study. Respondents were asked to indicate the frequency with which they engaged in the six job crafting behaviors *on their own* (1 = “never,” 6 = “every day”). The items had a Cronbach’s alpha of .79 and are shown in the Appendix.

**Collaborative job crafting.** Our measure of collaborative job crafting had the same six items as the individual job crafting scale. However, here we asked respondents to indicate the frequency with which they engaged in the six behaviors *in collaboration* with coworkers in their classrooms. These items had a Cronbach’s alpha of .89 and are also shown in the Appendix. Both individual and collaborative crafting were measured at the individual level.

**Predictors of job crafting.** We measured *work discretion* with four items adapted from Jehn (1995). The items asked respondents to indicate (1 = “never,” 5 = “always”) the frequency with which their jobs allowed them to be creative in their work, try out new ideas, change standard practices, and deviate from a “right way” of doing their work. Cronbach’s alpha for the scale was .71.

We assessed task *interdependence* with a measure adapted from Campion, Medsker, and Higgs (1993) asking respondents to report on the frequency (1 = “never,” 5 = “always”) with which coworkers started work that the respondent finished or the respondent started work that a coworker then finished. The specific items were: “In your classroom, how often do you start a task or activity that is finished by someone else?” and “In your classroom, how often do you finish a task or activity that was started by someone else?” The correlation between the two items was high (.56), so we combined them to represent task interdependence.

To measure the three types of *work orientation*—job, career, and calling—we adapted eight items from Wrzesniewski et al. (1997). We asked respondents to rate their agreement with each item (1 = “strongly disagree,” 5 = “strongly agree”). We were particularly interested in the calling work orientation, which we hypothesized as a predictor of job crafting, so we used twice the number of items to measure calling as the other two orientations. The measure of calling orientation consisted of four items: “I would choose my current work life again if I had the opportunity,” “I enjoy talking about my work to others,” “My work is one of the most important things in my life,” and “My work is a

chance to give back to the community” ( $\alpha = .73$ ). The measure of job orientation was comprised of two items: “When I am not at work, I do not think much about my work,” and “I never take work home with me” ( $\alpha = .66$ ). The measure of career orientation consisted of two items: “I expect to be in a higher-level job in this field in five years,” and “I view my job primarily as a stepping stone to other jobs” ( $\alpha = .67$ ).

Respondents were asked to assess the frequency of behaviors indicating *supportive supervision* on the part of their immediate supervisors (1 = “never,” 5 = “always”). Using data from the interviews and focus groups collected in the first stage of the study, we created five items that reflected childcare workers’ views regarding the type of behavior that constitutes supportive supervision. Specifically, we asked how often the supervisor “provides helpful feedback to you,” “helps you deal with difficult problems you face in your job,” “lets you know when you do good work,” “is available to discuss problems with you,” and “provides you with resources or information for doing your job” ( $\alpha = .89$ ).

To measure the strength of *social ties*, we created an index that incorporates the frequency of interactions and the interpersonal closeness each teacher/aide reported with her/his colleagues. Respondents were asked to report on how often they talked about work issues with teachers at the center (1 = “never,” 6 = “every day”), as well as how close they felt to these teachers (1 = “not at all close,” 4 = “very close”). They were also asked to report on the same items for the aides at the center. We combined these scores to compute the strength of each respondent’s social ties with two groups of their peers, teachers and aides. We then averaged these scores to create an overall index of the reported strength of social ties for each respondent (mean = 8.41, s.d. = 1.52).<sup>5</sup>

We had two measures of *human capital*: (1) educational attainment and (2) work experience. Teacher educational attainment was measured on an ordinal scale (1 = “completed 8th grade,” 7 = “coursework beyond a four-year college degree”). Experience was measured as the number of years

<sup>5</sup> Researchers differ in how they combine frequency and closeness measures to describe social capital, with some researchers multiplying frequency and closeness to form a product term and others averaging frequency and closeness measures. To err on the side of caution, we also ran the models using each of these different constructions of the strength of social ties—product and average—and found the same results.

the teacher had worked in the field of early education (mean = 12.97, s.d. = 8.47).

Job *status* was represented by the job classification of the respondent. Those who held the job of teacher received a coding of 1, and those who held the job of assistant/aide received a coding of 0. Of the 232 in our final sample, approximately 63 percent (146) were teachers and 37 percent (86) were assistants/aides.

**Outcomes of job crafting.** We measured performance using the ECERS-R scale previously described. As noted, this is an observation-based measure comprised of 43 indicators of quality of care on aspects such as the classroom environment, teacher/aide interactions with children, and language or reasoning activities within the classroom. Each item in the ECERS-R is rated on a scale ranging from 1, "inadequate quality," to 7, "excellent quality." Standard scoring procedures are then used to calculate an overall score for each classroom on all items (see Harms et al., 2005).

Cronbach's alpha for the scale was very high (.97), which was not surprising as the scale's developers report coefficient alphas ranging from .81 to .91 (Harms et al., 2005), and other studies have reported even higher values. A recent study of 326 classrooms in over 200 childcare centers reported a Cronbach's alpha of .95 (Perlman, Zellman, & Le, 2004). The researchers in that study found high redundancy among items in the ECERS-R and suggested using only a subgroup of the 43 items. The standard in childcare research, however, remains the full ECERS-R, which we used in this study as well. There was considerable variance within our sample on the ECERS-R scores (mean = 5.28, s.d. = 1.03; range: 2.26–7.00).

To measure *job satisfaction*, we asked respondents to report how satisfied they were with (1) the approach the center took in working with children, (2) the amount of work they were expected to do, (3) their pay compared with that of workers at a similar level in the field, (4) the physical space available in the center, and (5) the benefits they received (1 = "very dissatisfied," 5 = "very satisfied";  $\alpha = .68$ ).

We measured *organizational commitment* using four items adapted from Bryk and Schneider's (2002) scale of teacher commitment. Respondents were asked to report their level of agreement with the statements: (1) "I wouldn't want to work in any other center than the one I do now," (2) "I would recommend this center to parents seeking a place for their child," (3) "I usually look forward to each working day at this center," and (4) "I feel loyal to this center" (1 = "strongly disagree," 5 = "strongly agree";  $\alpha = .85$ ).

We used Becker's (1992) scale of *turnover inten-*

*tions*. This scale is comprised of five items (examples: "It is likely that I will actively look for a new job in the coming year" and "I often think about quitting my job"; 1 = "strongly disagree," 5 = "strongly agree";  $\alpha = .81$ ).

**Control variables.** We expected *wages* to impact job attitudes and turnover intentions, and thus we controlled for them in our analyses. Higher wages may also enable centers to attract and retain classroom staff with unmeasured characteristics that may affect work performance. Wages for childcare teachers and aides in our sample averaged a little under \$10 per hour (\$9.86), or \$20,500 per year for a 40-hour workweek. With median family income in the U.S. at \$48,201, these wages are in the lowest quintile and are approximately the poverty threshold for a family of four (<http://www.census.gov/hhes/www/poverty/>). We controlled for wages using the weekly rate paid to each respondent (mean = \$387, s.d. = \$167).

Welfare reform in 1996 consolidated and increased childcare block grants to states and increased their role in determining childcare policies, which now vary widely (Rigby, Ryan, & Brooks-Gunn, 2007). Mandated education, certification, and experience requirements for both teachers and center directors differ between New Jersey and Pennsylvania, with more stringent requirements in the latter (National Resource Center, 2008). There are also differences in how the two states subsidize childcare: Pennsylvania uses the Stars Program to provide incentives to improve quality while subsidizing care. Providers are rated with a certain number of stars that determine the generosity of state reimbursements. New Jersey relies more heavily on grants-in-aid to providers. The state's Abbott Preschool Program in poor neighborhoods provides higher levels of grant funding but also requires these centers to meet higher minimum thresholds for education and training of teachers and aides. These differences in regulation and childcare subsidy policy between the two states can be expected to affect childcare quality (Rigby et al., 2007). Thus, we controlled for the *state* in which a center was located (1 = "NJ," 0 = "PA").

