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Clarifying Work–Family Intervention Processes: The Roles of Work–Family Conflict and Family-Supportive Supervisor Behaviors

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Drawing on a conceptual model integrating research on training, work–family interventions, and social support, we conducted a quasi-experimental field study to assess the impact of a supervisor training and self-monitoring intervention designed to increase supervisors' use of family-supportive supervisor behaviors. Pre- and postintervention surveys were completed, 9 months apart, by 239 employees at 6 intervention ($N = 117$) and 6 control ($N = 122$) grocery store sites. Thirty-nine supervisors in the 6 intervention sites received the training consisting of 1 hr of self-paced computer-based training, 1 hr of face-to-face group training, followed by instructions for behavioral self-monitoring (recording the frequency of supportive behaviors) to facilitate on-the-job transfer. Results demonstrated a disordinal interaction for the effect of training and family-to-work conflict on employee job satisfaction, turnover intentions, and physical health. In particular, for these outcomes, positive training effects were observed for employees with high family-to-work conflict, whereas negative training effects were observed for employees with low family-to-work conflict. These moderation effects were mediated by the interactive effect of training and family-to-work conflict on employee perceptions of family-supportive supervisor behaviors. Implications of our findings for future work–family intervention development and evaluation are discussed.

Keywords: work–family intervention, family-friendly practices, supervisor training, supervisor support

Although the importance of increasing employers' work–family support has been widely advocated, there are two primary gaps in the literature indicating a need for more rigorous longitudinal and quasi-experimental research that is based on theory and designed to examine the processes and mechanisms by which this support

operates. First, the work–family field is in need of studies that integrate research on family-specific supervisor support and work–family conflict with actual workplace human resource initiatives such as training designed to increase this support. Although there is a growing literature on the importance of perceived organiza-

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tional and supervisor support for family in relation to key work-family outcomes (cf. Allen, 2001), more research is needed to examine the processes by which employee perceptions of family-specific supervisor support link to human resource change initiatives. Specifically, supervisor training to increase support for family is currently among the most frequently advocated interventions by work-life experts (cf. Hopkins, 2005). Further, although hundreds of studies have examined perceived organizational support for the family, the antecedents of work-family conflict, and how work-family conflict relates to key outcomes such as job satisfaction (cf. Eby, Casper, Lockwood, Bordeaux, & Brinley, 2005; Kossek & Ozeki, 1998, 1999), this literature is not well connected to the research on work-family interventions.

A second gap that has been identified in recent reviews pertains to the need for improvement not only in the quality of intervention research but also in workplace intervention research in general (Macik-Frey, Quick, & Nelson, 2007; Scharf et al., 2008), and specifically within the work-family field (Casper, Eby, Bordeaux, Lockwood, & Lambert, 2007; Kelly et al., 2008). Critics of prior intervention research have argued that much of this work has limited effectiveness due to the use of tertiary prevention models rather than primary or secondary prevention models (Quick & Tetrick, 2003), and because this research frequently takes an individual rather than a workplace change perspective (Lamontagne, Keegle, Louie, Ostry, & Landsbergis, 2007; Scharf et al., 2008). In addition, relatively little research on the design of human resource interventions and work-family policies has been translated into actual organizational practice (Rynes, Colbert, & Brown, 2002). Very little work-family research has been implemented using quasi-experimental designs to assess interventions (e.g., Kelly et al., 2008; Lamontagne et al., 2007; Scharf et al., 2008). Finally, workplace interventions to reduce job stress and work-family stress have been criticized as poorly designed and implemented, suggesting that more research is needed to clarify the conditions under which these interventions are likely to be most successful (Lamontagne et al., 2007). For example, certain interventions may be particularly effective for specific subgroups within the organization and must in turn be designed to target those "in need" of the intervention, rather than the entire organization.

Study Goals, Model Overview, and Theoretical Rationale

To address these gaps in work-family intervention research, the current study evaluated the conditions and processes under which a work-family intervention, designed to increase employee perceptions of family-specific support, led to increased job satisfaction, decreased intentions to turnover, and improved physical health. Integrating theory from research on training, work-family interventions, social support, and perceived organizational support, we developed and tested the model shown in Figure 1. This model highlights the moderating effects of work-family conflict and the processes by which a family-supportive supervisor intervention impacts job and health outcomes. Using a longitudinal quasi-experimental design, we tested the model by assessing the impact of a training and self-monitoring intervention designed to increase supervisors' use of family-supportive supervisor behaviors (FSSB; Hammer, Kossek, Zimmerman, & Daniels, 2007) on health and job outcomes.

Overall, the model has three tenets. First is the premise that the effectiveness of a family-supportive training intervention will vary depending on the degree of employee need for support. Specifically, employee need for support is operationalized as those with high levels of work-to-family conflict and family-to-work conflict, compared with those with low levels of such conflict. Thus, relationships between the intervention and positive health and work outcomes are expected to be moderated by work-family conflict. Here we argue that those employees with higher levels of both work-to-family conflict and family-to-work conflict have a greater psychological need for support.

Second, we assume that increasing perceptions of work-family-specific supervisor support is necessary to improve work, family, and health outcomes and that this support is more strongly related to work-family conflict than is more general supervisor support (Kossek, Pichler, Bodner, & Hammer, in press). Although general supervisor support has been shown to enhance employee job attitudes such as job satisfaction (Thomas & Ganster, 1995; Thompson & Protas, 2005) and to be negatively related to turnover intentions (Thompson, Beauvais, & Lyness, 1999; Thompson

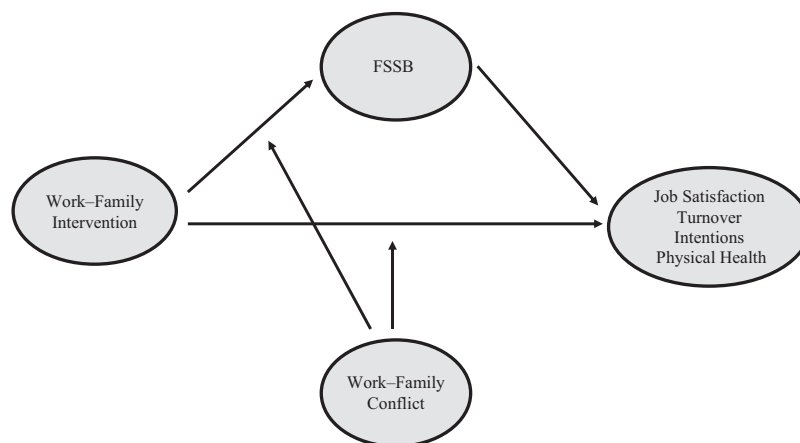


Figure 1. Conceptual model of linkages between a work-family intervention designed to increase family-supportive supervisor behaviors (FSSB) and job and health outcomes.

& Prottas, 2005), recent research has also demonstrated that employee perceptions of FSSB are positively related to these outcomes over and above the effects of general supervisor support (Hammer, Kossek, Yragui, Bodner, & Hanson, 2009). Thus, we focused our intervention to support work–family needs in order to produce stronger effects than would result from more general supervisor support. As with the findings of Karasek (1979) on the moderating effects of supervisor support on high-strain jobs, we expected that employee reports of physical health will improve when supervisors are trained to be more supportive of family needs.

Third, we suggest that an employee's perception of work–family supervisor support is the mechanism, or mediating process, through which our work–family intervention relates to job and health outcomes. We expect that employees who perceive greater FSSB from supervisors will have additional resources and be likely to have more control over management of work and family demands that should lead to positive job and health outcomes. Below we provide background drawn from the training and self-monitoring literatures on the rationale for the design of the specific intervention we developed to test our model. This is followed by the theoretical rationale for the model hypotheses and constructs.

FSSB Training and Self-Monitoring: An Effective Work–Family Intervention

Although some research exists on the availability and use of work–family supportive policies and practices, there is a lack of evaluation of the effects of those policies and practices on individual and organizational outcomes (e.g., Kelly et al., 2008). The family-supportive supervisor has been defined as one who empathizes with an employee's desire to seek balance between work and family responsibilities (Thomas & Ganster, 1995). New research has been conducted to clarify the FSSB construct, and this research forms the basis for the development of our training and self-monitoring intervention (Hammer et al., 2009).

