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Changing Work and Work-Family Conflict: Evidence from the Work, Family, and Health Network

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Abstract

Schedule control and supervisor support for family and personal life may help employees manage the work-family interface. Existing data and research designs, however, have made it difficult to conclusively identify the effects of these work resources. This analysis utilizes a group-randomized trial in which some units in an information technology workplace were randomly assigned to participate in an initiative, called STAR, that targeted work practices, interactions, and expectations by (1) training supervisors on the value of demonstrating support for employees' personal lives and (2) prompting employees to reconsider when and where they work. We find statistically significant, although modest, improvements in employees' work-family conflict and family time adequacy, and larger changes in schedule control and supervisor support for family and personal life. We find no evidence that this intervention increased work hours or perceived job demands, as might have happened with increased permeability of work across time and space. Subgroup analyses suggest the intervention brought greater benefits to employees more vulnerable to work-family conflict. This study uses a rigorous design to investigate deliberate organizational changes and their effects on work resources and the work-family interface, advancing our understanding of the impact of social structures on individual lives.

Keywords

work-family conflict, organizations, experiment, group-randomized trial, schedule control

Work-family conflict is increasingly common among U.S. workers (Jacobs and Gerson 2004; Nomaguchi 2009; Winslow 2005), with about 70 percent of workers reporting some interference between work and non-work (Schieman, Milkie, and Glavin 2009). Work-family conflict has grown due to increases in women's labor force participation (meaning more households have all adults employed) and rising expectations for fathers' involvement in children's daily care (Nomaguchi 2009). Yet work organizations have *not* changed much in response: the institutionalized expectation in U.S. workplaces is that serious, committed, promotable employees will work full-time (and longer), full-year, on

a schedule determined by the employer, with no significant breaks in employment (Blair-Loy 2003, Moen and Roehling 2005, Williams 2000). Trying to live up to this ideal creates work-family conflict for employees who have significant caregiving responsibilities, as well as the growing proportion of single workers and dual-earning couples who do not have a partner at home to take care of all the "little things" that need to be done (Schieman et al. 2009). The goal of this study is to assess the effects of an innovative workplace intervention on work-family conflict and related work conditions.

Scholars and advocates concerned about work-family conflict have advocated changing the social structure of workplaces, that is, the largely taken-for-granted and mutually reinforcing practices, interactions, expectations, policies, and reward systems that reflect and reinforce the ideal-worker schema (Acker 1990; Albiston 2010; Williams 2000). These calls recognize the constraining power of social structures, understood as "mutually sustaining cultural schemas and sets of resources" (Sewell 1992:27), but also acknowledge that agents can, in theory, reconfigure those structures through changing their everyday practices, interactions, and the social meanings attached to them. These theoretical precepts inform our understanding of the sources of work-family conflict, and point to the possibility for meaningful change through interventions that address the interrelated practices, interactions, and meanings at work in an organization.

This project is also informed by middle-range theory regarding the work conditions most relevant to work-family conflict. Guided by the job demands-resources model (Bakker and Demerouti 2007), scholars have viewed flexibility (or schedule control) and support as key work resources that can reduce work-family conflict (Schieman et al. 2009; Voydanoff 2004). Work resources are the "physical, psychological, social, or organizational aspects of the job" that help workers accomplish their work tasks or reduce the "physiological or psychological costs" of work demands (Bakker and Demerouti 2007:312). Schedule control and support are work resources that ameliorate work-family conflict because they make it easier to get work done and offset the stress of feeling pulled in two directions.[1]

Many studies tie schedule control and supervisor support to work-family conflict and related outcomes (as we will review), but the causal claims that can be made are limited. This study supports stronger causal claims by conducting a group-randomized trial in which some work units received an intervention (i.e., a new workplace initiative that represents the experimental treatment), while other units continued with "business as usual." We evaluate the effects of this intervention on employees' schedule control, supervisors' support for family and personal matters as reported by employees, and the work-family interface. We utilize two waves of data from employees in the information technology (IT) division of a U.S. Fortune

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500 organization; our pseudonym for the company is TOMO. The intervention is called STAR, short for "Support. Transform. Achieve. Results." STAR aimed to modify the practices, interactions, and social meanings within this workplace, specifically targeting employees' control over when and where they worked and supervisors' support for family and personal life, in hopes of reducing work-family conflict and promoting employee well-being.

CHANGING WORK TO REDUCE WORK-FAMILY CONFLICT

Previous Research and Its Limitations

Before reviewing empirical studies on the relationships between schedule control, supervisor support for family and personal life, and work-family conflict, we clarify our understanding of these terms. Because "flexibility" is sometimes used to refer to a management strategy of easily eliminating workers or relying on contingent staff, we prefer the more specific term, "schedule control," to refer to employees' control over the timing of their work, the number of hours they work, and the location of their work (Berg et al. 2004; Kelly et al. 2011; Lyness et al. 2012; Schieman et al. 2009). Supervisor support for family and personal life involves providing emotional support for employees' work-life challenges, modeling how supervisors themselves handle work-family issues, looking for creative solutions that meet the needs of both employees and organizations, and facilitating employees' flexible work practices (Hammer et al. 2009). This form of support is more closely associated with work-family conflict than is general supervisor support when comparing effects in the same sample (Hammer et al. 2009) or through meta-analysis (Kossek et al. 2011). We use the broad terms of work-family interface and work-family conflict interchangeably to refer to challenges managing paid work and nonwork and the sense that family time is squeezed or inadequate. We use the directional terms (work-to-family conflict and family-to-work conflict) more specifically to describe the degree to which role responsibilities from one domain are perceived as interfering with the other domain (Greenhaus and Beutell 1985; Netemeyer, Boles, and McMurrian 1996). Changes in the work environment may be more salient for work-to-family conflict, but family-to-work conflict may decrease as expectations shift within the workplace (e.g., arriving at work later due to a school appointment is no longer experienced as a problem). Note that the measures of conflict refer to personal life and family, so they are also salient for individuals with few family responsibilities.

Many studies have considered the relationship between these work resources and the work-family interface. Employees who report more control over their schedules have lower work-family conflict (Byron 2005; Galinsky, Bond, and Friedman 1996; Galinsky, Sakai, and Wigton 2011; Hammer, Allen, and Grigsby 1997; Kossek, Lautsch, and Eaton 2006; Moen, Kelly, and Huang 2008; Roeters, Van der Lippe, and Kluwer 2010) and better work-life balance (Hill et al. 2001; Tausig and Fenwick 2001). Employees who report more support from supervisors—particularly with regard to work-family issues—also report lower work-family conflict (Allen 2001; Batt and Valcour 2003; Frone, Yardley, and Markel 1997; Frye and Breaugh 2004; Hammer et al. 2009; Kossek et al. 2011; Lapierre and Allen 2006; Thomas and Ganster 1995; Thompson, Beauvais, and Lyness 1999) and believe their organizations to be more helpful with work-family balance (Berg, Kalleberg, and Appelbaum 2003).

We identify two concerns regarding this body of research. First, the vast majority of these studies are cross-sectional and nonexperimental, and so do not fully support causal claims. These design limitations are serious because employees have differential access to schedule control, supervisor support, and organizational work-family policies, with clear variation by education and occupational status (Davis and Kalleberg 2006; Golden 2008; Lyness et al. 2012; Schieman et al.

2009; Swanberg et al. 2011). The apparent inverse relationship between each resource and work-family conflict may reflect, at least in part, the selection of individuals with higher human and social capital into "good jobs" with "good employers" (Weeden 2005; Wharton, Chivers, and Blair-Loy 2008). Employees who enjoy these work resources often have higher incomes, higher occupational status, and perhaps fewer family demands, because they are more likely to have spouses who are not employed, fewer children, financially stable elders, and financial resources to outsource various "little things" that need to get done. Some research, however, finds that employees in these "good jobs" often work longer hours, face higher job demands, and invest more psychologically in their paid work; the "stress of higher status" helps explain the higher work-to-family conflict reported by these employees in some studies (Schieman et al. 2009; Schieman, Whitestone, and Van Gundy 2006). Previous cross-sectional studies examining work-family conflict generally control for work hours (and sometimes control for job demands or psychological involvement), but a stronger design would attempt to manipulate these work resources while holding work demands constant, as we do here.

The second concern is that previous studies do not provide clear guidance on *how* to foster these work resources. Research on common work-life policies finds mixed evidence regarding their effect on schedule control or supervisor support for family and personal life (Kelly et al. 2008; Kossek and Michel 2011). Flextime and telecommuting policies may be formally available in a given organization, but employees' ability to use these arrangements varies according to their occupational status and their managers' preferences or whims (Blair-Loy and Wharton 2002; Eaton 2003). Furthermore, in most organizations, these flexible work arrangements are treated as individual accommodations for valued employees (Kelly and Kalev 2006) and often carry career penalties for use (Glass 2004; Leslie et al. 2012; Wharton et al. 2008). When managers determine access to flexible work options, employees may not feel they have much schedule control and may not experience lower work-family conflict (Batt and Valcour 2003; Tausig and Fenwick 2001). In light of the mixed evidence on flextime and telecommuting policies, scholars and practitioners have argued for broader efforts to move beyond simply putting a new policy "on the books" (Lewis 1997; Mennino, Rubin, and Brayfield 2005; Thompson et al. 1999). This study involves a rigorous evaluation of one such effort.