In addition to differences between New Jersey and Pennsylvania in how childcare is subsidized, there are differences between centers in the level of state support they receive. As stated earlier, this support is calculated differently in each state and encompasses a variety of factors. Fundamentally, however, state payments are a means to subsidize care for low-income children and are thus a proxy for the socioeconomic status (SES) of children enrolled in the center. Family SES is an important predictor of child development and achievement in

TABLE 1  
Descriptive Statistics<sup>a</sup>

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1. Individual job crafting	2.83	1.01																					
2. Collaborative job crafting	3.07	1.15	.44																				
3. State	0.37	0.48	.02	-.07																			
4. Center size	1.14	0.91	-.01	.09	.10																		
5. For-profit	0.38	0.49	.06	-.09	.35	-.11																	
6. Student SES	0.20	0.27	.15	.01	.04	-.24	-.05																
7. Wages <sup>b</sup>	3.87	1.67	.12	.02	.36	.15	.10	.09															
8. Teachers/aides in a classroom	2.66	0.97	.04	.16	-.19	.02	-.10	.04	-.18														
9. Discretion	4.03	0.61	.22	.27	.03	-.03	-.01	.03	.01	.15													
10. Interdependence	2.75	0.78	.09	.23	.07	-.09	.02	.01	.00	.12	.00												
11. Calling orientation	3.71	0.73	.06	.10	.16	-.04	.10	.03	.16	.05	.09	-.05											
12. Job orientation	2.25	0.89	-.14	-.17	.05	.08	.05	-.07	-.10	.06	-.19	-.02	-.36										
13. Career orientation	3.16	1.10	.22	.10	.03	-.10	.11	.17	-.05	.10	.02	.01	.09	.03									
14. Supportive supervision	3.88	0.80	.06	.20	.11	.01	.01	.03	-.07	.14	.20	.07	.30	-.01	-.01								
15. Social ties	8.41	1.52	.17	.25	.01	-.02	.09	.00	.07	.04	.16	.12	.29	-.18	-.02	.19							
16. Status	0.63	0.48	.19	.00	-.08	-.04	-.07	.00	.31	-.17	.18	-.15	.00	-.19	-.14	-.15	-.01						
17. Organizational commitment	4.04	0.75	-.06	.11	.04	-.08	.00	-.09	-.05	.02	.17	-.04	.51	-.24	-.19	.44	.17	-.01					
18. Job satisfaction	3.64	0.72	-.11	.00	.13	-.02	-.07	-.09	.05	.04	.16	-.06	.40	-.07	-.12	.39	.08	-.09	.56				
19. Turnover intentions	2.17	0.87	.07	-.01	-.09	-.05	.03	.05	-.16	.11	-.09	.07	-.49	.28	.26	-.29	-.17	.01	-.61	-.53			
20. Quality of care	5.28	1.03	-.03	.12	-.52	.11	-.34	-.17	.08	.10	.02	-.10	.08	-.11	-.09	.01	.11	.01	.12	.04	-.09		
21. Education	5.12	1.28	.16	.01	-.14	.06	-.11	-.02	.26	-.04	.01	-.06	.02	-.07	.02	-.15	.06	.42	-.10	-.23	.11	.22	
22. Work experience	12.97	8.47	-.01	-.03	-.12	.07	-.09	-.16	.05	.02	.10	.00	.08	-.13	-.36	.07	-.07	.14	.20	.12	-.17	.11	.09

<sup>a</sup>  $n = 232$ . Correlation values over .16 are significant at  $p < .01$ ; correlation values over .12 are significant at  $p < .05$ . For organizational commitment, job satisfaction, turnover intentions, quality of care, education, and work experience,  $n = 179$ , and correlation values over .19 are significant at  $p < .01$ , and those over .15 are significant at  $p < .05$ .

<sup>b</sup> To enhance clarity, we divided weekly wage by 100. Thus, the mean wage should be read as \$387 and the s.d. as \$167.

school (Barnett, 1995) and thus might affect how preschool teachers approach their work. We controlled for a center's *student SES*, measured as the percentage of children enrolled whose care was state subsidized (mean = 20%, s.d. = 27).

We controlled for the *center size*, measured as the total number of children enrolled (mean = 114, s.d. = 91), and for the number of *teachers/aides in a classroom* (mean = 2.66, s.d. = 0.97), as both center size and classroom staffing could affect interaction among staff. Finally, we included as a control whether a center was a *for-profit* (38%) or nonprofit (62%) organization, in case these two groups systematically differed in work practices.

### Analytic Approach

Our sample for the analysis of predictors of job crafting involved a nested structure of 232 teachers and aides from 62 childcare sites for which we have complete data, and the sample for the analysis of the outcomes of job crafting included 179 teachers and aides from 59 sites.<sup>6</sup> Such a nested structure

implies that observations are likely to be nonindependent, thus violating an assumption of ordinary least squares (OLS) regression analysis. Failure to account for nonindependence increases the probability of type I and type II errors. Therefore, it is recommended that researchers employ hierarchical linear modeling (HLM) in analyzing nested data even when there is no particular interest in higher-level constructs (Bliese & Hanges, 2004; Raudenbush & Bryk, 2002).

Prior to hypothesis testing, for each of the six dependent variables (individual job crafting, collaborative job crafting, job satisfaction, organizational commitment, turnover intentions, and quality of care) we ran null models with no predictors. The resulting ICC(1) values reflect the percentage of variance residing between centers. For four of the six dependent variables, the ICC(1) values suggested that HLM was appropriate. Specifically, 16 percent of the variance in collaborative job crafting ( $\chi^2[61] = 7.77, p < .01$ ), 14 percent of the variance in organizational commitment ( $\chi^2[58] = 4.34, p < .05$ ), 15 percent of the variance in job satisfaction

<sup>6</sup> As noted previously, these are smaller than our total sample in terms of the number of participating teachers

and centers because of missing data and criteria for inclusion (i.e., two or more adults in the classroom).

( $\chi^2[58] = 4.45, p < .05$ ), and 87 percent of the variance in quality of care ( $\chi^2[58] = 269.14, p < .01$ ) resided between centers. For two of the six dependent variables—individual job crafting and turnover intentions—the amount of variance residing between centers was not statistically significant, and we utilized OLS regression in analyzing these models.

**RESULTS**

**Confirmatory Factor Analysis**

Table 1 reports basic descriptive statistics and correlations among the variables. Prior to hypothesis testing, we performed a confirmatory factor analysis (CFA) to assess the quality of our survey-based measures. These consisted of the items measuring individual job crafting, collaborative job crafting, discretion, supportive supervision, interdependence, job orientation, career orientation, calling orientation, organizational commitment, job satisfaction, and turnover intentions. The CFA achieved acceptable fit, with a comparative fit index (CFI) of .91 and a root-mean-square error of approximation (RMSEA) of .04 (Bentler, 1992). Although our comparative fit index falls somewhat short of the cutoff criteria suggested by Hu and Bentler (1999), other recent studies of work attitudes and behaviors have reported similar index values (e.g., Bunderson & Thompson, 2009; Muammer, 2008).

We were particularly concerned that respondents distinguish between individual and collaborative job crafting. To check that they had made this distinction, we compared an 11-factor model (all items in the survey-based constructs, including separate measures of individual and collaborative job crafting) with a 10-factor model (individual and collaborative job crafting items were specified as loading on the same factor). Results demonstrated that the 11-factor model ( $\chi^2 = 1,140.07, df = 890$ ) yielded a better fit than the 10-factor model ( $\Delta\chi^2 = 164.36, \Delta df = 10, p < .01$ ). Furthermore, we compared an unconstrained model in which the correlation between individual and collaborative job crafting was freely estimated with a constrained model in which the correlation between individual and collaborative job crafting was restricted to 1.0 (see Bagozzi, Yi, & Phillips, 1991). The unconstrained model displayed superior fit to the data ( $p < .05$ ). Thus, we concluded that individual and collaborative job crafting were distinct constructs empirically in our sample, as well as conceptually distinct in our theory of job crafting.