FSSB is conceptualized as behaviors exhibited by supervisors that are supportive of families and consists of the dimensions of emotional support (supervisors providing support by listening and showing care for employees' work–family demands), instrumental support (supervisors responding to an employee's work and family needs in the form of day-to-day management transactions), role-modeling behaviors (supervisors demonstrating how to synthesize work and family through modeling behaviors on the job), and creative work–family management (supervisor-initiated actions to restructure work to facilitate employee effectiveness on and off the job; Hammer et al., 2009; Hammer et al., 2007). Thus, our supervisor training focused on teaching behaviors to supervisors who would implement this FSSB construct in their workplace.

Supervisors and companies often face barriers and challenges in fully implementing family-supportive workplace policies and practices (Ryan & Kossek, 2008). One reason for this is that supervisor support for family has only recently become a popular issue in the workplace, and it is a relatively new expectation that managers demonstrate family support on the job (Lirio, Lee, Williams, Haugen, & Kossek, 2008). Consequently, we anticipate that supervisors may not necessarily exhibit high levels of FSSB without being trained. Trained supervisors would better understand the rationale for FSSB and be socialized to see FSSB as important

to exhibit. Trained supervisors would also have a greater understanding of how actually to engage in these behaviors and would view the training as a signal that the organization values support of employees' work–family needs. Taken together, we believe that supervisors who are trained to exhibit FSSB will be more likely to have employees who perceive them as being more supportive of work–family needs.

Although training supervisors is a good first step toward increasing supervisor support for work–family demands, when implemented, many organizations conduct training as an isolated change strategy. In line with the training research, we argue that it is critical for training to include a design that fosters motivation to transfer the training content to the job (e.g., M. J. Burke & Day, 1986; Ford, Kozlowski, Kraiger, Salas, & Teachout, 1997). M. J. Burke et al. (2006) conducted a meta-analysis of 95 quasi-experimental workplace safety and health intervention studies and found limited evidence of effective training when there was little engagement of participants. They calculated effect sizes for those methods they categorized as highly engaging (interactive face-to-face training), moderately engaging (interactive training such as computer based with feedback), and least engaging (printed materials) and found that only highly engaging training designed to motivate training transfer was associated with large effect sizes ($d > 0.8$) per Cohen (1988). Thus, it is important to strengthen the effects of training programs by increasing the engagement of participants.

Training effectiveness may be more engaging if the training includes a component that motivates individuals to transfer newly learned skills to the actual work environment. One approach for supporting transfer of training is to ask individuals to set goals, monitor their behavior over time, and discuss results. Such behavioral self-monitoring processes are widely applied in clinical settings to motivate behavior change (Elliott, Miltenberger, Kaster-Bundgaard, & Lumley, 1996; Korotitsch & Nelson-Gray, 1999) and are increasingly used in workplace settings to support the transfer of training (Olson & Winchester, 2008). Behavioral self-monitoring is a technique in which individuals repeatedly observe, evaluate, and record aspects of their own behavior (e.g., Hickman & Geller, 2003a, 2003b; Krause, 1997; McCann & Sulzer-Azaroff, 1996; Olson & Austin, 2001). Olson and Winchester (2008) conducted a meta-analysis on 24 studies of behavioral self-monitoring in different workplaces. They calculated a mean effect size of 2.2 for studies of self-monitoring, demonstrating the importance of designing attitudinal and behavioral change training that motivates transfer of training to the workplace. In the present study, we implemented a work–family training intervention that informed supervisors about the importance of increasing work–family-specific supportive behaviors and asked supervisors to set goals to self-monitor the frequency of FSSB for several weeks after the training.

Work–Family Conflict: A Moderator of the Effectiveness of a Work–Family Intervention

Many studies of work–family policies and initiatives are based on correlational designs. Few evaluations of work–family interventions have been based on quasi-experimental designs. In one of the few published quasi-experimental work–family interventions, Kossek and Nichol (1992) demonstrated that the positive results of

using an on-site child care center were more beneficial for those in need of the intervention, such as employees with young children who needed organizational support for family responsibilities. Similarly, we believe that the FSSB training and self-monitoring intervention will vary in effectiveness depending on individual-level work-family conflict (work to family and family to work). Given the well-documented finding that individuals with high work-family conflict are more likely to have higher intentions to turnover, lower reports of health (Allen, Herst, Bruck, & Sutton, 2000; Greenhaus, Parasuraman, & Collins, 2001), and lower job satisfaction (Allen et al., 2000; Eby et al., 2005; Kossek & Ozeki, 1998), we expected that training supervisors to be more supportive of family needs would be more effective for employees who experience high work-family conflict (both work-to-family conflict and family-to-work conflict) compared with those with low work-family conflict.

In addition, some theorists would argue that a supervisor support intervention would generally have a stronger effect on reducing work-to-family conflict compared with family-to-work conflict because the source of the support is the supervisor (i.e., work related; Frone, Russell, & Cooper, 1992). However, given that our intervention is specific to family-supportive supervision, we believe that there is just as much of an argument that it would be effective in reducing family-to-work conflict, because having a supportive supervisor could make it easier for employees to restructure work to handle family demands. This is also consistent with findings of the reciprocal, bidirectional effects and moderate to high correlations found between work-to-family conflict and family-to-work conflict (e.g., Frone et al., 1992). Thus, we are not hypothesizing differential effects for work-to-family conflict as a moderator versus family-to-work conflict as a moderator. Rather, we expected that both directions of work-family conflict would moderate the effects of the training on work and health outcomes. This led to our first hypothesis:

Hypothesis 1: Employee work-family conflict will moderate the effects of the family-supportive supervisor training intervention on employee job satisfaction, turnover intentions, and physical health. In particular, employees with higher levels of work-family conflict (i.e., work-to-family conflict and family-to-work conflict) in stores where managers receive training will report higher levels of physical health and job satisfaction and lower levels of turnover intentions compared with employees with higher levels of work-family conflict in stores where managers did not receive the training. These differences between the treatment and control conditions will be smaller for employees with lower levels of work-family conflict.

Employee Perceptions of FSSB: A Mediator of the Moderating Effects of Work-Family Conflict and Work-Family Intervention Effectiveness

Poor psychosocial work environments, including a combination of high demands, low control, and low support, are related to poor health (e.g., Belkic, Landsbergis, Schnall, & Baker, 2004; de Lange, Taris, Kompier, Houtman, & Bongers, 2003; Landsbergis, 1988). Drawing on the demand-control-support and the conservation of resources (Hobfoll, 1989) models, we theorized that

increasing supervisor support for family gives employees greater perceptions of social support in the workplace as well as greater control over how to perform work and family responsibilities as a result of the increased supportive resources provided by the supervisor. Extending our rationale to the general social support literature (Cohen & Wills, 1985), we expected employee perception of FSSB to reduce the negative effects of stress, more generally by providing a resource to employees through family-specific supervisor support (e.g., Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Hobfoll, 1989). Thus, we predicted that employees' perceptions of FSSB may act as a mediating mechanism to the effects of the intervention on work and health outcomes and that these effects are moderated by work-family conflict (i.e., work-to-family conflict and family-to-work conflict). Overall, we predicted that training supervisors on how to increase family-supportive behaviors would create increased perceptions of FSSB for those employees who are high on work-family conflict compared with those who are low on work-family conflict, which would in turn positively impact the employee outcomes of job satisfaction, turnover intentions, and physical health. Thus, we hypothesized the following:

Hypothesis 2: The interactive effect of supervisor training and employee work-family conflict (i.e., work-to-family conflict and family-to-work conflict) on FSSB will mediate the moderating effects of work-family conflict on training outcomes.

Method

Design

The study was conducted in 12 grocery stores in a midwestern U.S. grocery chain. Six stores were randomly chosen as the intervention sites, with six other stores serving as control sites. Each of the 12 stores had at least one store manager and anywhere from one to nine supervisors or department heads. The number of employees per store ranged from 30 to 90. Our intervention study used a pretest-posttest control group design.

Participants

Supervisors included store directors, assistant directors, customer service managers, assistant customer service managers, and the predominant group, department managers in bakery, dairy-frozen, delicatessen, meat, produce, and general merchandise. Thirty-nine supervisors received the training in the six intervention stores. The training intervention was implemented as part of company-mandated supervisor training, but the self-monitoring was optional for supervisors.

One hundred seventeen employees who participated in the study were in the intervention stores, and 122 employees were in the control stores. A majority of the employees worked as cashiers. Many of the employees worked part time, which is common in the grocery industry; 48% reported part-time and 52% reported full-time work schedules. All participation occurred during paid company time, and each employee and supervisor received a \$25 gift card for each survey (pre- or postintervention) in which they participated.