Few workplace interventions have been made with regard to fostering supervisor support for family and personal life, and even fewer have been studied. Management training is a viable option, but to design appropriate training, scholars first need to identify which behaviors constitute and convey supervisor support for family and personal life (Hammer et al. 2007). Scholars have long recognized supervisors' critical role in interpreting policies and acting as gatekeepers to flexible work and family leave policies (Blair-Loy and Wharton 2002; Hochschild 1997; Kossek, Barber, and Winters 1999), but only recently have researchers identified other dimensions of supervisor support for family and personal life, such as providing emotional support, sharing how one handles work-family challenges, and looking for creative solutions that meet both employees' and organizations' needs (Hammer et al. 2009; Hammer et al. 2007).

Recent Studies of Workplace Interventions

Building on cross-sectional research, two recent studies provide the strongest evidence to date on the possibility of manipulating schedule control and supervisor support for family and personal life and the effects of those changes on the work-family interface. In a study of the Results Only Work Environment (ROWE) initiative at the corporate headquarters of Best Buy Co., Inc., Kelly and colleagues (2011) found that employees in

departments participating in ROWE during the study period saw significantly increased schedule control and improvements in the work-family interface, compared to changes reported by employees in departments that continued operating in traditional ways. ROWE employees also had improved health behaviors (e.g., sleep before work days and going to the doctor when sick) compared to employees in traditional departments (Moen et al. 2011). These findings point to the possible benefits of broad initiatives targeting schedule control—as opposed to individually negotiated flexible work options—but the study did not involve randomization to "treatment" (instead studying a phased roll-out of ROWE), and the intervention and control groups were not fully equivalent at baseline (Kelly et al. 2011).

Second, Hammer and colleagues (2011) evaluated an intervention targeting supervisors' support for family and personal life in 12 grocery store sites. The training described how supervisors could demonstrate support for employees' family and personal lives, with a self-monitoring activity to help supervisors practice supportive behaviors. Work-family conflict was investigated as a moderator of the intervention effects, rather than as a primary outcome. Hammer and colleagues (2011) found that employees with high family-to-work conflict at baseline who worked in stores that received training reported higher levels of job satisfaction and physical health and lower turnover intentions than did similar employees in control stores, whereas employees who began with low levels of family-to-work conflict reported lower job satisfaction and physical health and higher turnover intentions than did similar employees in control stores. The intervention may have created a negative backlash among workers who did not feel company resources were used to benefit them, and supervisors' attention to workers with high family-to-work conflict may have frustrated other employees (Hammer et al. 2011). This study demonstrated the value of training supervisors to express support for family and personal life, while suggesting that work-family "interventions may be most effective for those most in need" (Hammer et al. 2011:147).

Contributions

We advance the work-family literature by investigating an innovative workplace intervention and utilizing a group-randomized trial (GRT, also called a cluster-randomized trial or place-based experiment). As we will describe, we integrated the interventions reviewed earlier to target both schedule control and supervisor support for family and personal life. The intervention aimed to alter the social environment itself, as experienced through everyday work practices, interactions, and the social meaning of work patterns. Within the work-family field, almost no GRTs or other experiments have attempted to change the social environment. Two important exceptions were conducted outside the United States. First, a recent experiment in a Chinese call center randomized individuals to work at home or in the office; researchers found improved work performance and job satisfaction and reduced turnover for those working at home (Bloom et al. 2013). Interestingly, after the experimental period in which those randomized to work at home were obligated to do so, employees were able to choose where they worked and outcomes improved even more (Bloom et al. 2013), suggesting the value of increased employee control. Second, in a group-randomized trial of self-scheduling among nurses in a Danish hospital, nurses in the treatment teams reported greater improvements in work-life balance, job satisfaction, satisfaction with hours, and social support than did nurses in the control condition (Pryce, Albertsen, and Nielsen 2006).[2]

This study also has implications well beyond work-family scholarship and the study of work organizations and employee well-being. Sociologists and other social scientists have turned their attention to randomized experiments in conjunction with a revived commitment to causal inference and

counterfactual thinking (Gangl 2010; Morgan and Winship 2007; Winship and Morgan 1999). Yet, sociologists have rarely conducted group-randomized trials—the very experiments that would help identify effects of social structures or social environments more conclusively (Cook 2005; Oakes 2004). Some recent educational research uses GRTs to examine innovations in schools (e.g., Borman et al. 2007; Cook, Murphy, and Hunt 2000; Raudenbush, Martinez, and Spybrook 2007), and occupational health studies increasingly involve GRTs (Landsbergis et al. 2011; van der Klink et al. 2001). Sociologists of work and organizations have not yet pursued group-randomized trials to investigate effects of specific workplace policies or initiatives on employees and organizations themselves.

In some cases, GRTs involve group randomization simply to achieve "economies of spatial concentration" (Bloom 2006:120–21). In these studies, the intervention target is individual behavior change and randomization occurs at the group level primarily for convenience and ease of intervention delivery. For example, when workplace-based smoking cessation interventions randomize at the workplace level, they do so for ease of delivering smoking cessation messages to individuals within a site and to avoid contamination of intervention activities into control groups (e.g., Okechukwu et al. 2009; Sorensen et al. 2002). Other GRTs aim to induce organizational change, such as whole-school reforms and employer-based initiatives that invite change in policies or practices (Bloom 2006). We employ a GRT design because randomizing individuals is not appropriate for a social intervention, such as STAR, that targets individual and team practices, interactions, expectations, and norms.

INTERVENTION OVERVIEW

STAR included (1) supervisory training on strategies to demonstrate support for employees' personal and family lives while also supporting employees' job performance, and (2) participatory training sessions to identify new work practices and processes to increase employees' control over work time and focus on key results, rather than face time. STAR as implemented in TOMO included eight hours of participatory sessions for employees (with managers present) and an additional four hours for managers. Managers were first oriented to the STAR initiative in a facilitated training session and then completed a self-paced, computer-based training lasting about an hour. The computer-based training reviewed demographic changes, described the impact of work-family conflict on business outcomes (e.g., turnover and employee engagement), and claimed that demonstrating support for subordinates' personal and family life could benefit both employees and the organization. The training reviewed ways managers could demonstrate "personal support" and "performance support" and invited managers to set goals for exhibiting supportive behaviors over the coming week. Managers carried an iPod Touch with an alarm reminder to log these behaviors. They received personalized feedback charts describing which types of supportive behaviors they had concentrated on and whether they had met their goals; the charts also showed mean scores for other managers in STAR. This self-monitoring task was intended to help managers reflect on their own behaviors; feedback was delivered individually, and information was not shared with executives. A second self-monitoring task was completed about one month after the first. Managers also participated in a facilitated training session specific to supervisors toward the end of the STAR roll-out; this provided an opportunity to share what was working well in their teams and to ask questions of facilitators and peers.

Participatory training sessions attended by employees and managers prompted discussions of the organization's expectations of workers, everyday practices, and company policies, and encouraged new ways of working to increase employees' control over their work time and demonstrate greater support for others' personal obligations. Sessions were highly scripted and very interactive.

Structured messages were presented to all, but participants responded differently to activities and questions. Facilitators argued that expectations that everyone work from 9 A.M. to 5 P.M. in the office do not reflect current technologies, employees' preferences given their personal obligations, or some teams' need to interface with offshore staff. Facilitators critiqued the assumption that employees seeking more flexibility were less committed or productive, instead claiming that employees would be more engaged in their work, more responsive to customers' and co-workers' needs, and happier if they had more control over their schedules. Then, using a variety of role plays and games, participants discussed how, when, and where they would like to work, how they could coordinate and communicate if hours were more varied and more employees worked remotely, and what everyday practices and interactions would need to change to support new work patterns. Common changes discussed were setting up conference call lines for meetings, clarifying tasks so "face time" is not used to evaluate productivity or commitment, contacting co-workers by instant message rather than stopping by their cubicles, and deciding whether a one- or two-hour break (e.g., a walk or errand during the work day) needed to be announced to one's team. Several work groups reporting to the same executive participated in each session. This allowed employees to hear their manager's perspective, and vice versa, and exposed them to other teams' approaches to these issues.

Although STAR primarily targeted practices and interactions at the team level, the intervention aligned these practices with an existing policy. Company policy required employees who wanted to work at home routinely to file a telecommuting agreement that had to be approved by their manager, director, and vice president (VP). Employees in STAR filled out the company's regular telecommuting agreement, but the whole group was granted blanket approval by their VP, rather than the case-by-case approval used before STAR (and in the usual-practice groups). The blanket approval was discussed in the first session and signaled top management's support for changes associated with STAR. Later sessions helped employees and managers jointly decide how much work at home was appropriate for different jobs, and how teams would communicate and coordinate with more variable schedules and more remote work.

Compared to most work-family initiatives, STAR is different in its collective and multilevel approach. Rather than provide select employees access to a flexible schedule or telecommuting based on a manager's approval of a request (Blair-Loy and Wharton 2002; Briscoe and Kellogg 2011), groups of employees were randomized to STAR. STAR's attempt to shift schedule control from managers to employees facilitated work at home and variability in work hours (i.e., changed individual work practices), but it also changed interactions at work because employees no longer asked permission to adjust their schedules or work location. STAR also altered the social meaning of these work patterns from being a special "accommodation" that may signal lesser commitment to being routine and accepted (Kelly et al. 2010; Kossek et al. 2011). Similarly, the broad effort to encourage managers to demonstrate support for employees' family and personal lives likely increased conversations about what was happening outside of work (i.e., changed interactions), while also encouraging changes in work practices, such as a manager attending a meeting for an employee who had an important work deadline or family obligation. These new interactions and practices have broader social meaning, signaling leadership's recognition and legitimation of employees' lives outside of work.