**TABLE 2**  
**Predictors of Job Crafting<sup>a</sup>**

Variables	Individual Crafting <sup>b</sup>	Collaborative Crafting <sup>c</sup>
<i>Controls</i>		
State	-0.06 (0.16)	-0.27 (0.19)
Center size	0.08 (0.07)	0.17 (0.09)
For-profit	0.14 (0.14)	-0.17 (0.17)
Student SES	0.45 (0.24)	-0.01 (0.29)
Wages	0.03 (0.04)	0.02 (0.05)
Teachers/aides in a classroom	0.01 (0.07)	0.07 (0.08)
<i>Predictors</i>		
Discretion	0.24 (0.11)*	0.36 (0.12)**
Interdependence	0.13 (0.08)	0.27 (0.09)**
Calling orientation	-0.08 (0.10)	-0.02 (0.11)
Job orientation	-0.08 (0.08)	-0.12 (0.08)
Career orientation	0.21 (0.06)**	0.10 (0.06)
Supportive supervision	0.05 (0.09)	0.18 (0.09)*
Social ties	0.08 (0.04)	0.13 (0.05)**
Status	0.39 (0.15)**	-0.08 (0.16)
<i>R</i> <sup>2</sup>	0.19	
Pseudo- <i>R</i> <sup>2</sup> <sub>level 2</sub>		.48
Pseudo- <i>R</i> <sup>2</sup> <sub>level 1</sub>		.18

<sup>a</sup>  $n = 232$ ; standard errors are in parentheses.

<sup>b</sup> We estimated the individual crafting model using OLS regression and therefore report  $R^2$  to demonstrate the proportion of variance explained.

<sup>c</sup> We estimated the collaborative crafting model using HLM and therefore report proportional reduction in level 1 and level 2 unexplained variance due to the inclusion of predictors with pseudo- $R^2$ s (Singer & Willett, 2003):

$$\text{Pseudo-}R^2_{\text{level 2}} = \frac{\hat{\sigma}^2_{\text{level 2}}(\text{preceding model}) - \hat{\sigma}^2_{\text{level 2}}(\text{subsequent model})}{\hat{\sigma}^2_{\text{level 2}}(\text{preceding model})}$$

$$\text{Pseudo-}R^2_{\text{level 1}} = \frac{\hat{\sigma}^2_{\text{level 1}}(\text{preceding model}) - \hat{\sigma}^2_{\text{level 1}}(\text{subsequent model})}{\hat{\sigma}^2_{\text{level 1}}(\text{preceding model})}$$

\*  $p < .05$

\*\*  $p < .01$

**Predictors of Job Crafting**

**Individual job crafting.** Our hypotheses suggest that childcare workers who report more discretion in their work (Hypothesis 1a), less interdependence (Hypothesis 2a), a calling rather than job or career orientation toward their work (Hypothesis 3a), more supportive supervision (Hypothesis 4a), and a higher-status position (Hypothesis 6) engage in more individual job crafting behavior. Table 2 displays the results of the OLS regression analysis used to test the hypotheses regarding predictors of individual job crafting.

As shown, we found that discretion was positively related to individual job crafting ( $\beta = .24$ ,

$p < .05$ ), lending support to Hypothesis 1a. The coefficient for interdependence is not statistically significant ( $\beta = .13$ , n.s.) so we did not find support for Hypothesis 2a. Contrary to our prediction, a calling orientation toward the work was not statistically significant ( $\beta = -.08$ , n.s.), but a career orientation was positively related to individual job crafting ( $\beta = .21$ ,  $p < .01$ ). Thus, Hypothesis 3a is not supported. Supportive supervision was not related to individual crafting ( $\beta = .05$ , n.s.), providing no support for Hypothesis 4a. Teacher status was positively related to individual job crafting ( $\beta = .39$ ,  $p < .01$ ), suggesting that teachers engage in more individual job crafting behaviors than do assistants and aides, which supports Hypothesis 6. Overall, our model explains 19 percent of the variance in individual job crafting.

**Collaborative job crafting.** Our hypotheses suggest that childcare workers engage in more collaborative job crafting when they report more discretion in their work (Hypothesis 1b), more interdependence (Hypothesis 2b), a calling rather than job or career orientation toward their work (Hypothesis 3b), more supportive supervision (Hypothesis 4b), and stronger social ties with their peers (Hypothesis 5). Table 2 displays the results of the hierarchical linear modeling used to test our hypotheses about the predictors of collaborative job crafting. As seen in the table, we found that discretion was positively related to collaborative job crafting ( $\beta = .36$ ,  $p < .01$ ), providing support to Hypothesis 1b. Similarly, interdependence was positively related to collaborative job crafting ( $\beta = .27$ ,  $p < .01$ ), supporting Hypothesis 2b. Contrary to expectation, work orientation was not a significant predictor, whether a calling ( $\beta = -.02$ , n.s.), job ( $\beta = -.12$ , n.s.), or career ( $\beta = .10$ , n.s.) orientation. Thus, Hypothesis 3b is not supported. Supportive supervision was positively related to collaborative job crafting ( $\beta = .18$ ,  $p < .05$ ), supporting Hypothesis 4b. Finally, the strength of ties with peers was positively related to collaborative job crafting ( $\beta = .13$ ,  $p < .01$ ), which supports Hypothesis 5.

In terms of the variance explained, recall that the analysis of collaborative job crafting employs hierarchical linear modeling, since 16 percent of the variance resided between centers. Therefore, we could not meaningfully analyze explained variance in terms of its overall level but instead computed the proportional reduction in unexplained variance at each level of analysis (Singer & Willet, 2003)—that is, between individuals and between centers. As reported in Table 2, our model explains 48 percent of between-center variance and 18 percent of between-individual variance in collaborative crafting compared to a null model with no predic-

tors entered. In other words, our results suggest that as centers differ in the extent to which they create conditions for individuals to use discretion, work interdependently, share social ties with coworkers, and enjoy high-quality supervision, these factors covary considerably (48%) with the extent to which center employees engage in collaborative job crafting. At the same time, recall that the majority of the variance in collaborative job crafting resided between individuals rather than between centers. Our model accounts for 18 percent of this variance.

In summary, we found several significant predictors of job crafting, supporting Hypotheses 1a and 1b, 2b, 4b, 5, and 6. We found no support for Hypotheses 2a, 3a, 3b, and 4a. Overall, our predictions were stronger for collaborative job crafting than for individual crafting, explaining variance between centers and between individual workers.

### Effects of Job Crafting

With respect to the outcomes of job crafting, we predicted that both individual and collaborative job crafting would be positively related to higher quality of care (Hypothesis 7), higher reported job satisfaction and organizational commitment, and lower turnover intentions (Hypothesis 9). We also predicted that quality of care would be more strongly associated with collaborative crafting than individual crafting (Hypothesis 8). To test these hypotheses, we analyzed a set of hierarchical linear models of quality of care. Table 3 presents these results. HLM models of job satisfaction and organizational commitment were also run and appear as models 1 and 2 in Table 4. Models 3 and 4 in Table 4 report OLS regressions for the models of turnover intentions.

Table 3 presents results on whether individual and collaborative crafting are associated with job performance (quality of care). Model 2 shows that collaborative crafting is positively and significantly related to quality of care ( $\beta = .10$ ,  $p < .01$ ), but individual crafting is not ( $\beta = -.03$ , n.s.) Thus, Hypothesis 7b is supported, while Hypothesis 7a is not. Moreover, these results support Hypothesis 8, which states that quality of care is more strongly associated with collaborative crafting than with individual crafting. Recall that the majority of variance in quality of care is located between centers. As reported in Table 3 (model 1), 33 percent of between-center variance is associated with state and wage differences, with much of this due to the association between higher performance and the state in which a center is located. Differences in state-level policies regulating staff and director qualifications and in incentives for quality im-

**TABLE 3**  
**Results of the Analysis for Quality of Care<sup>a, b</sup>**

Variables	Model 1	Model 2	Model 3
<i>Controls</i>			
State	-0.92** (0.22)	-0.91** (0.22)	-0.91** (0.22)
Center size	0.15 (0.12)	0.13 (0.12)	0.15 (0.12)
For-profit	-0.32 (0.22)	-0.28 (0.21)	-0.22 (0.21)
Student SES	-0.43 (0.37)	-0.40 (0.36)	-0.31 (0.36)
Teachers/aides in a classroom	0.02 (0.03)	0.01 (0.03)	0.02 (0.03)
Wages	0.04* (0.02)	0.04* (0.02)	0.04* (0.02)
<i>Predictors</i>			
Individual crafting		-0.03 (0.03)	-0.04 (0.03)
Collaborative crafting		0.10** (0.03)	0.12** (0.03)
Education		0.02 (0.03)	0.04 (0.03)
Work experience		-0.02 (0.03)	0.00 (0.03)
<i>Interactions</i>			
Education × individual crafting			-0.02 (0.02)
Education × collaborative crafting			-0.03 (0.03)
Experience × individual crafting			0.02 (0.02)
Experience × collaborative crafting			-0.05* (0.02)
Pseudo- $R^2_{level 2}$	.33	.03	.01
Pseudo- $R^2_{level 1}$	.02	.08	.07

<sup>a</sup>  $n = 179$ . All scale-based variables, i.e., individual crafting, collaborative crafting, education, and work experience, were standardized at mean = 0 and s.d. = 1.