Sample characteristics are listed in Table 1. However, our study and analyses are focused only on those employees who participated at both preintervention and postintervention (viz., 239). Three hundred sixty (61% response rate) employees participated in the preintervention data collection, and 239 (67% response rate) employees participated in the evaluation data collection postintervention. Of the total 360 employees who participated in the preintervention survey, 27% were men and 73% were women, 92% reported that they were White, and the entire group had a mean age of 38 years. Fifty-five percent reported living as married or married, 41% had children living at home, 16% were providing care for another adult, and 9% were providing care for both a child and an adult. There were no significant differences on key demographic variables between the control and experimental groups at preintervention except for age. The experimental group was 2 years older than the control group.

Of the 239 who participated in the posttraining survey, 22% were men and 77% were women. Approximately 92% were White with a mean age of 40 years, 57% reported living as married or married, 48% had children living at home, 14% were providing care for another adult, and 9% were providing care for a child and an adult.

Development of a Supervisor Work–Family Intervention

The intervention consisted of three components: computer-based training, face-to-face training, and behavioral self-monitoring, all focused on improving FSSB. The training was designed to enhance supervisors' skills and motivation to increase their interpersonal contact with employees and support of employees' needs in managing the work–family interface. As part of the intervention, supervisors were also asked to participate in a behavioral self-monitoring activity for 2 weeks following the training to increase the transfer of the training to on-the-job behaviors.

Computer-based supervisor training. The computer-based training was implemented in cTRAIN software (Northwest Edu-

cation Training and Assessment, Lake Oswego, OR; <http://www.nweta.com>), developed for a broad range of noneducated trainees and educated learners (e.g., Anger et al., 2001, 2006; Eckerman et al., 2004). The software employs (a) established behavioral training principles of self-pacing and interactivity (frequent quizzes, immediate feedback, high accuracy criterion); (b) clear system training instructions, so students do not require coaching on how to use the program; (c) icon-based navigation cues always on-screen, so there are no commands to remember; and (d) ready implementation of pictures and/or a movie on all screens.

The computer-based training content was developed based on a review of the work–family literature, as well as site visits, interviews, and focus groups in several grocery chains, in order to enhance generalizability of content. The supervisor training provided (a) background information on the benefits of reducing work–family conflict for employees' and their families' health and well-being; (b) the organization's motivation for reducing work–family conflict, including concerns about retention, absenteeism, and health costs; (c) information on the company's current work–family policies and programs; (d) definitions and examples of the four FSSB dimensions (viz., emotional support, instrumental support, role-modeling behaviors, and creative work–family management strategies) described above; (e) data on the existence of a consistent perceptual gap between employees and supervisors regarding work–family support (i.e., employees evaluated their FSSB lower, whereas supervisors rated their own FSSB higher) based on pretest and needs analysis survey data; and (f) a description of the self-monitoring program in which they would be invited to participate during the subsequent face-to-face training. Supervisors were given a computer-based pretest and posttest containing an identical set of 15 questions in order to assess learning and retention of the material. In addition, these 15 questions were embedded throughout the training in the form of quizzes requiring a correct answer to progress. An example of a multiple-choice item on the knowledge test that revealed a large amount of learning between the pre- and posttest is

Which of the following is true about work schedules and work hours among U.S. employees? 1. 30% of working women work evenings and weekends [correct answer]; 2. Most employees work nontraditional shifts; 3. Working nontraditional shifts is related to better health; 4. Most working fathers work part time.

Face-to-face training. The 1-hr face-to-face training was conducted by one or more of the first three authors following an outline that addressed the following points: (a) expression of appreciation to the company for supporting the surveys and intervention; (b) voluntary nature of the request to change behavior over the next month and the self-monitoring procedures, with distribution of consent forms; (c) description of self-monitoring procedures and opening an opportunity for questions about the procedures; (d) request for written reaction feedback on the face-to-face training; (e) clarification that the goal of the training is to change practices and behaviors of supervisors that include emphasizing emotional support, modeling healthy work–family behaviors, schedule conflict resolution, knowledge of company policies, and cross-training on work skills (i.e., FSSB); (f) role play by presenters of an employee overheard on the phone dealing with a need to come home to help a child and a supervisor stepping in to help resolve the conflict; (g) role play by presenters of filling out

Table 1
Participant Demographics at Each Stage of the Study

Participant	Preintervention	Training	Postintervention
Supervisors (<i>N</i>)		39	
Gender (male/female)		14/17	
Age (years, <i>M</i>)		42.5	
Married or living as married		NA	
White (%)		100	
Employees (<i>N</i>)	360		239
Gender (male/female)	97/262		54/186
Age (years, <i>M</i>)	38		40
Married or living as married (%)	55		57
White (%)	92		92
Children at home (%)	41		48
Adults in need of care at home (%)	16		14
Children and adults at home (%)	9		9

Note. NA = Not available.

self-monitoring cards and request for volunteers to fill in their estimate of how often they currently perform these behaviors and their goal for the following weeks; and (h) distribution of certificates for completing the training and a small gift with the universities' logos (pen, calculator). Prior to receiving their certificate, participants completed training reaction questionnaires on the computer-based training (five items) and face-to-face training (four items) that addressed the frequency of other supervisor training, ratings of the training they received, and the usefulness of the training. An example item was "How do you rate the information you learned in the computer-based training that you took yesterday or the day before?" (1 = *poor*, 2 = *not very good*, 3 = *neutral*, 4 = *good*, 5 = *excellent*).

Behavioral self-monitoring. Participants were requested, in both the computer-based and face-to-face training, to change their behavior over the following 3–5 weeks by collecting self-monitoring data on themselves for six behaviors and to set a goal of increasing the frequency of those six behaviors. The behaviors were (a) speak with store employees; (b) ask something about an employee's family; (c) say something about their (the supervisor's) family; (d) give positive feedback about an employee's work performance; (e) suggest a constructive improvement in an employee's performance; and (f) initiate a question about, or offer a way to improve, an employee's schedule.

The computer-based and face-to-face training requested that the supervisors carry a 3 × 5-in. supervisor daily data card and mark each time they carried out one of the six behaviors noted above, each of which was preprinted on the card. One card was provided for each day. To obtain a baseline and a goal, we asked the supervisors, in the face-to-face training, to provide an estimate of how frequently they currently performed each behavior each day and to set a goal of how much they would increase it (supervisors at two small stores did not provide baseline estimates and goals). They were also asked to perform those behaviors at their usual rate for the first few days of training and then increase them to their goal over the next 2–3 weeks.

Procedures

Preintervention and postintervention surveys were administered to employees individually in face-to-face interviews. Each interview consisted of 196 survey questions and lasted 35–50 min. This process led to virtually no missing data. Surveys were typically administered in managers' offices or in break rooms of the stores for quiet and privacy.

The intervention took place approximately 9 months after the preintervention survey was administered. The postintervention data were collected approximately 1 month following the end of the intervention. The computer-based training was set up for managers in a private area of the grocery store such as a break room or in the managers' office area. The self-paced computer-based training lasted approximately 1 hr. Usually, 1–2 days after the computer-based training was delivered to all managers, a 60- to 90-min face-to-face training session was provided at the grocery store during a slow time of the workday. At the end of the face-to-face session, the optional behavioral self-monitoring described in the computer-based training was reintroduced. Given that this portion of the training intervention required managers to provide informed consent, not all managers chose to participate.

Preintervention and Postintervention Survey Measures

FSSB. The 14-item scale of the FSSB developed by Hammer et al. (2009) includes four dimensions: emotional support (four items; $\alpha = .90$), role-modeling behaviors (three items; $\alpha = .86$), instrumental support (three items; $\alpha = .73$), and creative work-family management (four items; $\alpha = .86$). A sample emotional support item is "My supervisor is willing to listen to my problems in juggling work and nonwork life." A sample role-modeling item is "My supervisor is a good role model for work and nonwork balance." A sample instrumental support item is "I can depend on my supervisor to help me with scheduling conflicts if I need it." A sample creative work-family management item is "My supervisor thinks about how the work in my department can be organized to jointly benefit employees and the company." The reliability estimate for the total FSSB scores was .94; the total score was used in the analyses, with higher scores representing higher levels of the construct.

Work-family conflict. The construct of work-family conflict was measured in two directions with a total of 10 items (Netemeyer, Boles, & McMurrian, 1996). A sample item is "The demands of my work interfere with my home and family life." Coefficient alpha reliability for work-to-family conflict was estimated at .87, and at .85 for family-to-work conflict. Higher scores represented higher levels of the constructs.