STAR's approach is consistent with pioneering action research that uses collective dialogues to reevaluate work processes and practices in the hopes of advancing both an organization's goals and work-life fit (Bailyn 2011; Perlow 1997, 2012; Rapoport et al. 2002). Our experimental design, however, allows for a more rigorous evaluation of the

initiative than has been possible in those studies. Moreover, STAR pairs bottom-up changes identified by employees with structured training to promote managerial supportiveness.

RESEARCH QUESTIONS

We investigate four broad research questions. (1) Does STAR increase employees' schedule control and their reports of supervisor support for family and personal life? (2) Does STAR improve employees' experience of the work-family interface? Specifically, does STAR reduce work-to-family and family-to-work conflict and increase perceived time adequacy for family among TOMO employees at a six-month follow up?

We hypothesize that STAR will increase schedule control, employees' perceptions of their supervisors' support for family and personal life, and family time adequacy, and that STAR will reduce conflict between work and family in both directions. This expectation is based on cross-sectional research that finds a relationship between the intended targets of STAR—schedule control and family-supportive supervision—and work-family conflict, as well as recent studies of similar workplace interventions. Yet there are several reasons STAR might have no or very limited effects. First, STAR critiques past management practices, such as managers setting schedules, rewarding "face time" or visibility, and expecting employees to drop personal concerns while they are at work. Resistance to these changes might arise from managers and employees who have built careers under the old expectations, as has been seen in other participatory management initiatives (Smith 2001; Vallas 2003). Second, the study of ROWE in Best Buy found positive effects (Kelly et al. 2011; Moen et al. 2011), but a randomized evaluation of a similar initiative might not find changes in another organization. ROWE was "homegrown" within the company and therefore customized to that organizational culture and workforce. STAR, in contrast, was brought into the organization and delivered by outside consultants. Additionally, STAR was implemented in TOMO as a pilot program with the understanding that top executives were not ready to adopt it across-the-board. In this study, work units were randomized to STAR or "usual practice" conditions. Some employees and mid-level managers may have believed that executives above them were not supportive and were therefore cautious about STAR themselves. Third, STAR's manager training component has not been previously shown to reduce work-family conflicts; the pilot study in grocery stores evaluated work-family conflict as a moderator of other work and health outcomes (Hammer et al. 2011). Finally, during the course of the study, it was announced that TOMO would be acquired by another firm (with the merger finalized after the follow-up data analyzed here). This reflects the reality of conducting field experiments, in that all conditions could not be controlled. The merger announcement raised questions about whether the current organizational culture would be sustained into the future and may have decreased employees' investment in STAR. Employees facing organizational restructuring often feel that implementing workplace interventions is unwise (Egan et al. 2007; Olsen et al. 2008).

(3) Does the STAR initiative make conditions worse for employees by increasing their work hours or job demands? Such unintended consequences might arise due to increased permeability of work and non-work across time and space and the resulting blurring of work and family roles (Chesley 2005; Glavin and Schieman 2010; Kelliher and Anderson 2010; Schieman and Glavin 2008). Employees may gain more control over when and where they work but simultaneously find themselves working more or feeling more pressed at work. Although generally conceptualized as a work resource, schedule control may operate more to intensify work demands by increasing employees' exposure to job pressures (Schieman 2013). This dynamic may be especially likely in a salaried, professional workforce like TOMO, where the employer does not pay overtime (so the employer has an interest in getting as many hours of work as possible) and employees'

devotion to work is both expected and experienced as intrinsically rewarding (Blair-Loy 2003, 2009; Perlow 2012).

(4) Do the effects of STAR differ depending on employees' vulnerability to work-family conflicts? In other words, are there heterogeneous treatment or intervention effects? Previous research finds that employees with higher family demands, captured by having children living at home and providing care for elderly relatives or other dependent adults, have greater work-family strain and thus a greater need for a flexible, supportive work environment (Michel et al. 2011; Moen et al. 2012). Family responsibilities are gendered, with mothers and wives still doing significantly more housework and childcare, on average (Bianchi et al. 2012). Also, work-family strains seem to weigh more heavily on mothers' well-being than on fathers (Nomaguchi, Milkie, and Bianchi 2005), and there is some evidence that mothers feel the burden of normative judgments even when they are viewed as high performers at work (Benard and Correll 2010). This suggests that mothers and fathers may benefit differently from STAR, although it is unclear whether mothers will benefit more because their family demands are greater, or fathers will benefit more because their work-family needs were not previously recognized or they had not pursued the marginalized flexible work options.

Previous research also leads us to expect that employees with fewer work resources at baseline, that is, those who report less schedule control and less supportive supervisors, will benefit more from STAR because they were more vulnerable to begin with. STAR may level the playing field by raising these employees' sense of schedule control and supervisor support to match that reported by their peers whose supervisors had previously been flexible and supportive. Employees with high work demands are also expected to be more vulnerable to work-family conflict and thus should benefit more from the intervention. However, it is unclear how increased schedule control and supervisor support—the work resources hypothesized to ameliorate work-family conflict—stack up against high work demands in the form of very long work hours or perceived job pressures (Blair-Loy 2009; Kelly et al. 2011; Schieman et al. 2009).

We also investigate whether STAR benefits employees with existing vulnerability as indicated by higher work-to-family and family-to-work conflict at baseline. Employees with high conflict at baseline may receive more benefit, in part because they have more room for improvement. STAR may be more salient and attractive to employees with high work-family conflict (Hammer et al. 2011), even though the initiative is not presented to employees as a work-family initiative.

It is also plausible that STAR brings benefits to parents and adult caregivers, but shifts burdens to employees whose non-work obligations are less extensive or obvious. If this is the case, employees with no dependents may experience more work-family conflicts under STAR or begin working longer hours or more intensely as their peers take advantage of the initiative. The popular and business press are attuned to the possibility of work-family backlash prompted by singles and workers without dependents taking on even more work as parents and adult caregivers attend to family needs (e.g., Shellenbarger 2012; Wells 2007), although there is little research evidence to date (cf. Casper, Weltman, and Kweisga 2007).

METHODS

Research Site and Interest in the STAR Intervention

This field experiment was conducted in the information technology (IT) division of a U.S. Fortune 500 organization. Division employees developed software, tested applications, responded to problems in applications and related networks, worked with clients to plan how applications could meet their needs, and worked as project managers and administrative staff. Formative research indicated that the organization had fairly traditional expectations for employees, who

attempted to prove themselves as serious, dedicated, and committed by working long hours, prioritizing work over family, pursuing uninterrupted professional careers, and traveling as requested. Historically, employees received generous benefits and good wages in return. Mean tenure was over 10 years.

As the organization grew over the past 10 years, it came to rely on technology to coordinate projects. Many work groups were not co-located in the same building, city, or state. Additionally, since about 2005, some employees worked closely with offshore employees and contractors (primarily in India). Many U.S. employees were expected to be available for questions from their offshore collaborators at any hour and routinely participated in early morning conference calls—usually from home—to coordinate work. Approximately 20 percent of employees had a supervisor in a different state at the time of the baseline survey. Clearly, remote work and coordination across time zones was happening even before STAR was introduced to some groups.

Formative research revealed wide variation in managers' acceptance of variable schedules and working at home, especially when employees did so to meet personal or family obligations rather than in response to work demands (Leslie et al. 2012). Some employees expressed frustration with the variation in managers' approaches, expectations, and application of the company's telecommuting policy. Prior managerial discretion meant some employees experienced the STAR intervention as an opportunity to implement new practices, and others saw it as an endorsement of practices that were already happening informally. Our analysis examines whether effects were greater or smaller depending on baseline schedule control and supervisor support.

Human resources managers and IT executives were interested in STAR for several reasons. They recognized that coordination with offshore staff meant many U.S. employees were working longer or more variable hours, with the possibility of burnout and increased turnover. Executives also heard employees' frustrations after one vice president clamped down on remote work. Insiders recognized that the firm was not seen as particularly innovative and hoped that changes would attract applicants from newer, smaller firms. Work-family conflict was not presented as a central concern by leadership, although there was recognition that employees with family responsibilities and high work demands were especially vulnerable to burnout. Executives also expressed interest in the possibility that improving work conditions might improve employees' health, and perhaps help contain health care costs, but that did not seem to be the initial motivation.

Researchers selected this organization from possible industry partners because it offered multiple work units sufficient to support random assignment, geographic proximity to minimize study personnel's travel between locations, site and workforce stability to support the research for the study duration, and specific endorsement from the IT executives to support all research activities.

Development and Delivery of STAR Intervention

STAR was developed jointly by researchers and outside consultants. Drawing on formative research in the company and the two intervention studies reviewed earlier, the researchers and consultants worked together to customize the intervention materials for this workforce. Computer-based training on supervisor support for family and personal life was customized to include appropriate examples of managers' support for professional development (e.g., asking employees about adequacy of tools or resources and providing help as needed) as well as a video message from the top IT executive endorsing STAR. Participatory training sessions were customized by including IT-relevant discussions of communicating by instant messenger, coordinating with offshore staff, and handling periods of high demands around software releases. The intervention is described further in Kossek and colleagues (2014) and materials are available, at no cost, at http://workfamilyhealthnetwork.org.