<sup>b</sup> We report proportional reduction in level 1 and level 2 unexplained variance due to the inclusion of predictors with pseudo- $R^2$ 's (Singer & Willett, 2003):

$$\text{Pseudo-}R^2_{level 2} = \frac{\hat{\sigma}^2_{level 2}(\text{preceding model}) - \hat{\sigma}^2_{level 2}(\text{subsequent model})}{\hat{\sigma}^2_{level 2}(\text{preceding model})}$$

$$\text{Pseudo-}R^2_{level 1} = \frac{\hat{\sigma}^2_{level 1}(\text{preceding model}) - \hat{\sigma}^2_{level 1}(\text{subsequent model})}{\hat{\sigma}^2_{level 1}(\text{preceding model})}$$

\*  $p < .05$

\*\*  $p < .01$

provement, as described above, may help explain this finding. None of the center-level control variables (size, for-profit status, and student SES) was statistically significant. The addition of the job crafting variables (with only collaborative crafting being statistically significant) helps to reduce the unexplained between-center variance by 3 percent. In addition, collaborative crafting reduces the unexplained between-individual variance by 8 percent.

Model 1, Table 4, shows results of our test of the relationship between individual and collaborative job crafting and job satisfaction. We found that individual job crafting was a significant covariate ( $\beta = -.12, p < .05$ ), but the direction of this relationship is contrary to Hypothesis 9a. Collaborative job crafting is positively related to job satisfaction ( $\beta = .13, p < .05$ ), supporting Hypothesis 9b. Model 2, Table 4, reports tests of whether individual and collaborative job crafting are associated with organizational commitment. Individual job crafting has no significant relationship with organizational commitment ( $\beta = -.10, n.s.$ ), but collaborative job

crafting has a significant, positive association with organizational commitment ( $\beta = .21, p < .01$ ). Finally, model 3, Table 4, reports our test of whether individual and collaborative job crafting are related to turnover intentions. Since organizational commitment and job satisfaction are established antecedents of turnover intentions (Griffeth et al., 2000; Hom & Griffeth, 1995; Mathieu & Zajac, 1990; Tett & Meyer, 1993), we also included these variables as controls in the model. Neither individual crafting ( $\beta = .03, n.s.$ ) nor collaborative crafting ( $\beta = -.01, n.s.$ ) is significantly related to turnover intentions.

In summary, we found little support for our hypotheses regarding individual job crafting but greater support for those regarding collaborative crafting. Individual job crafting is not related to quality of care, organizational commitment, or turnover intentions. It is significantly related to job satisfaction but in the direction opposite our prediction. Thus, Hypotheses 7a and 9a are not supported. With respect to collaborative job crafting, we found full support for Hypotheses 7b and 8 and

**TABLE 4**  
**Results of the Analysis for Job Satisfaction, Organizational Commitment, and Turnover Intentions<sup>a</sup>**

Variables	Job Satisfaction, Model 1 <sup>b</sup>	Organizational Commitment, Model 2 <sup>b</sup>	Turnover Intentions	
			Model 3 <sup>c</sup>	Model 4 <sup>c</sup>
<i>Controls</i>				
State	0.37** (0.13)	0.26 (0.15)	0.10 (0.11)	0.17 (0.13)
Center size	-0.17* (0.07)	-0.13 (0.07)	-0.04 (0.05)	-0.04 (0.05)
For-profit	-0.15 (0.12)	-0.06 (0.14)	0.02 (0.10)	0.07 (0.10)
Student SES	-0.28 (0.22)	-0.14 (0.25)	-0.15 (0.18)	-0.13 (0.18)
Teachers/aides in a classroom	0.08 (0.06)	0.07 (0.06)	0.06 (0.05)	0.05 (0.05)
Wages	-0.01 (0.03)	-0.03 (0.04)	-0.10** (0.03)	-0.12** (0.03)
<i>Predictors</i>				
Individual crafting	-0.12* (0.06)	-0.10 (0.06)	0.03 (0.05)	0.05 (0.05)
Collaborative crafting	0.13* (0.06)	0.21** (0.06)	-0.01 (0.06)	-0.02 (0.05)
Organizational commitment			-0.53** (0.08)	-0.56** (0.08)
Job satisfaction			-0.33** (0.09)	-0.34** (0.09)
Quality of care				0.06 (0.06)
Quality of care × individual crafting				0.09 (0.05)
Quality of care × collaborative crafting				-0.14* (0.06)
Pseudo- $R^2_{level\ 2}$	.22	.15		
Pseudo- $R^2_{level\ 1}$	.08	.12		
$R^2$			0.48	0.50

<sup>a</sup>  $n = 179$ .

<sup>b</sup> We estimated the job satisfaction and organizational commitment models using HLM and therefore report proportional reduction in level 1 and level 2 unexplained variance due to the inclusion of predictors with pseudo- $R^2$ s (Singer & Willett, 2003):

$$\text{Pseudo-}R^2_{level\ 2} = \frac{\hat{\sigma}^2_{level\ 2}(\text{preceding model}) - \hat{\sigma}^2_{level\ 2}(\text{subsequent model})}{\hat{\sigma}^2_{level\ 2}(\text{preceding model})}$$

$$\text{Pseudo-}R^2_{level\ 1} = \frac{\hat{\sigma}^2_{level\ 1}(\text{preceding model}) - \hat{\sigma}^2_{level\ 1}(\text{subsequent model})}{\hat{\sigma}^2_{level\ 1}(\text{preceding model})}$$

<sup>c</sup> We estimated the turnover intentions models using OLS regression technique and therefore report  $R^2$  to demonstrate the proportion of turnover intentions variance explained by the model.

\*  $p < .05$

\*\*  $p < .01$

partial support for Hypothesis 9b. Collaborative job crafting was significantly related to quality of care, organizational commitment, and job satisfaction, but not turnover intentions. In terms of the magnitude of the significant relationships, an increase in collaborative crafting by one standard deviation is associated with a 10 percent increase in the quality of care, a 13 percent increase in job satisfaction, and a 21 percent increase in organizational commitment.

**Additional Policy-Related Analyses**

In addition to the hypothesized relationships, we conducted two further analyses of potential interaction effects, examining the effects of (1) an interaction of job crafting and teacher human capital on quality of care and (2) an interaction of job crafting and quality of care on turnover intentions. To examine the role of human capital, we included educational attainment and work experience in our

model of quality of care. As shown in model 2, Table 3, we found no significant relationship between quality of care and either measure of human capital: experience ( $\beta = -.02$ , n.s.) or education ( $\beta = .02$ , n.s.). We then explored whether job crafting might interact with teacher human capital in its relationship with quality of care. Specifically, we included the interaction terms of the human capital variables and job crafting variables in our quality of care model (model 3, Table 3). We found that for collaborative crafting, the interaction with experience was negative and statistically significant ( $\beta = -.05$ ,  $p < .05$ ), but the interaction with education was not statistically significant ( $\beta = -.03$ , n.s.). We found no significant interactions of individual crafting and either of the human capital variables.

To examine the nature of the significant interaction, we plotted simple regression lines representing the relationship between collaborative crafting and quality of care separately at high (one standard



deviation above the mean) and low (one standard deviation below the mean) levels of experience. Using the approach suggested by Preacher, Curran, and Bauer (2006), we analyzed the statistical significance of the simple slopes of these regression lines. In particular, the slope of the line representing the relationship between collaborative job crafting and quality of care among more experienced teachers was not statistically significant, but the slope of the line representing the relationship between collaborative job crafting and quality of care among less experienced teachers was positive and statistically significant ( $\beta = .17, p < .01$ ). Figure 1 presents these slopes. As shown, the positive relationship between collaborative crafting and quality of care is weaker among more experienced teachers than among less experienced ones. In terms of the relative magnitude of the relationship for each group, a one standard deviation increase in collaborative crafting is associated with a 7 percent increase in quality of care among more experienced teachers but a 17 percent increase in quality of care among teachers with less experience in early childhood education. Thus, collaborative crafting is a particularly powerful tool for improving the job performance of less experienced teachers.