Job satisfaction and turnover intentions. Job satisfaction was measured with a five-item scale (Hackman & Oldham, 1975). A sample item is "Generally speaking, I am very satisfied with this job." Reliability for this scale was estimated to be .80. Higher scores represented higher levels of job satisfaction. Employee intentions to quit their job was measured with a two-item scale (Boroff & Lewin, 1997). A sample item is "I am seriously considering quitting this company for an alternate employer." Reliability for this scale was .87. Higher scores represented higher levels of intentions to quit. All of the above scales were based on a Likert-type response scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*.

Physical health. Physical health was measured with the Short-Form Health Survey (Version 2) seven-item physical composite score (Ware, Kosinski, & Keller, 1996). The Short-Form Health Survey is an internationally used self-report assessment of subjective health, with physical health and mental health composite scores with means of 50 ($SD = 10$); Kudielka et al., 2005). A sample item is "During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular activities as a result of your physical health?" Scores were reverse-coded such that higher levels of the construct indicated more positive health. The reliability for the physical health composite score of the survey in our study was .82.

Summary of Training Outcome Measures: Reaction, Learning, Behavior, and Results

Using Kirkpatrick's (1959) classification of training criteria, we moved beyond training reactions, the most frequently used criterion measure to evaluate training (e.g., Alliger, Tannenbaum, Bennett, Traver, & Shotland, 1997; Arthur, Bennett, Edens, & Bell, 2003; Sitzmann, Brown, Casper, Ely, & Zimmerman, 2008), and extended our evaluation to include learning, behavior, and

results criteria. Furthermore, these methods were based on data from supervisors and their employees. More specifically, we used (a) supervisor reaction questionnaires immediately following the computer-based and face-to-face training (i.e., reaction criteria); (b) supervisor multiple-choice knowledge tests (pretest and posttest) embedded in the computer-based training (i.e., learning criteria); (c) supervisor self-reports of family-supportive behaviors based on completion of the supervisor daily data cards in the weeks following the training (behavior criteria); and (d) employee surveys about work and family, safety, and health outcomes before and after the intervention (results criteria).

Results

Training Outcomes for Supervisors: Reaction, Learning, and Behavior Criteria

Thirty-nine supervisors from the intervention stores received the work–family intervention training (computer-based and face-to-face); 32 of these supervisors participated in the self-monitoring. The self-monitoring was voluntary as opposed to the company-mandated training.

Reactions of supervisors ($N = 39$) indicated that they found the computer-based training to be useful. Supervisors rated the information they received in the computer-based training as “good” ($M = 4.10$, $SD = 0.50$), and they indicated that both the computer-based training and the face-to-face training formats had a moderate to high degree of perceived usefulness ($M = 3.65$, $SD = 0.67$, and $M = 3.32$, $SD = 0.58$, respectively).

Learning was assessed with the pretest and posttest scores from the computer-based training. The supervisors scored a mean percent correct of 74.1 ($SD = 11.4$) on the pretest, and they improved to 91.8 ($SD = 10.4$) on the posttest. This difference is significant, $t(39) = 7.77$, $p < .001$, $d_{\text{gain}} = 1.23$, an effect size considered large per Cohen (1988). Thus, the computer-based training taught the material effectively based on the results of the multiple-choice test.

Behavior criteria were assessed with self-monitoring data. Of the 39 managers who completed the computer-based training, 32 (82%) volunteered to self-monitor, and all but four completed supervisor daily data cards on a mean of 7.5 days ($SD = 3.7$) over a 25-day period; the range of the number of days on which managers completed cards was 1–15.

Of the supervisors who completed cards during the intervention, 24 listed estimates of the frequency of the six behaviors we asked them to increase, and 23 set goals for how much they would increase the frequency of those behaviors. The mean goal ranged from an increase of 63% for the number of times they would speak to employees to 107% for the number of times they would initiate a conversation about scheduling with an employee (typically increasing from one time per day to a goal of two times per day).

Self-report data on the individual behaviors that we requested supervisors to increase also suggest that they did in fact increase. Given the total potential opportunities for supervisors to exceed their estimated baseline number of behaviors (24 supervisors \times 6 behaviors) and meet or exceed their goals (23 \times 6), 62.5% exceeded their estimated baseline number of behaviors at least once, and 48.6% met or exceeded their goals at least once during the intervention. Although we emphasized in the training that the

purpose of the cards was to allow supervisors to be more objective and thus accurate about their actual behavior (and that the data would not be shown to management), we were not able to conduct independent observations of supervisor behaviors to verify these self-reports.

Impact of Supervisor Training on Employee Outcomes: Results Criteria

Of the 360 employee participants at baseline, 239 were also available at follow-up. Two techniques were used to assess and minimize the potential biases that this level of attrition may produce. First, we assessed the bivariate relationships between the variables under study and a variable indicating whether the employee was available at follow-up. We found no significant difference in the percentage of dropouts in stores with (35%) and without (36%) the supervisor training, $\chi^2(1, N = 368) = 0.06$, $p = .82$. However, we did find that dropouts had significantly lower mean job satisfaction ($M = 3.31$, $SD = 0.71$) than completers ($M = 3.47$, $SD = 0.65$), $t(358) = 1.99$, $p < .05$, and dropouts had significantly higher mean turnover intentions ($M = 2.64$, $SD = 1.22$) than completers ($M = 2.34$, $SD = 1.02$), $t(358) = 2.49$, $p = .01$. In fact, we found that 71 of the 121 people who dropped out of the study between baseline and follow-up no longer worked at the company. No other significant differences were found for the variables under study. Given the differences found in two important study variables, we used a modeling technique that can account for such differences to minimize bias. Thus, second, we used the full information maximum likelihood routine in Mplus 4.2 (Muthén & Muthén, 2005) to conduct all the regression analyses that follow. This routine provides unbiased estimation of model parameters when the data are missing at random (i.e., variable missingness does not depend on the variable’s value but can depend on other observed variable values). Given that, in the regression analyses that follow, the outcome variables at follow-up are predicted by the same variables at baseline, along with several other control variables that are almost completely observed, we found missing at random to be a reasonable assumption.

The means, standard deviations, and correlations among study variables are in Table 2. Multiple regression analyses were used to evaluate the study hypotheses. In these regression analyses, we focused primarily on the effect of training, the interactive effect of training and work-to-family conflict, and the interactive effect of training and family-to-work conflict on postintervention work and health outcomes while controlling for preintervention levels of those outcomes. Ideally, we would have employed multilevel modeling given the nesting of stores within training conditions and employees within stores; however, the number of stores (i.e., six stores per treatment condition) precluded precise estimation of random effects across stores. Therefore, as is typical in such cases, store differences and the training indicator were modeled as fixed effects at the same level as the employees, yielding a one-level model. This modeling decision necessarily limits the generalizability of these results. However, we feel that generalizability in research is best served through replication rather than through assumptions about the random sampling of stores.

In these analyses, we controlled for the store-level variables through a series of 10 orthogonal contrasts (i.e., five contrasts within each treatment condition). These contrasts are not of sub-

Table 2
Means, Standard Deviations, and Zero-Order Correlations of Employee Study Variables

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Treatment ^a	0.48	0.50	—														
2. Baseline FWC	1.92	0.56	-.03	—													
3. Baseline WFC	2.61	0.88	-.00	.40**	—												
4. Baseline FSSB	3.44	0.71	.01	-.01	-.26**	—											
5. Follow-up FSSB	3.61	0.76	-.08	.08	-.08	.56**	—										
6. Baseline PH	51.62	8.23	.02	-.06	-.09	.07	-.01	—									
7. Follow-up PH	51.03	8.44	.15*	-.17*	-.06	.04	.00	.52**	—								
8. Baseline JSAT	3.41	0.68	.01	-.09	-.38**	.45**	.34**	.04	.06	—							
9. Follow-up JSAT	3.34	0.74	-.06	-.08	-.20**	.34**	.48**	.02	.00	.60**	—						
10. Baseline TOI	2.44	1.12	-.05	.12*	.33**	-.29	-.23**	.08	.09	-.62**	-.40**	—					
11. Follow-up TOI	2.52	1.05	-.01	.11	.17*	-.23**	-.34**	.12	.04	-.47**	-.70**	.56**	—				
12. Living as married ^b	0.54	0.50	.04	-.07	.02	-.04	-.07	-.03	.10	.01	.12	.11	-.12*	—			
13. Number of children at home	1.74	1.86	.14**	.12**	-.03	-.08	-.13	-.15**	-.10	.06	.14*	-.23**	-.27**	.37**	—		
14. Hours worked	31.36	8.55	-.03	.01	.09	-.08	-.08	.11*	.09	-.01	.06	-.07	-.12	.11**	.03	—	
15. Caring for parents ^b	0.16	0.37	.03	.14*	.11*	-.01	.07	-.04	-.08	-.03	.05	-.04	-.02	.08	.04	.05	—

Note. N = 236–368. FWC = family-to-work conflict; WFC = work-to-family conflict; FSSB = family-supportive supervisor behaviors; PH = physical health; JSAT = job satisfaction; TOI = turnover intentions.