STAR was rolled out as a company-sponsored pilot program announced by IT executives. It was common within the IT division to pilot new initiatives, including programs developed in-house or brought in by consultants. The company provided executive sponsorship, human resources staff time, and space for training, and it allowed participants to attend STAR sessions and complete related activities during the workday. Four facilitators delivered STAR training at TOMO; they were supported by research grants but were not identified with the researchers within the company. Additional STAR coordinators scheduled sessions, computer-based training, and self-monitoring activities; they observed training and later conducted interviews to learn how STAR was implemented. This was a hybrid role with some research elements, but the outside facilitators served as the primary face of STAR. The separation of STAR and the broader study was not complete, because top IT executives, human resources managers, and a small advisory board knew of the link; we pursued this strategy to try to avoid differential participation in the study by the control group and to ensure the core data for the evaluation were collected by research staff who were "blind" to employees' condition (i.e., STAR or control).

Randomization

The randomization process began by identifying groups of employees and managers who would be treated as "study groups." Researchers identified 56 study groups in close coordination with company representatives. Some study groups were large teams of workers reporting to the same manager, while other study groups included multiple teams who either reported to the same senior leadership or worked closely together on the same application. We refer to these units as *study* groups to denote they were aggregations of work groups that operated in the organization.

Company representatives and our formative research suggested that study findings would be discounted if all or most of the groups receiving the intervention were in a single job function, reported to any one VP, or represented particularly small or particularly large work groups. For example, if all groups randomized to STAR happened to be software development teams, managers and employees in other job functions would likely view the findings as irrelevant to them. We therefore decided on a randomization design that would ensure balance on job function, VP, and size of the study group. We modified a biased-coin randomization technique for use with group randomization (Bray et al. 2013; Frane 1998). The first four study groups were randomized using simple randomization. Subsequent study groups were hypothetically assigned to intervention, and then the null hypothesis of balance across study conditions (i.e., intervention or usual-practice control) was tested for each randomization criterion (i.e., job function, size of study group, and VP) separately; each group was then hypothetically assigned to usual practice. The lowest p-value derived from the balance test across randomization criteria was used in adaptive randomization procedures, to minimize risk of imbalance.

Study Recruitment and Data Collection

Workers were eligible to participate in the study if they were employees (not contractors) located in the two cities where data collection occurred. Additionally, one study group whose employees were represented by collective bargaining agreements was excluded due to concerns the intervention might conflict with contractual work rules. Recruitment materials emphasized the value of a study investigating connections between employees' work, family, and health for employees (who received some health information), the employing organization, and scientific knowledge more broadly; there was no reference to STAR. Recruitment materials emphasized the independence of the research team from TOMO and the confidentiality of individual data. Computer-assisted personal interviews, lasting approximately 60 minutes, were conducted at the workplace on company time, at baseline and six months later.

At baseline, 70 percent of eligible employees participated (N = 823), and 87 percent of baseline participants completed the six-month follow-up (N = 717). Figure 1 confirms that response rates were similar for employees in intervention and control conditions and that all study groups identified as eligible for the study were randomized and had some employees who participated. Our analyses focus on the respondents who completed both baseline and six-month surveys, with the following exclusions. We excluded 15 employees who were randomized to the intervention condition, but were never invited to participate in STAR sessions due to a staff error. Additionally, we excluded eight employees because they shifted reporting structures and began reporting to a manager already going through STAR. The resulting analytic sample consists of 694 employees nested in 56 study groups. See Table S1 in the online supplement (http://asr.sagepub.com/supplemental) for analyses of response bias and baseline means by condition to confirm balance (i.e., randomization created comparable groups, and therefore we can analyze effects of STAR without adjusting for individual characteristics).

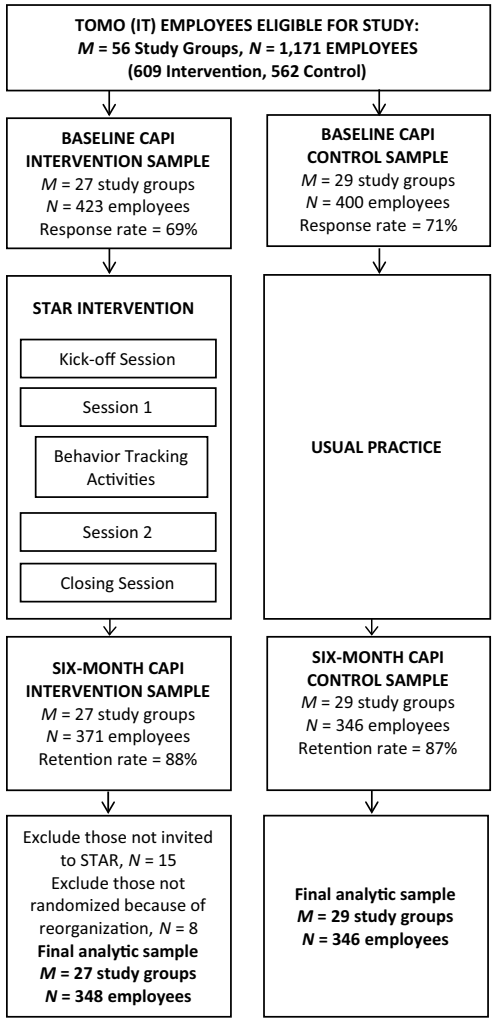

Figure 1. Study Design and Response Rates

MEASURES

Outcomes

For all scales analyzed as outcomes, Table 1 provides wording of items, source, reliability scores, and response values.

Schedule control measures the degree to which employees report control over their work time and work location.[3] *Family supportive supervisor behaviors* (FSSB) is designed to measure employee perceptions of supervisors' behavioral support for family and personal life. It is a separate construct from general supervisor support, as some supervisors are supportive of employees' job concerns but not their family concerns. We use a four-item version, with questions measuring emotional support, instrumental support, role modeling, and creative management, validated by Hammer and colleagues (2013). *Work-to-family conflict* and *family-to-work conflict* reflect the degree to which role responsibilities from one domain are incompatible with the other. *Time adequacy with family* asks employees whether they had enough time during the past year to spend with their family. *Weekly hours worked* is measured with a single question: "About how many hours do you work in a typical week in this job?" The mean at baseline was 45 hours, with 29 percent reporting working more than 50 hours per week. *Psychological job demands* is a subscale of the Karasek and Theorell (1990) demands-control model measuring perceived pressure and overload.

Table 1. Description of Scales

Scale	Source	Variable Description	Cronbach's Alpha (Wave 1)	Cronbach's Alpha (Wave 2)	Values
Schedule Control	Thomas and Ganster 1995	How much choice do you have over when you take vacations or days off? How much choice do you have over when you can take off a few hours? How much choice do you have over when you begin and end each work day? How much choice do you have over the total number of hours you work each week? How much choice do you have over doing some of your work at home or at another location, instead of [insert company name/location]? How much choice do you have over the number of personal phone calls you make or receive while you work? How much choice do you have over the amount or times you take work home with you? How much choice do you have over shifting to a part-time schedule (or full-time if currently part-time) while remaining in your current position if you wanted to do so?	.802	.825	1 = Very little 2 = Little 3 = A moderate amount 4 = Much 5 = Very much
Family-Supportive Supervisor Behaviors	Hammer et al. 2013	Your supervisor makes you feel comfortable talking to him/her about your conflicts between work and non-work. Your supervisor works effectively with employees to creatively solve conflicts between work and non-work. Your supervisor demonstrates effective behaviors in how to juggle work and non-work issues. Your supervisor organizes the work in your department or unit to jointly benefit employees and the company.	.874	.876	1 = Strongly Disagree 2 = Disagree 3 = Neither 4 = Agree 5 = Strongly Agree
Work-to-Family Conflict	Netemeyer et al. 1996	The demands of your work interfere with your family or personal time. The amount of time your job takes up makes it difficult to fulfill your family or personal responsibilities. Things you want to do at home do not get done because of the demands your job puts on you. Your job produces strain that makes it difficult to fulfill your family or personal duties. Due to your work-related duties, you have to make changes to your plans for family or personal activities.	.915	.914	1 = Strongly Disagree 2 = Disagree 3 = Neither 4 = Agree 5 = Strongly Agree

(continued)

Table 1. *(continued)*

Scale	Source	Variable Description	Cronbach's Alpha (Wave 1)	Cronbach's Alpha (Wave 2)	Values
Family-to-Work Conflict	Netemeyer et al. 1996	The demands of your family or personal relationships interfere with work-related activities. You have to put off doing things at work because of demands on your time at home. Things you want to do at work don't get done because of the demands of your family or personal life. Your home life interferes with your responsibilities at work, such as getting to work on time, accomplishing daily tasks, and working overtime. Family-related strain interferes with your ability to perform job-related duties.	.835	.863	1 = Strongly Disagree 2 = Disagree 3 = Neither 4 = Agree 5 = Strongly Agree
Psychological Job Demands	Karasek et al. 1998	You do not have enough time to get your job done. Your job requires very fast work. Your job requires very hard work.	.575	.581	1 = Strongly Disagree 2 = Disagree 3 = Neither 4 = Agree 5 = Strongly Agree

Note: Employees are restricted to those (1) who completed both Wave 1 and Wave 2 CAPI, (2) excluding 15 employees in work groups 56b, 56b.1, 56b.2, and 56b.3, and (3) excluding eight employees in work group 14a.3 for whom we do not have randomization-related variables.

If a respondent skipped a specific item but completed at least 75 percent of the scale (e.g., four out of five items in the work-to-family conflict scale), we assigned the mean from other responses by the same respondent to other questions in that scale. If the respondent did not complete at least 75 percent of the scale (or did not complete the time adequacy item or the job demands scale), they were omitted from that model.