To address the second policy issue, retaining childcare workers who provide high-quality care, we ran additional analyses on turnover intentions. Model 4, Table 4, shows that the association of turnover intentions with the interaction of quality of care and individual crafting is not statistically significant ( $\beta = .09, n.s.$ ) but collaborative crafting interacts with quality of care to have a significant, negative relationship with turnover intentions ( $\beta = -.14, p < .05$ ). Examination of the statistical significance of the slopes of the regression lines associ-

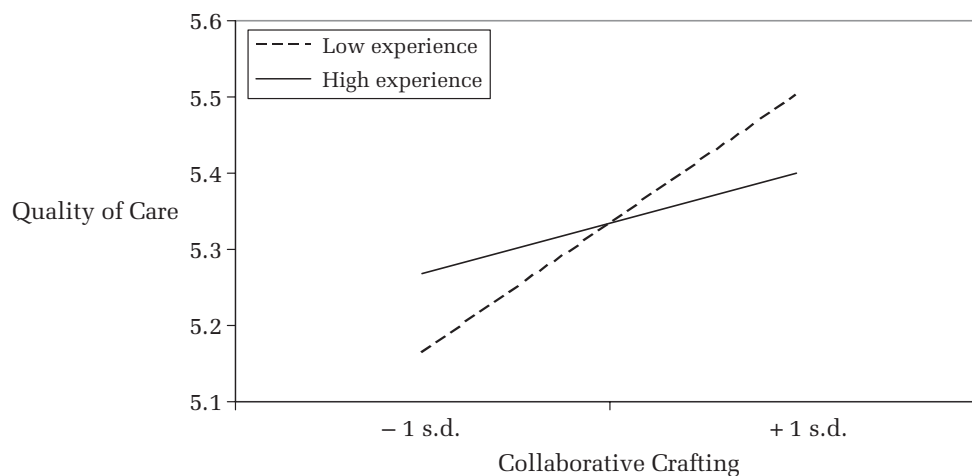
ated correspondingly with high and low quality of care reveals the form of this interaction, shown in Figure 2. Essentially, the relationship between collaborative job crafting and turnover intentions is negative and statistically significant for teachers and aides who provide higher-quality care ( $p < .05$ ). The slope of the line representing the association between collaborative job crafting and turnover intentions for workers who provide low-quality care is not statistically significant. In terms of the relative magnitude of the significant effect, a one standard deviation increase in collaborative crafting is associated with a 14 percent decrease in turnover intentions among teachers providing high-quality care. Thus, collaborative crafting is associated with the retention of high-performing teachers. The size of this effect suggests that collaborative job crafting may be a powerful tool for retaining high-quality employees (Whitebook & Sakai, 2003).

## DISCUSSION

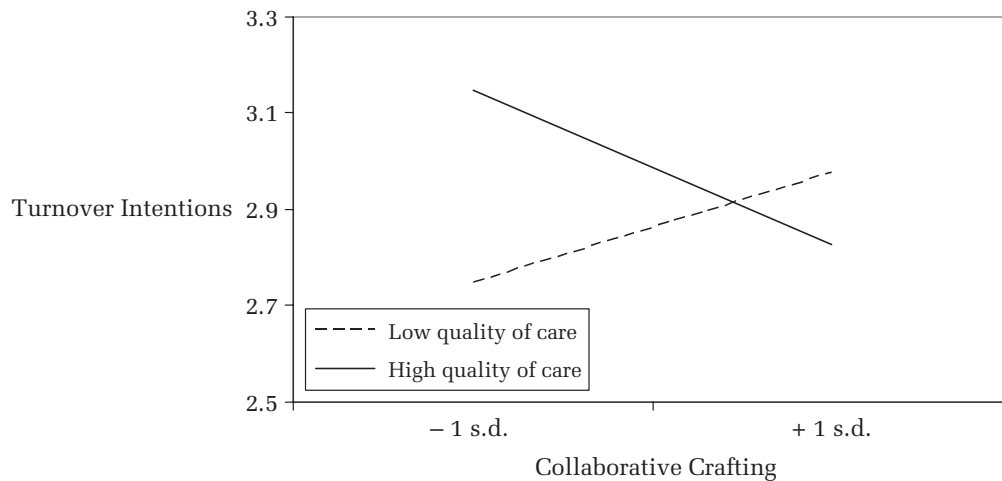
### Contributions to Theory and Research

Our findings extend previous theory and research on job crafting in several ways. First, we distinguish conceptually between individual and collaborative job crafting and, for this sample, demonstrate that they are distinct constructs. Collaborative job crafting is an important addition to job crafting theory that incorporates the social embeddedness that both enables and constrains individual behavior. Second, we contribute to theory and research by modeling potential antecedents of individual and collaborative job crafting. We found that childcare workers use the latitude they have in

**FIGURE 1**  
Joint Effect of Experience and Collaborative Crafting on Quality of Care



**FIGURE 2**  
**Joint Effect of Quality of Care and Collaborative Crafting on Turnover Intentions**



their jobs to engage in both forms of job crafting. Also, as expected, task interdependence and social ties with peers are significantly related to collaborative crafting but not individual crafting.

Third, our results suggest that individual job crafting is best conceptualized and studied at the individual level of analysis. This assumption is implicit in Wrzesniewski and Dutton's (2001) theory of job crafting, and we find support for it here. At the same time, factors operating at both the individual and the group levels of analysis may affect collaborative crafting. Here, we find support for both between-organization and between-individual variance in collaborative job crafting. This distinction in level of analysis between individual and collaborative job crafting may be an important one for theory development, particularly with respect to practices that foster or discourage job crafting.

Fourth, Wrzesniewski and Dutton (2001) did not posit a relationship between job crafting and organizational performance. In contrast, we argue that in the context of childcare work, job crafting should be positively related to the quality of care. We found support for our prediction in that collaborative job crafting is positively and significantly associated with quality of care, perhaps because of the enhanced information sharing and learning that take place when teachers and aides work together. In addition, collaborative crafting is particularly important to quality performance for workers with less experience caring for young children. Child-care workers who engage in collaborative crafting—particularly those with less experience—may develop a deeper understanding of the relationship between their day-to-day activities and the quality

of care, and may be better able to respond to unpredictable situations.

Fifth, although we did not find a direct relationship between collaborative crafting and turnover intentions, we did find that collaborative crafting was significantly related to organizational commitment and job satisfaction, which, in turn, are associated with lower turnover intentions. In addition, in settings in which collaborative crafting is more frequent, we found that employees with stronger job performance expressed stronger job attachment. Thus, collaborative crafting promotes higher-quality care and encourages job attachment among high performers. These too are important findings for job crafting theory.

### Contributions to Policy and Practice

This study provides new insights into the actual execution of childcare work and the relationship between job crafting by classroom staff and the quality of care in classrooms. As described earlier, high-quality childcare has become an essential support for parents combining work and family and can benefit employers as well by reducing turnover and absenteeism and enhancing the job performance of employees with young children. The rapid increase in publicly funded prekindergarten programs has brought with it an interest by policy makers in ensuring that children in center-based early care and education programs have high-quality classroom experiences. This concern has focused policy makers' attention on features of pre-K programs that can be most readily regulated.

Although such regulations vary widely by state, policy makers increasingly look to the K-5 profes-

sional model, which relies primarily on teachers' educational attainment and credentials to ensure quality education. Our research suggests that this policy focus alone is not sufficient for improving quality in the pre-K classroom. In our research, we found no significant effect of teacher education on quality of care. This result, along with the significant finding regarding collaborative crafting and quality of care, suggests that the K–5 model for teacher training may not be appropriate for the pre-K classroom.

This may be due to several differences between pre-K and K–5 education. Unlike K–5 teachers, who essentially work alone in their classrooms, both a lead teacher and an assistant teacher or aide typically staff a pre-K classroom. Thus, the roles of teachers and aides in pre-K classrooms are more complex, and attention to work process and the promotion of collaborative job crafting may be key to assuring high-quality care. The aspects of quality that tend to be regulated through state licensing requirements or highlighted in teacher training and professional development are teacher education and qualifications, teacher-child ratios, class size, and teacher compensation. Our research suggests that other, usually unobserved, job process characteristics of prekindergarten classrooms also have important effects on the quality of care.

Specifically, our findings suggest that interaction and improvisation among staff (collaborative job crafting) are important elements of the “black box” of unobserved characteristics that affect classroom quality—elements that we have now identified and that are amenable to action by policy makers. Whether collaborative job crafting is a cause or an effect of higher classroom quality, teachers and aides need to know how to work together effectively. Much of the training currently required to be state certified in early childhood education focuses on child development and safety. State policy could also require teachers and aides to have training in teamwork and joint decision making.