^a Treatment: 1 = intervention, 0 = control. ^b Living as married and caring for parents: 1 = yes, 0 = no.

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

stantive interest, and therefore they are not labeled; they are meant only to account for store differences that are independent of the training effect. In these analyses, we also controlled for several employee variables. Specifically, we controlled for the outcome variable assessed at baseline, whether the employee was living as married with a partner, whether the employee had elderly parents living at home, how many children the employee had living at home, and the typical number of hours worked in a week. To facilitate interpretation, all predictor variables were mean centered. Table 3 presents the results of these regression analyses to test Hypothesis 1 where the key predictors and parameters are italicized.

As presented in the treatment row of Table 3, supervisor training led to a significant increase in physical health but no significant change in job satisfaction or turnover intentions when evaluated at the mean for family-to-work and work-to-family conflict and controlling for the other store- and employee-level predictors. However, as presented in the Treatment × Family-to-Work Conflict at Baseline row in Table 3, all these training effects were qualified by significant interactions between training and family-to-work conflict at preintervention on these outcomes. Furthermore, the training effect on physical health at follow-up was also qualified by a Treatment × Work-to-Family Conflict interaction. No other significant interactions of treatment with work-to-family conflict on the outcomes were observed.

Figures 2 and 3 present graphs of these interactions where the effect of training is evaluated at one standard deviation above and below the preintervention family-to-work (or work-to-family) conflict mean. Figure 2A displays the interactive effect of training and family-to-work conflict on physical health at follow-up. Figure 3 displays the interactive effects of training and family-to-work conflict at baseline on job satisfaction and turnover intentions at follow-up. Inspection of these figures demonstrates that the interactive effect of training and family-to-work conflict on these outcomes is disordinal in nature (i.e., the direction of the treatment

effect changes for those low vs. high in family-to-work conflict). At high levels of family-to-work conflict at baseline, employees in stores with training exhibited higher levels of job satisfaction and physical health and lower levels of turnover intentions than similar employees in stores without training. However, at low levels of family-to-work conflict at baseline, employees in stores with training exhibited lower levels of job satisfaction and physical health and higher levels of turnover intentions than similar employees in stores without training.

Figure 2B displays the interactive effect of training and work-to-family conflict on physical health at follow-up. Here an ordinal interaction was observed. That is, the direction of the effect of treatment on the outcome was consistent for the values of work-to-family conflict. At lower levels of work-to-family conflict, employees in stores with training exhibited higher levels of physical health than similar employees in stores without training. At higher levels of work-to-family conflict, the magnitude of this difference due to training was smaller. This finding is contrary to our hypothesis and is discussed later. In all, these findings demonstrate that family-supportive supervisor training was especially successful at improving work and health outcomes for those workers with higher levels of family-to-work conflict but was not successful and even had negative effects for those with lower levels of family-to-work conflict. Furthermore, the hypothesized effects were not observed for those with higher levels of work-to-family conflict.

Evaluation of Process: Mediated Moderation Analyses

Next we turn to an evaluation of the theoretical process underlying these interaction effects. Recall that the supervisor training was designed to improve FSSB and that the positive effects of this training on employee work and health outcomes should theoretically be attributable to increases in employee perceptions of FSSB. This would be particularly true for employees with higher levels of work-family conflict, as suggested in Hypothesis 2. Therefore, we

Table 3

Regression Analysis Results for the Effects of Training and Other Predictors on Family Supportive-Supervisor Behaviors, Physical Health, Job Satisfaction, and Turnover Intentions at Follow-Up Using Full Information Maximum Likelihood Estimation

Predictor	Physical health		Job satisfaction		Turnover	
	Slope	SE	Slope	SE	Slope	SE
Treatment (T)	<i>2.17*</i>	0.88	<i>-0.06</i>	0.07	<i>-0.03</i>	0.11
Family-to-work conflict at baseline (BFWC)	<i>-1.55*</i>	0.93	<i>0.13</i>	0.07	<i>-0.16</i>	0.11
T × BFWC	<i>4.78*</i>	1.88	<i>0.47*</i>	0.15	<i>-0.70*</i>	0.22
Work-to-family conflict at baseline (BWFC)	<i>0.16</i>	0.61	<i>-0.06</i>	0.05	<i>0.06</i>	0.08
T × BWFC	<i>-2.00*</i>	0.97	<i>0.06</i>	0.10	<i>-0.02</i>	0.15
Physical health at baseline	<i>0.51*</i>	0.06				
Job satisfaction at baseline			<i>0.62*</i>	0.06		
Turnover at baseline					<i>0.57*</i>	0.06
Living as married	<i>2.00*</i>	0.97	0.10	0.08	<i>-0.08</i>	0.11
Children at home	0.43	0.46	0.05	0.04	<i>-0.02</i>	0.06
Caring for parents	<i>-0.56</i>	1.25	0.15	0.10	<i>-0.12</i>	0.15
Hours worked	<i>-0.01</i>	.06	0.01	0.01	<i>-0.01</i>	0.01
Store Contrast 1	<i>-0.20</i>	1.27	<i>-0.07</i>	0.10	<i>-0.14</i>	0.15
Store Contrast 2	2.26	1.80	0.03	0.14	<i>-0.15</i>	0.21
Store Contrast 3	<i>-2.53</i>	2.44	<i>-0.34</i>	0.20	<i>0.95*</i>	0.29
Store Contrast 4	<i>-0.98</i>	2.04	0.09	0.17	0.02	0.25
Store Contrast 5	<i>-1.34</i>	2.25	<i>-0.31</i>	0.18	<i>0.63*</i>	0.28
Store Contrast 6	1.49	1.24	0.10	0.10	<i>-0.12</i>	0.15
Store Contrast 7	<i>-4.57*</i>	1.84	0.05	0.15	<i>-0.10</i>	0.22
Store Contrast 8	2.61	2.20	<i>-0.50*</i>	0.18	0.49	0.28
Store Contrast 9	<i>-0.35</i>	1.82	<i>-0.11</i>	0.15	0.09	0.22
Store Contrast 10	4.86	2.51	0.06	0.20	<i>-0.50</i>	0.30
Model R ²	.38		.48		.45	
Test of R ²	$\chi^2(20) = 111.55^*$		$\chi^2(20) = 146.60$		$\chi^2(20) = 125.62^*$	

Note. $N = 360$. Key parameters are highlighted in italics. All variables are mean centered. Store contrast variables account for between-store differences that are independent of the training effect and not of substantive interest.

* $p < .05$.

conducted mediated moderation analyses (Muller, Judd, & Yzerbyt, 2005).

In classic mediation analysis (Kenny & Judd, 1984), the mediated effect is a direct or main effect; in mediated moderation analysis, the mediated effect is an interaction. Despite this important difference, the modeling process is similar in that it requires four criteria to be met across three separate regression analyses. The first regression analysis must establish the effect of interest (here the interactive effect of training and family-to-work conflict or work-to-family conflict) on the outcome of interest (here physical health, job satisfaction, or turnover intentions). The second regression analysis must establish the effect of interest on the mediating variable (here FSSB). The third regression must establish the effect of the mediating variable on the outcome of interest (controlling for the effect of interest) and must make the effect of interest on the outcome variable disappear (controlling for the mediating variable). All four criteria are required to justify a claim of complete mediation; a claim of partial mediation is justified if all but the final criterion are met but the magnitude of the effect of interest on the outcome of interest is weakened.

Tables 4, 5, and 6 display the results of the mediated moderation analyses conducted for the outcomes of physical health, job satisfaction, and turnover intentions, respectively. These results support the claims that FSSB partially mediates the interactive effects of training and family-to-work conflict on job satisfaction and turnover intentions. However, no claim can be made that FSSB mediates the interactive effect of training and family-to-work conflict

on physical health, nor the interactive effect of work-to-family conflict on physical health, job satisfaction, or turnover intentions; these interactive effects must be due to other processes. In light of these results, Hypothesis 2 was only partially supported.