Variables for Subgroup Analyses

The subgroup analyses investigate whether employees with greater vulnerability to work-family conflict, as measured by high family demands, low work resources, and more conflict at baseline, benefited more from STAR. *Child at home* is an indicator of parents (or step-parents) with children under age 18 living in their home at least four days per week. Childless employees and parents with grown children or children who do not live in their homes were coded as *child not at home*. We investigated different effects for mothers and fathers by interacting gender and *child at home* (n = 121 mothers, 205 fathers). We also created four categories of family demands: *child at home only* (n = 261) for employees with children at home but no adult care reported; *care for adults* (n = 95) for respondents reporting adult caregiving responsibilities at least three hours per week but no children under age 18 at home; *child at home and care for adults* ("sandwich generation," n = 65); and employees with *no dependents* (n = 273) reported. Employees with no dependents may have a spouse or an adult child (not receiving care) living in the home. *Low schedule control* (n = 122) was indicated by a mean response of "very little" or "little" choice over one's schedule (i.e., mean < 3 at baseline). *Lower supervisor support* (n = 308) reflects strong disagreement, disagreement, or neutral responses to affirmative statements about supervisors' support for family and personal life (i.e., mean < 4 at baseline); we included neutral responses here because relatively few employees (n = 84) disagreed outright with the affirmative statements regarding supervisor support. *High work-to-family conflict* (n = 147) captured employees who agreed or strongly agreed that work interfered with family and personal life at baseline (i.e., mean ≥ 4). Family-to-work conflict was much less common; only 86 employees strongly agreed, agreed, or said they neither agreed nor disagreed that family interfered with work (coded *higher family-to-work conflict* if mean > 3). The skewed distribution of family-to-work conflict is not surprising, given previous research and the cultural expectation that professional workers will organize their lives around work (Blair-Loy 2003; Jacobs and Gerson 2004). To assess whether STAR brought benefits to employees with especially high work demands, we compared employees working 50 or more hours (n = 200) with those working fewer than 50 hours (n = 494) (Cha 2010; Schieman et al. 2009) and dichotomized *high psychological job demands* (n = 253) at the mean ≥ 4, indicating responses of agreement or strong agreement that the job required very hard work, it required very fast work, and there was not enough time to do the job.

ANALYSIS

We estimated generalized linear mixed models (using PROC MIXED in SAS) on repeated measures with random effects for the level-2 unit nested in experimental condition, that is, for study groups in STAR or usual practice. This is a member cohort analysis, using pre- and post- data on individuals nested in study groups (Murray 1998). Specifically, we used mixed models of the following form to assess the effect of the intervention on outcomes:

$$Y_{ij:k:l} = \mathrm{f}\big(\beta_0 + \beta_1 C_l + \beta_2 T_j + \beta_3 T_j C_l + \boldsymbol{\beta}_4 \boldsymbol{X}_{ij:k:l} + \boldsymbol{\beta}_5 \boldsymbol{RAND}_k + \boldsymbol{\gamma}_0 \boldsymbol{G}_{k:l} + \boldsymbol{\gamma}_1 \boldsymbol{M}_{i:k:l} + \boldsymbol{\gamma}_2 \boldsymbol{TG}_{jk:l}\big) + \varepsilon_{ij:k:l} \quad (1)$$

Here $Y_{ij:k:l}$ is the outcome for person i observed at time j, nested within group k, which is in condition l; f(•) is a link function; and $\varepsilon_{ij:k:l}$ is an iid (independent and identically distributed) error or residual; here we estimate linear models. The βs are fixed-effect parameters to be estimated, and the γs are random-effect

parameters (i.e., variance components) to be estimated. C_l is a dichotomous variable indicating membership in the STAR intervention condition, T_j is a dichotomous variable indicating the jth time point, and T_jC_l is the interaction between condition and time (here STAR x Wave 2). $\boldsymbol{X}_{ij:k:l}$ is a vector of demographic and other potential confounds; none are included here because randomization created balance on potential confounds. $\boldsymbol{RAND}_k$ is a vector of randomization factors used in the biased coin algorithm, that is, job function and study group size. These are included as control variables. $\boldsymbol{G}_{k:l}$ is a vector indicating group membership, $\boldsymbol{M}_{i:k:l}$ is a vector of individual indicators, and $\boldsymbol{TG}_{jk:l}$ is a vector of interactions between time points and group membership. Given the specification of the fixed effects, β_3 captures the effect of the intervention at that follow-up time point (Murray 1998) and can be thought of as the difference-in-difference estimate.

Our central analyses employ an intent-to-treat framework that provides a conservative estimate of the intervention effect. This means all employees eligible for receiving the treatment were coded as being in the STAR condition, even though individuals in STAR-randomized study groups decided how much to participate in the training. Sessions were held during work hours, and the mean attendance rate for the analytic sample was 74 percent of sessions; 10.4 percent of employees (n = 37) attended fewer than half of the STAR sessions, and 3.9 percent (n = 14) of those randomized to STAR attended no sessions. Supplemental analyses move beyond the intent-to-treat framework by comparing effects of STAR for employees with higher and lower participation.

RESULTS

Findings on Central Research Questions

We first investigate whether STAR improved work resources for managing work-family challenges. STAR increased employees' schedule control and supervisor support for family and personal life significantly, compared to changes in the control groups, providing an affirmative answer to our first research question. In Table 2, the STAR x Wave 2 coefficient (bolded) is the intervention (or treatment) effect of interest with a difference-in-difference interpretation. Other covariates include condition, time point, study group size, and core job function. Employees in STAR perceived more control over where and when they worked and described their supervisors as more supportive of their personal lives, as seen in panels A and B of Table 2. Table 3 presents standardized effect sizes calculated by dividing the STAR x Wave 2 coefficient (from Table 2) by the standard deviation of the outcome at baseline.

In addition to evaluating whether employees' sense of the control and support available to them changed, we can also assess whether their work practices changed. We find that STAR encouraged employees to adjust their schedules based on personal needs and to work at home more. Employees in STAR were twice as likely to describe their schedules as "variable" at the six-month survey, going from 17 to 35 percent. Among employees in the usual-practice group, 21 percent reported a variable schedule at both waves. In questions asked only on the six-month survey, STAR respondents were significantly more likely than usual-practice employees to agree that they "fit in personal errands and appointments during work hours" and "change schedule as needed for personal/family life." Finally, mean hours of work at home almost doubled for STAR employees between the surveys (from 10.2 to 19.6 hours per week), while increasing significantly less for employees in usual-practice groups (from 10.8 to 12.3 hours per week). These findings provide evidence that schedule control was both perceived and enacted by employees in STAR.

Second, we find that all three measures of the work-family interface improved more for employees in STAR than for those in usual-practice control groups. The intervention effect for work-to-family conflict is marginally significant (p = .059) in panel C of Table

Table 2. Multilevel Intervention Effects on Work-Family Outcomes

	A. Schedule Control (M = 56 study groups, N = 1,388 person-waves)				
	Estimate	SE	DF	t Value	Pr > |t|
STAR	−.092	.079	52	−1.17	.247
Wave 2	.035	.029	54	1.20	.235
STAR x Wave 2	.231	.041	54	5.63	<.0001
# Employees for Randomization	.005	.003	52	1.45	.152
Core Function[a]	.006	.076	52	.08	.939
Intercept	3.505	.096	52	36.60	<.0001

	Subject	Ratio	Estimate
Intercept	studygroup(star)	.316	.046
CS	ID(studygroup x star)	1.782	.261
Residual		1	.146

	B. Supervisor Support for Family and Personal Life (M = 56 study groups, N = 1,379 person-waves)				
	Estimate	SE	DF	t Value	Pr > |t|
STAR	−.010	.087	52	−.12	.908
Wave 2	−.063	.037	54	−1.71	.094
STAR x Wave 2	.131	.052	54	2.51	.015
# Employees for Randomization	−.001	.003	52	−.21	.834
Core Function	−.094	.083	52	−1.13	.264
Intercept	3.923	.105	52	37.51	<.0001

	Subject	Ratio	Estimate
Intercept	studygroup(star)	.205	.047
CS	ID(studygroup x star)	1.555	.361
Residual		1	.232

	C. Work-to-Family Conflict (M = 56 study groups, N = 1,388 person-waves)				
	Estimate	SE	DF	t Value	Pr > |t|
STAR	.106	.117	52	.91	.366
Wave 2	−.103	.043	54	−2.42	.019
STAR x Wave 2	−.116	.060	54	−1.93	.059
# Employees for Randomization	−.006	.005	52	−1.22	.226
Core Function	−.024	.114	52	−.21	.834
Intercept	3.181	.142	52	22.44	<.0001

	Subject	Ratio	Estimate
Intercept	studygroup(star)	.360	.113
CS	ID(studygroup x star)	1.423	.447
Residual		1	.314

	D. Family-to-Work Conflict (M = 56 study groups, N = 1,388 person-waves)				
	Estimate	SE	DF	t Value	Pr > |t|
STAR	.088	.060	52	1.47	.147
Wave 2	.030	.030	54	1.00	.320
STAR x Wave 2	−.088	.043	54	−2.05	.045
# Employees for Randomization	.001	.002	52	.31	.756
Core Function	.117	.055	52	2.11	.040
Intercept	1.999	.071	52	28.20	<.0001

	Subject	Ratio	Estimate
Intercept	studygroup(star)	.094	.015
CS	ID(studygroup x star)	1.338	.214
Residual		1	.160

(continued)

Table 2. *(continued)*

	E. Enough Time for Family (M = 56 study groups, N = 1,360 person-waves)				
	Estimate	SE	DF	t Value	Pr > |t|
STAR	–.092	.069	52	–1.34	.187
Wave 2	–.039	.042	54	–.92	.360
STAR x Wave 2	.137	.059	54	2.32	.024
# Employees for Randomization	–.001	.002	52	–.22	.826
Core Function	–.008	.062	52	–.12	.902
Intercept	3.515	.080	52	43.95	<.0001
	Subject	Ratio	Estimate		
Intercept	studygroup(star)	.056	.016		
CS	ID(studygroup x star)	.825	.241		
Residual		1	.292		

Note: Employees are restricted to those (1) who completed both Wave 1 and Wave 2 CAPI, (2) excluding 15 employees in work groups 56b, 56b.1, 56b.2, and 56b.3, and (3) excluding eight employees in work group 14a.3 for whom we do not have randomization-related variables. For scales, we imputed the mean from a respondent's responses to other questions in the scale; it is only imputed if a respondent answered 75 percent or more of the questions in the scale.
[a]The core function identifies groups where most individuals were involved in software development; groups dominated by other IT jobs are the reference group.