Examining the classroom as a work site for teachers and aides as we have done here also yields important insights for directors and others in leadership positions in childcare centers. Center directors can foster a culture that supports stronger social ties and more collaborative interaction among teachers and aides. Moreover, we find that supervisory actions that are developmental and supportive, such as providing helpful feedback and being available to discuss particular classroom challenges, can promote collaborative behavior by teachers and aides that improves the quality of care. Center directors can model this type of supervision and can reward it in others.

In summary, our research suggests that the current emphasis by policy makers on extending the K–5 model of teacher preparation to pre-K classrooms may be misplaced. Instead, policy makers should combine existing policies directed at improving teacher human capital with a new focus on professional development that fosters the skills needed for effective collaboration and job crafting among classroom staff. As this study shows, in pre-K classrooms, differences in the extent of collaborative job crafting are associated with differences in the quality of care. This is especially true for less experienced staff.

### Combining Theory and Practice

Our findings contribute to the sparse literature on job crafting and point to the potentially strong influence of context on both its antecedents and its effects. Center-based childcare work tends to be organized as a collaborative endeavor with dyads or triads of teachers and aides working together to provide care and developmentally appropriate educational activities to groups of like-aged children. In this context, it is not surprising that the results regarding collaborative job crafting are more powerful than those regarding individual crafting. Those doing other direct care jobs, such as nurses and nursing assistants in hospitals and long-term care facilities, are similarly interdependent and have high levels of work latitude; thus, these may be appropriate settings for encouraging collaborative job crafting as well.

We found a positive relationship between collaborative crafting and job satisfaction as expected, but we were surprised to find that individual job crafting had a negative relationship with job satisfaction. Moreover, in our sample individual crafting is significantly associated with a career orientation to work in which the current job is seen primarily as a stepping stone to a better one. These findings suggest that in childcare centers—and perhaps in other work settings where collaboration is important—idiosyncratic improvisation (i.e., individual job crafting) may well reflect alienation as much as innovation.

Turning to an issue that was not a focus of this study, we note that state policies mandating standards, as well as policies that affect how states subsidize child care, appear to affect the quality of care. Differences between the two studied states in quality of care were significant above and beyond our other study findings, and this may be a result of differences in state regulation and subsidy policies between Pennsylvania and New Jersey. Much of the between-center variation in quality of care can be

attributed to the strong association between center performance and the state in which the center was located. These state differences remained even in analyses controlling for other factors, such as teacher-child ratios, center size, and student socioeconomic status. Clearly, this is fertile ground for future research.

### Strengths and Limitations of the Research

Like all studies, this research has limitations as well as strengths. In terms of weaknesses, many of our measures come from a single source, and thus the relationships among the variables could be inflated because of common method bias. However, the key outcome of interest, quality of care, was assessed by independent observers who completed a comprehensive and complex rating procedure that is widely used in the field. Thus, our core findings regarding job crafting and performance cannot be challenged on the basis of common method bias. Second, our study focused only on preschool teachers and aides and did not consider the care of younger children and babies. We deliberately chose this focus in light of the direction of public policy toward universal access to preschool. Nonetheless, there may be important differences in how teachers care for younger children that affect the relationships posited here. Third, the data are cross-sectional, so we cannot be sure of the causal ordering among the variables. At the same time, reverse causation seems unlikely. If superior performance or greater job satisfaction were the cause of job crafting rather than the effect, we would expect to find an increase in both individual and collaborative job crafting rather than in collaborative job crafting alone. In either case, this should not diminish the practical ramifications of the research for public policy, but it does call attention to the desirability of longitudinal research to further advance the theory of job crafting.

In terms of the strengths of our research, we gathered data across a wide range of childcare workers and centers, enhancing the generalizability of our findings. Second, our study utilized a mixed-methods design in that we combined qualitative and quantitative methods, and survey and observational measures, to understand the phenomena of interest. Third, we approached the issue of childcare work and how it is carried out using a defined theoretical lens (job crafting) and a focus on job process factors rather than treating such processes as a black box, as many previous studies of the childcare workforce have done.

### CONCLUSIONS

Our results confirm the relationship between work discretion and job crafting hypothesized by Wrzesniewski and Dutton (2001). Further, they shed light on the antecedents and effects of collaborative job crafting, as well as the individual crafting described in previous research. In childcare centers, the effects of crafting by teachers and aides working collaboratively are more powerful than the effects of individual job crafting. The latter, in this setting, may be at best weakly associated with job performance and, at worse, negatively related to employee job attitudes such as satisfaction. Supportive management practices such as being available to discuss the challenges that arise and providing sufficient resources are effective in encouraging childcare teachers and aides to craft collaboratively. Moreover, strong social ties are important to collaborative crafting.

Our results suggest that policy makers need to broaden their focus beyond teacher human capital and the K-5 model if children are to receive quality prekindergarten education. Although the educational attainment of staff may affect classroom quality, clearly the work process within the classroom is also important. Our research, which examines the pre-K classroom both as a work site for adults and a place of learning for children, shows a positive association between classroom quality and collaborative job crafting among classroom staff. The practical implication of this finding is that if states are to improve the quality of center-based childcare, they will need to revamp curriculum and training for pre-K teachers and aides to include a focus on teamwork, collaboration, and joint decision making among classroom staff—in addition to the current emphasis on the educational and developmental needs of children.

Finally, though it is only suggestive, the significant difference in quality of care between the two states in our study indicates that differences in state regulations regarding the qualifications of center directors and incentives for improvements in practice may affect classroom quality. This points to an important area for further study and underscores the critical role of public policy in improving the quality of early childhood education.

### REFERENCES

- Abbott, A. 1981. Status and strain in the professions. *American Journal of Sociology*, 86: 819–835.
- Amabile, T., Hill, K., Hennessey, B., & Tighe, E. 1994. The work preference inventory: Assessing intrinsic and extrinsic motivational orientations. *Journal of Personality and Social Psychology*, 66: 95–967.