Discussion

Summary of Findings

The goal of this study was to develop, implement, and evaluate a family-supportive supervisor training intervention, integrating research from training and workplace interventions (e.g., M. J. Burke et al., 2006; Lamontagne et al., 2007) and social support theory (e.g., Cohen & Wills, 1985). Using pre- and postintervention data, we conducted one of the few existing quasi-experimental work-family intervention studies reported to date. The results of this study demonstrate that although the family-supportive supervisor training intervention was successful at improving work and health outcomes for those workers with higher levels of family-to-work conflict, ironically, at the same time, the training resulted in detrimental outcomes for employees who exhibited lower levels of family-to-work conflict. Furthermore, the expected moderating effects of work-to-family conflict were not found for the outcomes of job satisfaction and turnover intentions and were actually in the direction opposite to what was expected for the outcome of physical health. This demonstrates that those employees with

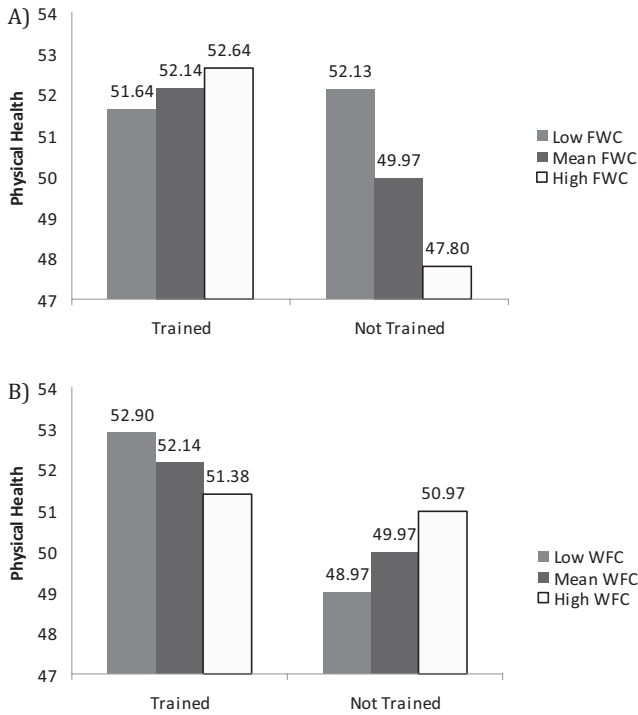


Figure 2. Interactive effects of training and family-to-work conflict (FWC; A) and training and work-to-family conflict (WFC; B) on physical health at follow-up from regression analysis reported in Table 3.

the highest levels of work-to-family conflict reported the highest, as opposed to the lowest, levels of physical health.

Furthermore, the results of this study help to clarify the processes by which a supervisor training intervention affected employee outcomes. Namely, employee perceptions of FSSB mediated the interactive effects of the intervention and work-family conflict (both work-to-family conflict and family-to-work conflict) on job satisfaction and turnover intentions. However, FSSB did not mediate the interactive effect of training and work-family conflict (both family-to-work conflict and work-to-family conflict) on physical health.

On the basis of analysis of the data from the supervisors who received the training, we conclude that the supervisors generally reported that the training and self-monitoring intervention was useful. In addition, the tests embedded in the computer-based training indicated that the supervisors learned the material. Evidence of the supervisor training transferring to on-the-job behaviors was also demonstrated. Thus, in sum, our data show that the supervisors responded favorably to the training and that the training led to behavior changes on the job that, in turn, impacted employee work and health outcomes. Below is a more detailed discussion of the study findings.

Employee Outcomes Associated With Supervisor Training

Two surprising findings emerged from the data that necessitate further discussion. First, we discuss the results associated with the moderating effect of work-family conflict. Second, we discuss the

unique unexpected findings associated with the physical health outcome.

Moderating effect of work-family conflict. Although there was support that the training had a positive impact on outcomes for some employees, our findings were surprising in that the intervention had detrimental effects on those individuals who were initially lower in family-to-work conflict. There are two related possible explanations for these findings: “family-friendly backlash” and workgroup blending. First, it may be that the intervention had a negative backlash effect for individuals low in family-to-work conflict who may have resented that company resources or attention were being allocated to work-family support that they were not likely to need or use. Those individuals with low levels of family-to-work conflict could have viewed the intervention as offering support that specifically favored those with families. Work-family backlash may occur due to an in- and out-group bias effect, as Grover (1991) found in a study of hypothetical work-family benefits. Employees who have lower need for work-family support may have negative reactions because they do not benefit directly from the support and thus do not perceive it is fair (Thompson, Beauvais, & Allen, 2006). Furthermore, research by Parker and Allen (2001) found that fairness perceptions of family-friendly benefits were more positive among those who appeared to “gain the most” from the benefit but that identifying this group was somewhat complicated (p. 456). In other words, they suggested that we cannot simply examine the relationship between individual variables, such as parental status, and fairness perceptions because other factors, such as age of children, will most likely influence this relationship. Our findings suggest that those who may gain the

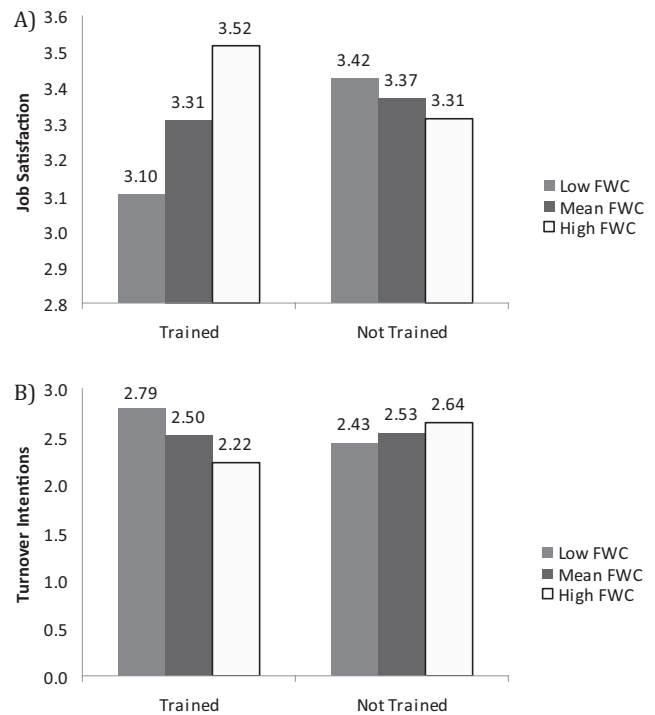


Figure 3. Interactive effects of training and family-to-work conflict (FWC) on job satisfaction (A) and turnover intentions (B) at follow-up from regression analyses reported in Table 3.

Table 4
Results of Mediated Moderation Analysis for the Effect of Training on Physical Health at Follow-Up Using Full Information Maximum Likelihood Estimation

Predictor	Model 1 (physical health at follow-up)		Model 2 (FSSB at follow-up)		Model 3 (physical health at follow-up)	
	Slope	SE	Slope	SE	Slope	SE
Treatment (T)	2.17*	0.89	-0.08	0.07	2.18*	0.88
Family-to-work conflict at baseline (BFWC)	-1.56	0.93	0.15	0.08	-1.54	0.94
T × BFWC	<i>4.78*</i>	<i>1.88</i>	<i>0.39*</i>	<i>0.16</i>	<i>4.83*</i>	<i>1.91</i>
Work-to-family conflict at baseline (BWFC)	0.17	0.65	0.04	0.06	0.18	0.65
T × BWFC	<i>-2.46*</i>	<i>1.22</i>	<i>-0.05</i>	<i>0.10</i>	<i>-2.47*</i>	<i>1.22</i>
Physical health at baseline	0.51*	0.06	0.00	0.01	0.51*	0.06
FSSB at baseline	0.05	0.71	0.64*	0.06	0.15	0.86
FSSB at follow-up					<i>0.01</i>	<i>0.78</i>
Living as married	2.01*	0.97	-0.06	0.08	2.02*	0.97
Children at home	0.43	0.46	0.03	0.04	0.44	0.46
Caring for parents	-0.57	1.25	0.16	0.11	-0.53	1.26
Hours worked	-0.01	0.06	0.01	0.01	-0.01	0.06
Store Contrast 1	-0.19	1.28	0.12	0.11	-0.16	1.28
Store Contrast 2	2.25	1.80	-0.46*	0.15	2.24	1.84
Store Contrast 3	-2.52	2.44	-0.40	0.21	-2.50	2.46
Store Contrast 4	-0.99	2.05	-0.26	0.17	-1.01	2.06
Store Contrast 5	-1.34	2.25	0.40*	0.19	-1.34	2.27
Store Contrast 6	1.46	1.27	0.09	0.11	1.42	1.27
Store Contrast 7	-4.58*	1.85	-0.04	0.16	-4.59*	1.85
Store Contrast 8	2.64	2.23	-0.18	0.19	2.68	2.23
Store Contrast 9	-0.36	1.84	-0.42*	0.16	-0.39	1.86
Store Contrast 10	4.82	2.53	0.23	0.21	4.79	2.54
Model R ²	.38		.46		.38	
Test of R ²	$\chi^2(21) = 111.48^*$		$\chi^2(21) = 135.95^*$		$\chi^2(22) = 111.55^*$	

Note. $N = 360$. Key parameters are highlighted in italics. All variables are mean centered. Store contrast variables account for between-store differences that are independent of the training effect and not of substantive interest. FSSB = family-supportive supervisor behaviors.