Table 3. Intervention Effect Sizes

Outcomes	Estimate	Effect Size	Pr > |*t*|
Schedule Control	.231	.342	<.0001
Supervisor Support for Family and Personal Life	.131	.160	.015
Work-to-Family Conflict	−.116	−.122	.059
Family-to-Work Conflict	−.088	−.138	.045
Enough Time for Family	.137	.178	.024
Work Hours	−.263	−.047	.482
Psychological Job Demands	−.075	−.107	.106

Note: Effect size is STAR x Wave 2 coefficient from Table 2 (and parallel models for hours and job demands) divided by the standard deviation of the outcome at baseline.

2, and we see a statistically significant intervention effect for family-to-work conflict (in panel D of Table 2). STAR also significantly increased reported time adequacy with family members (in panel E of Table 2). Again, STAR produced changes in work-family conflict and time adequacy while employees continued in the same jobs—many with the same long hours and work pressures—and in the same family situations. These findings provide clear evidence that a workplace's expectations, interactions, and practices affect employees' well-being, in the form of work-family conflict, directly and in ways not dictated by the work itself.

For our third research question, we turn to models investigating whether STAR had negative consequences by increasing work hours or psychological job demands. Employees might experience work intensification as an unintended byproduct of STAR increasing the permeability of work and non-work across time and space; this would be the double-edged sword of workplace flexibility (Blair-Loy 2009; Perlow 2012; Schieman et al. 2009). Table 3 shows no evidence that this occurred. In fact, STAR respondents were less likely to agree with the item (from the job demands scale) stating "you do not have enough time to get your job done," at a marginally significant ($p = .06$) level. This finding suggests the intervention *relieved* time pressures for employees (at work as well as with family time, seen previously) and contradicts the work intensification hypothesis.[4] More generally, Table 3 provides evidence that STAR's effects were larger for the outcomes directly targeted by the intervention. Schedule control moved the most, with modest but significant increases in family-supportive supervision and adequate time for family.

Our fourth research question considers whether employees with greater expected vulnerability to work-family conflicts experienced more benefits from the intervention. We operationalize vulnerability as higher family demands, lower work resources at baseline, work-family interference reported at baseline, and high work demands that might overwhelm any positive changes that could come with STAR. Figures 2a through 2e show the intervention effect (STAR x Wave 2 coefficient) for the unstratified models with the full sample (see Table 2), and then intervention effects for stratified models estimated separately for each subgroup. The overall intervention effect for the full study population is marked with a dotted horizontal line, with confidence intervals from subgroup models shown with bars. Table S2 in the online supplement provides more detail.

We find that effects of STAR on schedule control are of similar magnitude almost across the board (see Figure 2a). Consistent increases in schedule control suggest that the intervention benefited employees with all types of family situations and those with lower and higher schedule control at baseline. Effects of STAR on schedule control were somewhat larger for employees who did not describe their supervisors as supportive at baseline (intervention effect of .32, $p < .0001$,

compared to .23 in the unstratified model). STAR effects were similar across work hours and job demands categories; this suggests that even employees who faced high work demands at baseline felt STAR gave them more choice over when, where, and how much they worked.

The effects of STAR on supervisor support for family and personal life differed by family status and work resources at baseline (see Figure 2b and supplement Table S2). Effects of STAR on supervisor support for family and personal life were notably larger for fathers (.26) and sandwich-generation employees who had at least one child at home plus adult-care responsibilities (.30, compared to .13 in the unstratified model). Perhaps mothers, whose family responsibilities are often more visible and more normative, received support from managers regardless of condition, whereas STAR encouraged managers to demonstrate support for others' family responsibilities. Additionally, employees who reported lower supervisor support, higher work-to-family conflict, or higher family-to-work conflict at baseline saw especially large effects of STAR on supervisor support for family and personal life. STAR also had greater effects on supervisors' family support among employees who reported their jobs were quite demanding.

With regard to work-to-family conflict, we find further evidence that employees with more vulnerability benefited more from STAR (see Figure 2c and supplement Table S2). In particular, sandwich-generation employees saw the largest benefits of STAR with regard to work-to-family conflict; among these employees, the STAR intervention effect is –.48 ($p = .01$), compared to –.12 for the unstratified model. STAR effects on work-to-family conflict are also larger for employees who did not rate their supervisors as supportive of family at baseline (–.25, compared to –.12 in the unstratified model). In models of family-to-work conflict, women who did not have children at home (most of whom did have a spouse or partner) saw the greatest effects of STAR (see Figure 2d), although STAR mothers' mean family-to-work conflict also declined.

As seen in Figure 2e, STAR brought larger benefits to mothers with regard to reporting enough family time (intervention effect of .30, $p = .03$, compared to the unstratified effect of .14). Employees putting in *more* than 50 hours per week at baseline saw somewhat greater increases in time adequacy under STAR (intervention effects of .25, $p = .02$, compared to .14 for the unstratified model), although effects of STAR on work-to-family conflict and family-to-work conflict were nonsignificant among employees working long hours (see Table S2 in the online supplement).

In summary, employees with greater family demands and fewer work resources (particularly moderate or low supervisor support for personal life) at baseline experienced greater effects of STAR. A partial exception is the effect of STAR on schedule control, which is similar across most subgroups. Additionally, the findings suggest that STAR brought some benefits to employees working longer hours—by providing greater schedule control, supervisor support for family and personal life, and increasing time adequacy with family—but did not override the effect of long work hours interfering with family and personal life.

The question remains, though, whether employees with fewer family responsibilities also benefited, or instead took on a greater burden at work. Employees with no dependents experienced the benefits of STAR with regard to schedule control but saw smaller, nonsignificant effects for the other outcomes. STAR had no effects on work hours or psychological job demands in the full sample, but perhaps STAR had these pernicious effects among employees who did not have dependents making claims on their time or energy. The effect of STAR on work hours was negative for parents of children under age 18 (–1.14 indicating a decline of about one hour per week, $p = .03$), but it was not statistically significant for employees with no dependents (see Table S2 in the online supplement). This suggests that STAR helped parents trim their work time somewhat, but we find no evidence that other employees took on that work in this