- Appelbaum, E., Bailey, T., Berg, P., & Kalleberg, A. 2000. *Manufacturing advantage: Why high performance work systems pay off*. New York: Cornell ILR Press.
- Bagozzi, R. P., Yi, Y., & Phillips, L. W. 1991. Assessing construct validity in organizational research. *Administrative Science Quarterly*, 36: 421–458.
- Barnett, W. S. 1995. Long-term effects of early childhood programs on cognitive and school outcomes. *The Future of Children*, 5(3): 25–50.
- Barnett, W. S., Hustedt, J. T., Hawkinson, L. E., & Robin, K. B. 2007. *The state of preschool: 2006 State preschool yearbook*. New Brunswick, NJ: National Institute for Early Education Research.
- Batt, R. 1999. Work organization, technology, and performance in customer service and sales. *Industrial and Labor Relations Review*, 52: 539–564.
- Becker, T. E. 1992. Foci and bases of commitment: Are their distinctions worth making? *Academy of Management Journal*, 35: 232–244.
- Bellah, R., Madsen, R., Sullivan, W., Swindler, A., & Tipton, S. 1985. *Habits of the heart: Individualism and commitment in American life*. New York: Harper & Row.
- Bellm, D., Burton, A., Whitebook, M., Broatch, L., & Young, M. P. 2002. *Inside the pre-K classroom: A study of staffing and stability in state-funded pre-kindergarten programs*. Washington, DC: Center for the Childcare Workforce.
- Bentler, P. M. 1992. On the fit of models to covariances and methodology to the Bulletin. *Psychological Bulletin*, 112: 400–404.
- Blau, D. M. 1997. The production of quality in child care centers. *Journal of Human Resources*, 32: 354–387.
- Blau, D. M. 2000. The production of quality in child-care centers: Another look. *Applied Developmental Science*, 4: 136–148.
- Blise, P. D., & Hanges, P. J. 2004. Being both too liberal and too conservative: The perils of treating grouped data as though they were independent. *Organizational Research Methods*, 7: 400–417.
- Brown, J. S., & Duguid, P. 1991. Organizational learning and communities of practice: Toward a unified view of working, learning, and innovation. *Organization Science*, 2: 40–57.
- Bryk, A. S., & Schneider. B. 2002. *Trust in schools: A core resource for improvement*. New York: Russell Sage.
- Bunderson, J. S., & Thompson, J. A. 2009. The call of the wild: Zookeepers, callings, and the double-edged sword of deeply meaningful work. *Administrative Science Quarterly*, 54: 32–57.
- Bureau of Labor Statistics. 2007. *Employment characteristics of families in 2006*. USDL 07–0673 (release date, May 9).
- Caldwell, D. F., & O'Reilly, C. A. 2003. The determinants of team-based innovation in organizations: The role of social influence. *Small Group Research*, 34: 497–517.
- Campion, M. A., Medsker, G. J., & Higgs, A. C. 1993. Relations between work group characteristics and effectiveness: Implications for designing effective work groups. *Personnel Psychology*, 46: 823–849.
- Cassidy, D., Hestenes, L. L., Hegde, A., Hestenes, S., & Mims, S. 2005. Measurement of quality in preschool child care classrooms. *Early Childhood Research Quarterly*, 20: 345–360.
- Cochran-Smith, M., & Zeichner, K. M. 2005. *Studying teacher education: The report of the AERA panel on research and teacher education*. Mahwah, NJ: Erlbaum.
- Cohen, S., & Bailey, D. 1997. What makes teams work: Group effectiveness research from the shop floor to the executive suite. *Journal of Management*, 23: 239–290.
- Committee for Economic Development. 2006. *The economic promise of investing in high-quality preschool: Using early education to improve the growth and the fiscal sustainability of states and the nation*. Washington, DC: Committee for Economic Development.
- Cost, Quality and Child Outcomes Study Team. 1995. *Cost, quality and child outcomes in childcare centers*. Executive summary, University of Colorado at Denver.
- Dickens, W. T., Sawhill, I., & Tebbs, J. 2006. *The effects of investing in early education on economic growth*. Policy brief no. 153, Brookings Institution, Washington, DC.
- Early, D. M., Bryant, D. M., Pianta, R. C., Clifford, R. M., Burchinal, M. R., Ritchie, S., Howes, C., & Barbarin, O. 2006. Are teachers' education, major, and credentials related to classroom quality and children's academic gains in pre-kindergarten? *Early Childhood Research Quarterly*, 21: 174–195.
- Early, D. M., Maxwell, K. L., Burchinal, M., Alva, S., Bender, R. H., Bryant, D. M., Cai, K., Clifford, R. M., Ebanks, C., Griffin, J. A., Henry, G. T., Howes, C., Iriondo-Perea, J., Jeon, H. J., Mashburn, A. J., Peisner-Feinberg, E., Pianta, R. C., Vandergrift, N., & Zill, N. 2007. Teachers' education, classroom quality, and young children's academic skills: Results from seven studies of preschool programs. *Child Development*, 78: 558–580.
- Edmondson, A. C. 1999. Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, 44: 350–383.
- Federal Interagency Forum on Child and Family Statistics. 2006. *America's children: Key national indicators of well-being, 2006: Table POP 8.A*. Washington, DC: U.S. Government Printing Office. <http://www.childstats.gov/americaschildren/tables/pop8a.asp> (accessed April 3, 2007).

- Frede, E., Jung, K., Barnett, W. S., Lamy, C. E., & Figueras, A. 2007. *The Abbott preschool program longitudinal effects study (APPLES)*. New Brunswick, NJ: National Institute for Early Education Research.
- Frese, M., Kring, W., Soose, A., & Zempel, J. 1996. Personal initiative at work: Differences between East and West Germany. *Academy of Management Journal*, 39: 37–63.
- Fuller, J. B., Marler, L. E., & Hester, K. 2006. Promoting felt responsibility for constructive change and proactive behavior: Exploring aspects of an elaborated model of work design. *Journal of Organizational Behavior*, 27: 1089–1120.
- Ganseboom, H. B. G., & Treiman, D. J. 1996. Internationally comparable measures of occupational status for the 1988 international standard classification of occupations. *Social Science Research*, 25: 201–239.
- Ghitulescu, B. 2006. *Job crafting and social embeddedness at work*. Unpublished doctoral dissertation, University of Pittsburgh.
- Gornick, J. C., & Meyers, M. K. 2003. *Supporting a dual-earner/dual-career society: Policy lessons from abroad*. Unpublished manuscript, The Graduate Center, City University of New York.
- Graen, G., & Cashman, J. 1975. A role-making model of leadership in formal organizations: A developmental perspective. In J. G. Hunt & L. Larson (Eds.), *Leadership frontiers*: 143–165. Kent, OH: Kent State University Press.
- Grant, A., & Ashford, S. 2008. The dynamics of proactivity at work. In A. Brief & B. Staw (Eds.), *Research in organizational behavior*, vol. 28: 3–34. Greenwich, CT: JAI Press.
- Griffeth, R. W., Hom, P. W., & Gaertner, S. 2000. A meta-analysis of antecedents and correlates of employee turnover: Update moderator tests, and research implications for the next millennium. *Journal of Management*, 26: 463–488.
- Griffin, M. A., Neal, A., & Parker, S. K. 2007. A new model of work role performance: Positive behavior in uncertain and interdependent contexts. *Academy of Management Journal*, 50: 327–347.
- Guzzo, R., & Dickson, M. 1996. Teams in organizations: Recent research on performance and effectiveness. In J. T. Spence, J. M. Darley, & D. J. Foss (Eds.), *Annual review of psychology*, vol. 47: 307–338. Palo Alto, CA: Annual Reviews.
- Hackman, R. J., & Oldham, G. R. 1976. Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance*, 16: 250–279.
- Hanushek, E. A. 1986. The economics of schooling: Production and efficiency in the public schools. *Journal of Economic Literature*, 24: 1141–1177.
- Harms, T., Clifford, R. M., & Cryer, D. 2005. *Early childhood environment rating scale, revised (updated) (ECERS-R)*. New York: Teachers College Press.
- Heckman, J. J. 2006. *Investing in disadvantaged young children is an economically efficient policy*. Paper presented at the Forum on Building the Economic Case for Investments in Preschool. [http://www.ced.org/docs/report/report\\_2006prek\\_heckman.pdf](http://www.ced.org/docs/report/report_2006prek_heckman.pdf) (accessed September 17, 2007).
- Helburn, S. W. 1995. *Cost, quality, and child outcomes in childcare centers*. Technical report, University of Colorado at Denver, Department of Economics, Center for Research in Economics and Social Policy.
- Hom, P. W., & Griffeth, R. W. 1995. *Employee turnover*. Cincinnati: South-Western.
- Howes, C., Phillips, D. A., & Whitebook, M. 1992a. Thresholds of quality: Implications for the social development of children in center-based childcare. *Child Development*, 63: 449–460.
- Howes, C., Phillips, D. A., & Whitebook, M. 1992b. Teacher characteristics and effective teaching in child care: Findings from the National Child Care Staffing Study. *Child and Youth Care Forum*, 21: 399–414.
- Hu, L., & Bentler, P. M. 1999. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6: 1–55.
- Ichniowski, C., Shaw, K., & Prennushi, G. 1997. The effects of human resource management practices on productivity: A study of steel finishing lines. *American Economic Review*, 87: 291–313.
- Jehn, K. A. 1995. A multimethod examination of the benefits and detriments of intragroup conflict. *Administrative Science Quarterly*, 40: 256–282.
- Lamb, M. 1998. Nonparental childcare: Context, quality and correlates. In I. Siegal & K. Renninger (Eds.), *Handbook of child psychology*, vol. 4: 73–133. New York: Wiley.
- Leana, C., & Florkowski, G. 1992. Employee involvement programs: Integrating psychological theory and management practice. In G. R. Ferris & K. M. Rowland (Eds.), *Research in personnel and human resources management*, vol. 10: 233–270. Greenwich, CT: JAI Press.
- Lee, T. W., Mitchell, T. R., Sablinski, C. J., Burton, J. P., & Holtom, B. C. 2004. The effects of job embeddedness on organizational citizenship, job performance, volitional absences, and voluntary turnover. *Academy of Management Journal*, 47: 711–722.
- Levin, W. 1993. *Sociological ideas: Concepts and applications* (4th ed.). Belmont, CA: Wadsworth.
- Lynch, R. G. 2004. *Exceptional returns: Economic, fiscal, and social benefits of investment in early childhood development*. Washington, DC: Economic Policy Institute.
- Manlove, E., & Guzell, J. R. 1997. Intention to leave,