* $p < .05$.

most from our intervention are those with higher levels of family-to-work conflict than those with lower levels of family-to-work conflict. Thus, we conducted post hoc analyses that are consistent with this suggestion of a backlash effect. Those analyses demonstrated that employees with lower family-to-work conflict in the training intervention stores actually rated their supervisors lower in FSSB than similar employees in control stores, after controlling for the preintervention FSSB scores. Specifically, training leads to higher FSSB scores only for those employees with high family-to-work conflict, and the training actually led to decreased FSSB among those with low and mean levels of family-to-work conflict. Additional post hoc analyses found that there were no significant differences between those with and without family responsibilities on FSSB or any of the outcomes. This may suggest that the subjective perception of having high family-to-work conflict is a more important moderator to consider than the objective measure of having dependent care responsibilities (vs. no responsibilities).

A second but related possible explanation is the need to plan for tactics to address the unintended consequences of intervention implementation with an eye toward “blended work groups.” By this we mean that every work group has a mix of employees in high need and low need of a particular intervening work practice. Perhaps supervisors increased their FSSB in ways that had some detrimental effects on employees with low work-family conflict. It is also possible that supervisors focused their supportive behaviors on those with high family-to-work conflict. That is, supervisors’

actual behaviors may have been different toward those with high versus those with low family-to-work conflict.

Physical health findings compared with other outcomes.

Tests of our hypothesis revealed that family-supportive supervisor training led to a significant increase in reports of physical health, compared with the control group, but no significant change in job satisfaction and turnover intentions when evaluated at the mean for family-to-work and work-to-family conflict. In other words, the intervention appeared to have a beneficial impact on physical health reports, whereas the effects on job satisfaction and turnover intentions were beneficial only at high levels of family-to-work conflict, compared with low levels of family-to-work conflict. Thus, when making the case for this work-family intervention, one must be careful to clarify that this intervention is effective for some employees and not for others depending on the outcome of interest, leading to limitations in its utility.

In addition, the training effect on physical health was qualified by a Treatment × Work-to-Family Conflict interaction, such that the training was more effective for this outcome for those with lower levels of work-to-family conflict, contrary to our predictions. Whereas employees in the treatment stores reported higher levels of physical health compared with those in the control sites (as expected), these effects were more pronounced for those with the lowest level of work-family conflict but not for those with higher levels of work-to-family conflict (which was contrary to our expectations).

Table 5
Results of Mediated Moderation Analysis for the Effect of Training on Job Satisfaction at Follow-Up Using Full Information Maximum Likelihood Estimation

Predictor	Model 1 (job satisfaction at follow-up)		Model 2 (FSSB at follow-up)		Model 3 (job satisfaction at follow-up)	
	Slope	SE	Slope	SE	Slope	SE
Treatment (T)	−0.06	0.07	−0.08	0.07	−0.03	0.07
Family-to-work conflict at baseline (BFWC)	0.12	0.07	0.15	0.08	0.07	0.07
T × BFWC	<i>0.47*</i>	<i>0.15</i>	<i>0.40*</i>	<i>0.16</i>	<i>0.34*</i>	<i>0.14</i>
Work-to-family conflict at baseline (BWFC)	−0.04	0.05	0.06	0.06	−0.05	0.05
T × BWFC	0.05	0.10	−0.06	0.10	0.07	0.09
Job satisfaction at baseline	<i>0.58*</i>	0.07	0.07	0.07	<i>0.54*</i>	0.06
FSSB at baseline	0.08	0.06	0.61*	0.07	−0.10	0.07
FSSB at follow-up					<i>0.32*</i>	<i>0.06</i>
Living as married	0.12	0.08	−0.07	0.08	0.14*	0.07
Children at home	0.05	0.04	0.02	0.04	0.05	0.03
Caring for parents	0.15	0.10	0.17	0.10	0.10	0.09
Hours worked	0.01	0.01	0.01	0.01	0.01	0.01
Store Contrast 1	−0.06	0.10	0.13	0.11	−0.09	0.10
Store Contrast 2	0.01	0.14	−0.45*	0.15	0.15	0.14
Store Contrast 3	−0.35	0.20	−0.38	0.21	−0.23	0.19
Store Contrast 4	0.07	0.17	−0.24	0.17	0.14	0.16
Store Contrast 5	−0.30	0.18	0.38*	0.19	−0.42*	0.17
Store Contrast 6	0.08	0.10	0.09	0.11	0.04	0.10
Store Contrast 7	0.04	0.15	−0.02	0.15	0.04	0.14
Store Contrast 8	−0.49*	0.18	−0.14	0.19	−0.44*	0.17
Store Contrast 9	−0.15	0.15	−0.40*	0.16	−0.03	0.14
Store Contrast 10	0.01	0.20	0.26	0.21	−0.08	0.19
Model R ²	.48		.46		.54	
Test of R ²	$\chi^2(21) = 148.35^*$		$\chi^2(21) = 137.10^*$		$\chi^2(22) = 181.68^*$	

Note. $N = 360$. Key parameters are highlighted in italics. All variables are mean centered. Store contrast variables account for between-store differences that are independent of the training effect and not of substantive interest. FSSB = family-supportive supervisor behaviors.

* $p < .05$.

There are several speculative explanations for our differential findings on health and higher work–family conflict, which may be related to the unique nature of our sample. First, our sample included many low-wage and working poor employees, who typically are left out of the mainstream work–family research. Compared with their other low-income colleagues, perhaps those with higher work–family conflict have higher work role identity and are a high-functioning subgroup of the working poor. Perhaps they are working two jobs to make ends meet, working longer hours, or combining work with education or other workforce development activities or are a different family structure such as less likely to be a single parent. Unfortunately, we do not have data available to test these possible alternative explanations.

Second, literature on the interaction between formal or structural work–family supports compared with informal or relational supports provides a plausible explanation for some of these results related to the physical health outcome (Kossek, Lewis, & Hammer, 2010). The FSSB intervention is more focused on informal or relational change, which may be useful in improving the physical health of those with lower levels of family-to-work conflict, but that such relational interventions may not be strong enough to budge certain outcomes for high family-to-work conflict groups. Organizations may need to integrate structural and relational supports for work–family interventions to impact outcomes for those high in work-to-family conflict. These findings point to the critical

importance of the differential effects of work–family interventions for those with family-to-work versus work-to-family conflict. In addition, they suggest the need to examine these moderators separately.

Supervisor Behavior Change Findings

In addition to the effects on employees, our intervention increased supervisor knowledge about family-supportive supervision (pre- to posttest $d_{\text{gain}} = 1.23$), produced increases in self-set goals for delivering FSSB (by 63%–107%), and resulted in modest improvements in self-reported FSSB after training (by 48.6% on at least one occasion). Furthermore, supervisor reactions to the training were positive. Future research and practice should incorporate the intervention design principles we identified. To change FSSB, (a) interventions must be designed to target and measure the specific behavioral change construct of interest, (b) include a component to increase motivation for transfer of training (behavioral self-monitoring in this case), and (c) use multiple stakeholder evaluations of changed supervisor behaviors that capture self-report and employee measures.