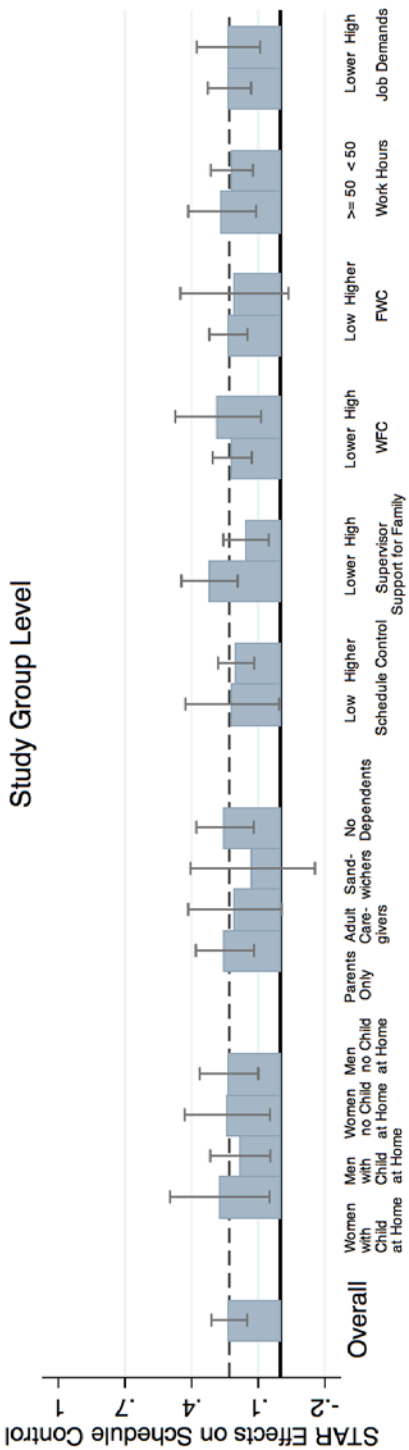

Figure 2a. Intervention Effects for Schedule Control, by Subgroups

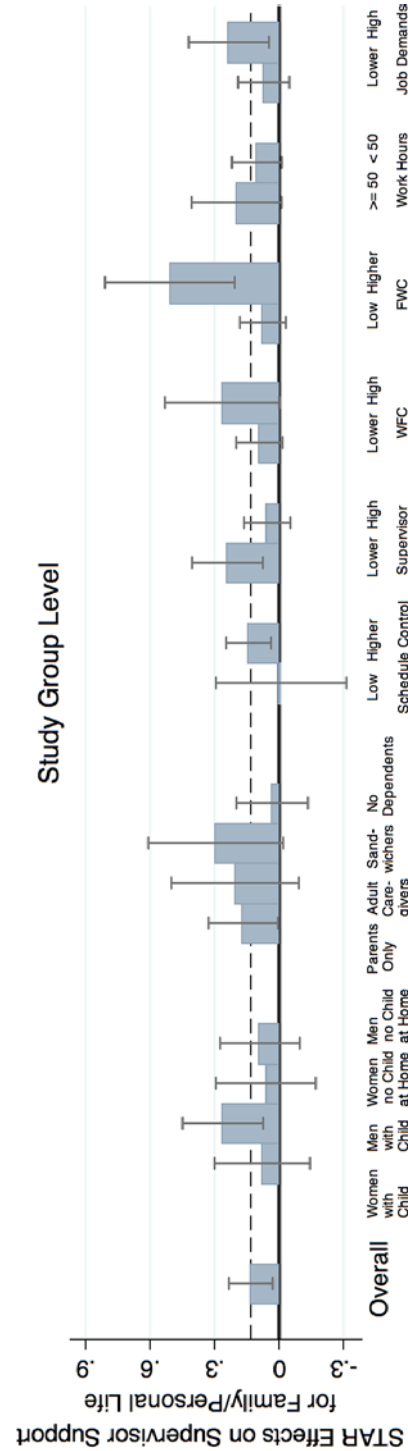

Figure 2b. Intervention Effects for Supervisor Support for Family, by Subgroups

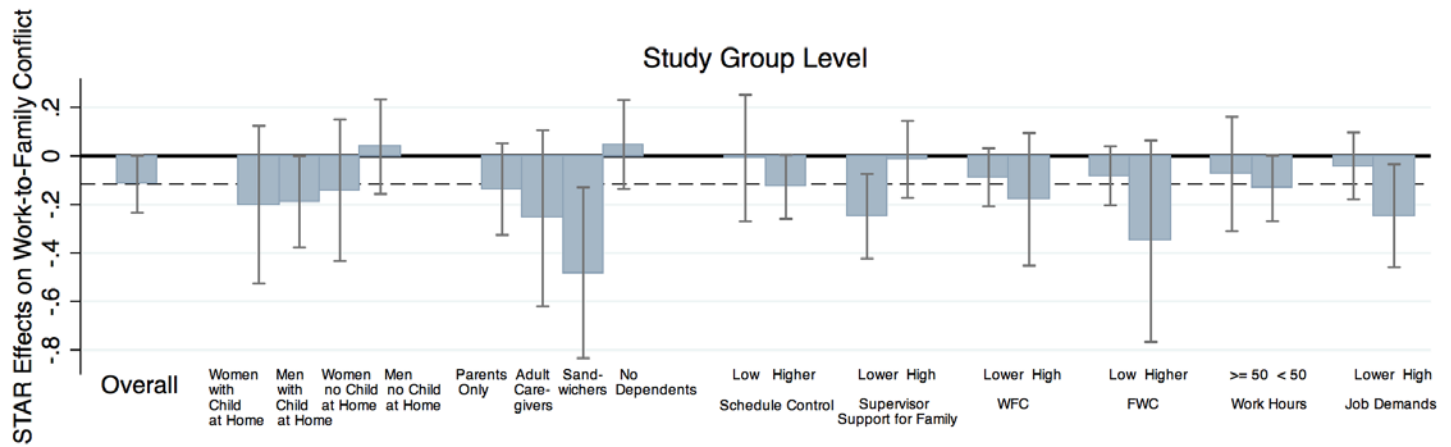

Figure 2c. Intervention Effects for Work-to-Family Conflict, by Subgroups

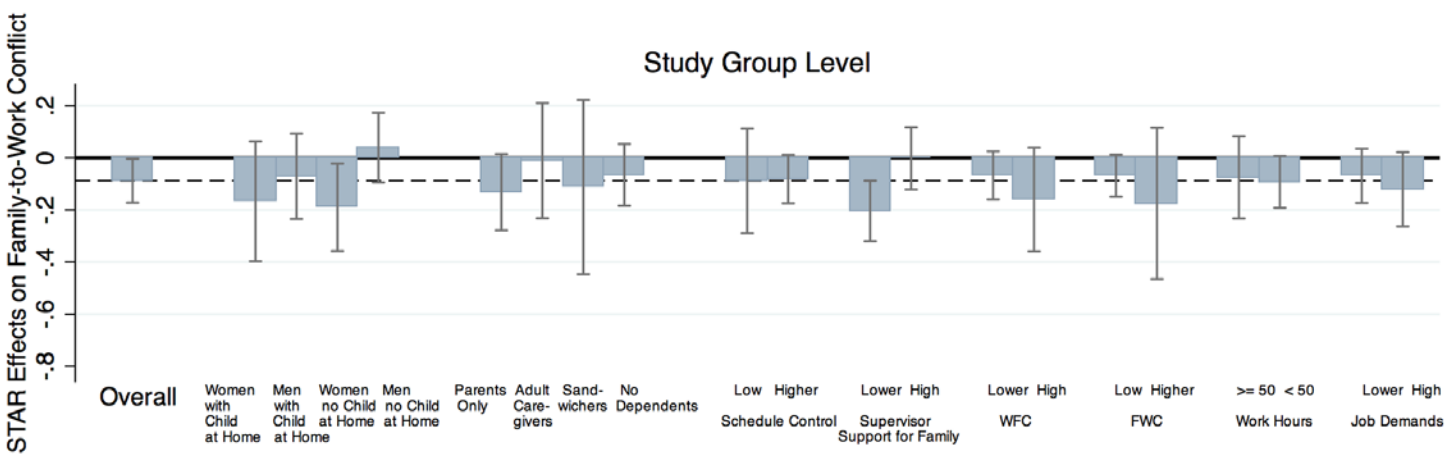

Figure 2d. Intervention Effects for Family-to-Work Conflict, by Subgroups

salaried professional setting. There is also no evidence that psychological job demands increased for any subgroup; in fact, STAR may have reduced job demands for men with no children at home (–.16, $p = .06$), as shown in Table S2. We also investigated effects of STAR specifically for singles with no children or adult-care responsibilities ($N = 77$, $M = 35$ study groups), the group that might absorb additional work if work-family backlash claims are correct. We find no significant effects of STAR on these employees' work hours or psychological job demands. STAR—which was deliberately available to all (randomized) employees, regardless of family situations—did not shift burdens from parents or caregivers to others, but it brought only limited benefits to employees with few family responsibilities.

Additional Analyses

Intent-to-treat analyses are expected in experimental designs, because randomization creates equivalent groups on observable and unobservable factors (Murray 1998; Schulz, Altman, and Moher 2010). Analyses that compare employees who participated more in STAR with those who did not participate reintroduce selection issues, because employees who chose to attend more training and invest in the program may differ from those who gave less time and commitment, in both measured and unmeasured ways (e.g., openness to change, salience of work stressors, emotional intelligence, or investment in an ideal-worker career strategy) (Ludwig et al. 2008; Sampson 2008). On the other hand, including employees with low or no participation in STAR sessions may dampen the apparent effects and perhaps hide negative effects for employees who were randomized to treatment but did not actively participate. We expect employees who participated in more sessions saw greater changes with STAR than did employees who were randomized to treatment but "exposed" to fewer of these messages when attending sessions.