- anticipated reasons for leaving, and 12-month turnover of childcare center staff. *Early Childhood Research Quarterly*, 12: 145–167.
- Mathieu, J. E., & Zajac, D. M. 1990. A review and meta-analysis of the antecedents, correlates, and consequences of organizational commitment. *Psychological Bulletin*, 108: 171–194.
- Milkovich, G., & Gomez, L. R. 1976. Childcare and selected work behaviors. *Academy of Management Journal*, 19: 111–115.
- Milliken, F., Dutton, J., & Beyer, J. 1990. Understanding organizational adaptation to change: The case of work-family issues. *Human Resource Planning Journal*, 13: 91–107.
- Mittal, V., Rosen, J. & Leana, C. R. 2009. A dual-driver model of retention and turnover in the direct care workforce. *Gerontologist*, 49: 623–634.
- Morrison, E. W., & Phelps, C. 1999. Taking charge: Extra-role efforts to initiate workplace change. *Academy of Management Journal*, 42: 403–419.
- Muammer, O. 2008. Personal and task-related moderators of leader-member exchange among software developers. *Journal of Applied Psychology*, 93: 1174–1182.
- Nahapiet, J., & Ghoshal, S. 1998. Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review*, 22: 242–266
- Orr, J. E. 1990. Sharing knowledge, celebrating identity: Community memory in a service culture. In D. Middleton & D. Edwards (Eds.), *Collective remembering*: 169–189. London: Sage.
- Orr, J. E. 1996. *Talking about machines: An ethnography of a modern job*. Ithaca, NY: ILR Press/Cornell University Press.
- Orlikowski, W. J. 1996. Improvising organizational transformation over time: A situated change perspective. *Information Systems Research*, 7: 63–92.
- Peisner-Feinberg, E., Burchinal, M. R., Clifford, R. M., Culkin, M. L., Howes, C., Kagan, S. L., Yazejian, N., Byler, P., Rustici, J., & Zelazo, J. 1999. *The children of the cost, quality and outcomes study go to school*. Technical report, University of North Carolina at Chapel Hill, Frank Porter Graham Child Development Center.
- Perlman, M., Zellman, G. L., & Le, V. N. 2004. Examining the psychometric properties of the Early Childhood Environment Rating Scale–Revised (ECERS-R). *Early Childhood Research Quarterly*, 19: 398–412.
- Phillipsen, L., Burchinal, M., Howes, C., & Cryer, D. 1997. The prediction of process quality from structural features of child care. *Early Childhood Research Quarterly*, 12: 281–303.
- Pianta, R., Howes, C., Burchinal, M., Bryant, D., Clifford, R., Early, D., & Barbarin, O. 2005. Features of pre-kindergarten programs, classrooms, and teachers: Do they predict observed classroom quality and child-teacher interactions? *Applied Developmental Science*, 9: 144–159.
- Preacher, K. J., Curran, P. J., & Bauer, D. J. 2006. Computational tools for probing interaction effects in multiple linear regression, multilevel modeling, and latent curve analysis. *Journal of Educational and Behavioral Statistics*, 31: 437–448.
- Raudenbush, S. W., & Bryk, A. S. 2002. *Hierarchical linear models: Applications and data analysis methods* (2nd ed.). Thousand Oaks, CA: Sage.
- Rigby, E., Ryan, R., & Brooks-Gunn, J. 2007. Childcare quality in different state policy contexts. *Journal of Policy Analysis and Management*, 26: 887–907.
- Rolnick, A., & Grunewald, R. 2003. *Early childhood development: Economic development with a high public return*. FedGazette, Federal Reserve Bank of Minneapolis, December: 6–12.
- Schweinhart, L. J., Barnes, H. V., & Weikart, D. P. 1993. *Significant benefits: The High/Scope Perry preschool study through age 27*. Ypsilanti, MI: High/Scope Press.
- Shellenback, K. 2004. *Childcare and parent productivity: Making the business case*. Linking Economic Development & Childcare Research Project, Cornell University, Ithaca, NY.
- Shonkoff, J., & Phillips, D.A. (Eds.). 2000. *From neurons to neighborhoods: The science of early childhood development*. Washington, DC: National Academy Press.
- Singer, J. D., & Willett, J. B. 2003. *Applied longitudinal data analysis: Modeling change and event occurrence*. New York: Oxford University Press.
- Sparrowe, R., & Liden, R. 1997. Process and structure in leader-member exchange. *Academy of Management Review*, 22: 522–522.
- Spreitzer, G., & Sonenshein, S. 2003. Positive deviance and extraordinary organizing. In K. S. Cameron, J. E. Dutton, & R. E. Quinn (Eds.), *Positive organizational scholarship*: 207–224. San Francisco: Berrett-Koehler.
- Staw, B. M., & Boettger, R. D. 1990. Task revision: A neglected form of work performance. *Academy of Management Journal*, 33: 534–559.
- Tett, R. P., & Meyer, J. P. 1993. Job satisfaction, organizational commitment, turnover intention, and turnover: Path analyses based on meta-analytic finding. *Personnel Psychology*, 46: 259–293.
- Treiman, D. J. 1977. *Occupational prestige in comparative perspective*. New York: Academic Press.
- Wageman, R. 1995. Interdependence and group effectiveness. *Administrative Science Quarterly*, 40: 145–180.
- Wall, T., Kemp, N., Jackson, P., & Clegg, C. 1986. Outcomes of autonomous workgroups: A long-term field

experiment. *Academy of Management Journal*, 42: 403–419.

- Weick, K. E. 1979. *The social psychology of organizing*. Reading, MA: Addison-Wesley.
- Whitebook, M., & Sakai, L. 2003. Turnover begets turnover: An examination of job and occupational instability among childcare staff. *Early Childhood Research Quarterly*, 18: 273–293.
- Wrzesniewski, A. 2003. Finding positive meaning in work. In K. S. Cameron, J. E. Dutton, & R. E. Quinn (Eds.), *Positive organizational scholarship*: 296–308. San Francisco: Berrett-Koehler.
- Wrzesniewski, A., & Dutton, J. E. 2001. Crafting a job: Revisioning employees as active crafters of their work. *Academy of Management Review*, 26: 179–201.
- Wrzesniewski, A., McCauley, C., Rozin, P., & Schwartz, B. 1997. Jobs, careers, and callings: People's relations to their work. *Journal of Research in Personality*, 31: 21–33.

## APPENDIX

### Job Crafting Items

Respondents were asked “How often do you do any of the following?”

#### Individual Crafting

1. Introduce new approaches on your own to improve your work in the classroom.
2. Change minor work procedures that you think are not productive (such as lunch time or transition routines) on your own.
3. On your own, change the way you do your job to make it easier to yourself.
4. Rearrange equipment or furniture in the play areas of your classroom on your own.
5. Organize special events in your classroom (such as celebrating a child's birthday, etc.) on your own.
6. On your own, bring in other materials from home for the classroom (such as empty jars or egg cartons).

#### Collaborative Crafting

1. Work together with your coworkers to introduce new approaches to improve your work in the classroom.
2. Decide together with your coworkers to change minor work procedures that you think are not productive (such as lunch time or transition routines).
3. Decide together with your coworkers to change the way you do your job to make it easier to yourself.
4. Decide together with your coworkers to rearrange equipment or furniture in the play areas of your classroom.
5. Decide together with your coworkers to organize special events in your classroom (such as celebrating a child's birthday, etc.)
6. Decide together with your coworkers to bring in other materials from home for the classroom (such as empty jars or egg cartons).



**Carrie Leana** (leana@pitt.edu) is the George H. Love Professor of Organizations and Management at the University of Pittsburgh. She received her Ph.D. from the University of Houston. Her current research is focused on work behavior and management practice, particularly for low-wage workers.

**Eileen Appelbaum** (eappelba@rci.rutgers.edu) is an economist and professor in the School of Management and Labor Relations, Rutgers University, where she directs the Center for Women and Work. She received her Ph.D. from the University of Pennsylvania. Her research focuses on work processes and workplace practices with an emphasis on the organization and management of work.

**Iryna Shevchuk** (iryna.shevchuk@live.com) is a postdoctoral fellow at the Center for Health and Care Work, University of Pittsburgh. She received her Ph.D. in organizational behavior from the University of Pittsburgh. Her current research interests include contextual factors that surround employee turnover and absenteeism.





Copyright of Academy of Management Journal is the property of Academy of Management and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.