Moving beyond the intent-to-treat framework, we examine whether employees who

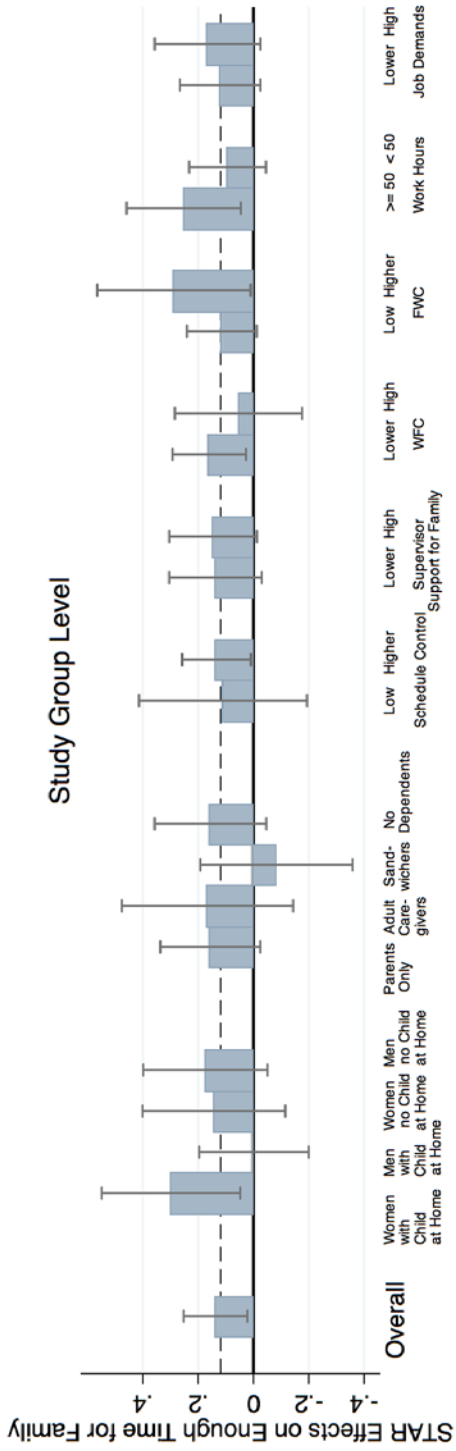

Figure 2e. Intervention Effects for Enough Time for Family, by Subgroups

attended more sessions benefited more from STAR. We constructed two subsamples based on attendance rate: (1) employees who were randomized to STAR and participated in 75 percent or more sessions (n = 257, 72 percent of those randomized to STAR) compared to all employees in the control group, and (2) employees who were randomized to STAR and participated in less than 75 percent of sessions (n = 98) compared to all employees in the control group. Results from repeated measures analysis for each group show that employees who attended more sessions indeed benefited more from STAR. The STAR intervention effect for schedule control was .28 ($p < .0001$) for employees who attended at least three-fourths of the sessions; it was smaller and not significant for employees who participated in fewer sessions. For supervisor support for family and personal life, the intervention effect was .17 ($p = .01$) among employees with high attendance but small and not significant for employees who attended fewer sessions. Similarly, employees who participated in more sessions saw significant and larger decreases in work-to-family (–.17, $p = .01$) and family-to-work (–.11, $p = .03$) conflict; intervention effects were much smaller and not significant for employees who participated in fewer sessions. Time adequacy with family exhibited the same pattern. STAR did not appear to affect work hours regardless of attendance rates. Employees who attended more sessions, however, saw a marginally significant reduction in perceived job demands (–.10, $p = .06$); no significant intervention effect was detected for the other group. In summary, the benefits of the initiative were concentrated among employees who attended most or all of the STAR sessions.

As noted earlier, randomization occurred at the level of study groups, an aggregation of work groups or teams by researchers. Analysis at the work group (M = 120) level that better reflects the day-to-day organization at TOMO found nearly identical intervention effects. Intervention effects are also robust to inclusion of a variable indicating whether a respondent's baseline survey was completed before or after announcement of the upcoming merger.

CONCLUSIONS

This study makes theoretical and empirical contributions to work-family research, to broader sociological questions, and to policy development. First, we provided a multilevel conceptualization of how workplaces foster work-family conflict. We argued that an ideal-worker schema underlies workplace policies, practices, and interactions that implicitly give paid work primacy over personal or family commitments and assumes managerial control over workers' time. Mutually reinforcing policies, practices, interactions, and expectations for oneself and others constitute a structure of work that exacerbates work-family conflict. This structure operates at multiple levels: the organization, work group or team, dyads (supervisor-subordinate and peer-to-peer), and individuals' own work practices and expectations. Second, we developed and analytically described a social intervention that operated at multiple levels: it attempted to disrupt the structure of work by changing established practices and interactions, providing new interpretations of formerly marginalized ways of working, and aligning policies to support new practices. Third, we utilized a group-randomized trial to rigorously evaluate the effects of this social intervention on employees' experience of the workplace (particularly employees' control over work time and supervisors' support for personal life) and the work-family interface. By doing so, we demonstrated more conclusively that work-family conflicts are not simply private troubles of individual workers, but can be changed within workplaces. More broadly, this study contributes to the sociological literature on social structures and individual well-being by using an experimental design that supports causal conclusions about the effect of changes in a given social environment for individuals' subjective experience of their lives.

We provide the first experimental evidence that workplace interventions can reduce

work-family conflict among employees and change work resources, specifically increasing employees' control over the time and timing of their work and the support they receive from supervisors for their family and personal lives. We find clear evidence of benefits for employees, with regard to improvements in schedule control, supervisor support for family and personal life, work-family conflict, and family time adequacy over six months, although the magnitude of change is modest. Additionally, STAR changed work practices, increasing work at home and employee-driven variability in schedules. We also find that employees who are likely more vulnerable to work-family conflicts, as measured by greater family demands and lower supervisor support at baseline, benefited more from the intervention. Recent research suggests that schedule control further blurs the boundaries between work and non-work in ways that may encourage longer and more intensive work (especially among salaried, professional workers) (Blair-Loy 2009; Schieman 2013), but we find no evidence that the intervention increased work hours or psychological job demands; instead, work hours declined slightly for parents randomized to STAR.

The reduction of work-family conflict has implications for health, family well-being, and gender inequality. Work-family conflict has been linked to mental and physical health and to health behaviors, in studies with cross-sectional and longitudinal designs and with both objective measures and self-reports (Allen and Armstrong 2006). Health outcomes associated with work-family conflict include hypertension (Frone, Russell, and Cooper 1997), sleep (Lallukka et al. 2010), and use of alcohol and cigarettes (Frone, Barnes, and Farrell 1994; Grzywacz and Marks 2000; Roos, Lahelma, and Rahkonen 2006). Work-family conflict is associated with strain in marriages (Matthews, Conger, and Wickrama 1996) and parent-child relationships (Cinamon, Weisel, and Tzuk 2008), including higher conflict and lower intimacy in these relationships. Employees' experience of work-family conflict also has the potential to cross over to affect the health and well-being of spouses and children (Hammer et al. 1997; McLoyd, Toyokawa, and Kaplan 2008). Work-family conflict can reinforce gender inequality because women who experience intense conflict and cultural pressure to devote themselves fully to families are more likely to "scale back" their hours or leave the labor force (Moen and Roehling 2005; Stone 2007). These decisions affect the careers of these individual women, but they also reinforce gender beliefs and discrimination against mothers and the marginalization of caregivers (Correll, Benard, and Paik 2007; Williams 2000).

Findings from this study can inform the development of future corporate and public policy, as well as research on organizational change. The work redesign approach studied here, in which employees and managers were invited to reconsider when, where, and how work was done and how they could offer professional and personal support to colleagues, differs from common flexible work policies that allow some employees to alter their work slightly, with managerial permission, without a broad examination of the way work is done. Our findings suggest the STAR approach leads to more meaningful changes grounded in and customized to specific organizational contexts and job requirements—compared to instituting a more standardized flexible work policy that, in practice, is available only to employees with supportive managers (Perlow and Kelly 2014). One limitation of this approach is that it requires support from managers and executives and employees must be confident they can take control of when, where, and how they work and still be judged as good workers. These initiatives can be cancelled with changes in leadership or in leadership's evaluation of their relative costs and benefits. However, this is true for any workplace policy not required by law. In the spring of 2013, a new executive at Best Buy ended ROWE (an initiative quite similar to STAR), just after a new executive at Yahoo cancelled a more standard telecommuting policy (Cohan 2013; Maynard 2013; Raftery 2013).

Research comparing the effectiveness of more common flexible work policies and work redesign approaches, in terms of work-family conflict and gender inequality, would be valuable. Furthermore, it would be fruitful to consider how public policies, with their ability to reach more workers and their normative power for describing what good employers should do, might incorporate elements of the approach studied here (Bielby 2013). Currently, the most innovative public policies give individual employees a right to request flexible work arrangements without retaliation (Ben-Ishai 2013), but advocates could couple that legal push with tools to look more collectively and carefully at work processes, practices, and interactions in pursuit of a dual agenda of better work and better lives (Rapoport et al. 2002). Engaging in this process with the backing of an employment law would likely increase employees' confidence in the legitimacy and sustainability of these changes.

Additional research is also needed to understand how organizational changes unfold in a variety of settings and the longer-term implications of this type of workplace intervention. Group-randomized studies are currently underway to examine innovative work-family interventions in health care organizations and among construction workers (Hammer et al. 2013; Kossek et al. 2014). Future analyses should investigate the persistence of these effects for employees over a longer period and in the face of organizational restructuring, such as the merger in TOMO, or leadership changes such as those seen at Best Buy and Yahoo. Researchers should also examine whether changes in work resources and work-family conflict contribute to improvements in employees' health and to the well-being of their partners and children. Finally, it is important to investigate whether employees exposed to work redesign interventions, and especially employees who make more changes in their work practices, suffer negative career consequences or whether the broad attempt to change expectations and norms (as well as practices) avoids "flexibility stigma" (Glass 2004; Leslie et al. 2012). Doing so will help establish whether new ways of working become fully institutionalized and legitimated in organizations that pursue broad organizational interventions, or whether the ideal-worker norm holds even in the face of a direct challenge.

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Notes

1. Another middle-range theory, job demands-control-support theory, also claims that employees' control

and the social support available in the workplace help workers manage high-demand jobs (Karasek and Theorell 1990). Applying this to work-family concerns, schedule control has been conceptualized as employees' control over when, where, and how much work is done (Kelly, Moen, and Tranby 2011; Lyness et al. 2012), and supervisor support for family as a specific form of social support (Kossek et al. 2011). These two perspectives offer similar predictions, although the job demands-resources model is broader than the demands-control-support theory (Bakker and Demerouti 2007; Schieman 2013).

2. A few randomized studies of work-family interventions have targeted employees' coping and parenting skills, with interested individuals randomized to the intervention or a wait-list control (Hartung and Hahlweg 2010; Martin and Sanders 2003); these interventions offered training to individuals seeking help rather than attempting to change the workplace.
3. Following recent research on schedule control, our scale includes the items on employees' choice over working at home or another location and taking work home. In white-collar settings, control over scheduling of work hours, total number of work hours, and work location are closely related, whereas that may not be the case in jobs involving direct customer service (e.g., retail, hospitality, and health care).
4. We thank a reviewer for suggesting we examine each item in this scale independently. We found no significant effects of STAR on the other job demands items.

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