Methodological Contributions

This study makes several methodological contributions. We designed, implemented, and evaluated a work–family intervention

Table 6
Results of Mediated Moderation Analysis for the Effect of Training on Turnover Intentions at Follow-Up Using Full Information Maximum Likelihood Estimation

Predictor	Model 1 (turnover at follow-up)		Model 2 (FSSB at follow-up)		Model 3 (turnover at follow-up)	
	Slope	SE	Slope	SE	Slope	SE
Treatment (T)	-0.03	0.11	-0.08	0.07	-0.06	0.10
Family-to-work conflict at baseline (BFWC)	-0.14	0.11	0.15	0.08	-0.08	0.11
T × BFWC	<i>-0.70*</i>	<i>0.22</i>	<i>0.41*</i>	<i>0.16</i>	<i>-0.55*</i>	<i>0.22</i>
Work-to-family conflict at baseline (BWFC)	0.04	0.08	0.05	0.06	0.06	0.08
T × BWFC	-0.01	0.15	-0.06	0.10	-0.02	0.14
Turnover at baseline	0.56*	0.06	-0.04	0.04	0.53*	0.06
FSSB at baseline	-0.09	0.09	0.62*	0.06	0.13	0.10
FSSB at follow-up					<i>-0.39*</i>	<i>0.09</i>
Living as married	-0.10	0.12	-0.07	0.08	-0.13	0.11
Children at home	-0.02	0.06	0.03	0.04	0.01	0.05
Caring for parents	-0.11	0.15	0.16	0.10	-0.04	0.14
Hours worked	-0.01	0.01	0.01	0.01	-0.01	0.01
Store Contrast 1	-0.16	0.15	0.12	0.11	-0.13	0.15
Store Contrast 2	-0.13	0.22	<i>-0.43*</i>	0.15	-0.29	0.21
Store Contrast 3	0.94*	0.29	-0.40	0.21	0.79*	0.28
Store Contrast 4	0.04	0.25	-0.26	0.17	-0.04	0.24
Store Contrast 5	0.62*	0.28	0.37	0.19	0.73*	0.27
Store Contrast 6	-0.09	0.15	0.09	0.11	-0.05	0.15
Store Contrast 7	-0.09	0.22	-0.03	0.15	-0.10	0.21
Store Contrast 8	0.46	0.28	-0.14	0.19	0.41	0.27
Store Contrast 9	0.13	0.22	<i>-0.41*</i>	0.15	-0.03	0.22
Store Contrast 10	-0.45	0.31	0.26	0.22	-0.34	0.30
Model R ²	.45		.46		.49	
Test of R ²	$\chi^2(21) = 126.67^*$		$\chi^2(21) = 136.83^*$		$\chi^2(22) = 146.99^*$	

Note. $N = 360$. Key parameters are highlighted in italics. All variables are mean centered. Store contrast variables account for between-store differences that are independent of the training effect and not of substantive interest. FSSB = family-supportive supervisor behaviors.

* $p < .05$.

that addressed criticisms of prior job stress and work–family intervention research. Design limitations noted in existing intervention research have prevented the translation of such findings. These limitations include rarely implementing control groups and rarely collecting pre- and postintervention evaluation data (Glasgow & Emmons, 2007). Although much of the work–family research states the importance of analyzing non-same-source longitudinal data with a control group and a within-subject design, few researchers actually use such rigorous approaches. Our study not only reflects improved intervention research but also shows how to design studies that use better methodology to address work–family issues. Furthermore, we assessed Kirkpatrick’s (1959) four levels of training effectiveness (i.e., reaction, learning, behavior, results) in hopes that this research will be more readily translated into practice (Glasgow & Emmons, 2007), a feat rarely reported in the training literature (Arthur et al., 2003). Reviews show reactions are influenced by factors beyond the training itself. These include trainee characteristics and organizational support for the training (Sitzmann et al., 2008). Thus, expanding training criteria to learning, behavior, and results, as suggested by Kirkpatrick (1959), provides a more thorough assessment of training effectiveness. Another methodological contribution of the study is the use of multisource data. We trained supervisors and evaluated the effects of the training on their employees. The fact that we demonstrated beneficial effects beyond the supervisor level of analysis to the employee level strengthens the contribution of this study. Finally,

we employed an improved analytical technique of mediated moderation analysis, allowing us to model more closely the processes by which our work–family intervention impacts work and health outcomes.

Study Limitations

Although the computer-based training and face-to-face training sessions were required by the company, the self-monitoring aspect of the intervention was voluntary by design. This is consistent with a training philosophy that voluntary on-the-job transfer is more likely to be effective than coercive transfer, as supervisors have to learn how to incorporate training concepts in their daily routines. Because of this approach, we did not achieve 100% compliance of the supervisors in the self-monitoring portion of the intervention. We believe that this led to weaker results than we would have achieved had we had 100% supervisor participation in all intervention activities. However, we remain confident in our conclusions, as the effects were robust despite this reduced participation. More importantly, we were unable to implement the feedback aspects of self-monitoring (i.e., graphing data so the supervisors can see their behavior trends clearly) that are believed to be critical to effective self-monitoring, which suggests why our self-reported behavior changes were much smaller and thus weaker than those reported in this literature (Olson & Winchester, 2008).

An additional limitation is that we are not aware how long the training effects will continue, given that the postintervention survey was conducted 1 month after training. Although the self-monitoring was designed to help increase transfer of training, we know that not all supervisors participated in this activity. Given previous research demonstrating that transfer climate plays a significant role in the ability of training to transfer (L. A. Burke & Baldwin, 1999), future work-family training intervention studies should assess the extent and length of transfer and take steps to increase the transfer of training climate and “stickiness” or lasting effects of the training.

Implications of Results for Research and Theory

We suggest that the moderating effects of work-family conflict on intervention effectiveness need further research, as some work-family interventions may be more effective than others for people varying on work-family conflict, and these effects may be dependent on the outcome of interest. Work-family researchers should endeavor to include samples of employees with variance in work-family conflict in future studies of work-family intervention effectiveness, because our results suggest that such interventions may be most effective for those most in need.

Future studies should also include intervention efforts that are designed to change the workplace to increase both cultural (e.g., more positive supervisor attitudes) and structural (e.g., more work-family flexibility in job design) support in order to mainstream work-family initiatives with more general organizational change initiatives (Kossek et al., 2010). It may be that our training intervention increased cultural support by changing attitudes and increasing knowledge of family-supportive behaviors, and then the supervisors informally implemented structural change in job design by being more flexible on schedules.

Because we designed the intervention to have training and then behavioral self-monitoring in the workplace to support transfer of training, we were unable to isolate the effects of the different components. Future research should be conducted to differentiate the effects of multiple-component interventions. We believe that self-monitoring behaviors are akin to general goal setting after a training effort to support transfer. Well-designed interventions should consider the transfer mechanisms that could be achieved via a number of ways, from voluntary self-monitoring with feedback on behavior change to goal setting to having a mentor or “training buddy” to support transfer. The key intervention implementation lesson from this study is to conduct work-family training or other interventions with consideration of ways to motivate transfer as part of the intervention design.

We suggest that the findings of this study also have significant implications not only for intervention and job stress theory but also for the theoretical development of the FSSB construct, given that we have shown how to impact this construct through behavioral training based on the four dimensions of FSSB (i.e., emotional support, instrumental support, role-modeling behaviors, and creative work-family management; Hammer et al., 2009). Further, research should examine whether the FSSB and family-to-work interaction mediating effects found in this study are replicated for other family outcomes or other work outcomes such as job performance and extrarole behaviors.

In addition, scholars should continue to examine other psychological and mediating processes through which work-family intervention effects operate. For example, work-family interventions aimed at increasing worker control through flexible work schedules would be expected to operate via the process of increasing perceived control. Although it is a truism to say that supervisors matter for work-family policy effectiveness, ironically, very little work-family research actually collects data from supervisors and then links those data to the health and productivity reports of employees. More work-family research needs to include actual data from supervisors and then match those data to the employees’ work-life experiences and health and productivity, as in the current study.

Implications for Practice

Overall, this study has identified the conditions under which work-family interventions are likely to be most effective. We developed an intervention that focuses on changing organizational systems (i.e., the supervisor behaviors), as opposed to changing the individual employee. We elaborated on the meaning of this study for the design of effective workplace stress interventions, specifically those that are work-family specific.

First, our findings suggest that work-family interventions may be most effective if they target individuals in organizations that have higher need (higher family-to-work conflict). To date, organizations have adopted many work-family policies, but often the individuals that may be most in need of help may not actually be targeted for these policies, or the interventions may not have fit their needs. Such interventions and policies tend to be more common among higher level professional positions. We studied a group of lower wage, hourly grocery workers who typically are not provided opportunities for work-family supports due to the structural rigidity of their jobs. Perhaps providing our less formal work-family intervention of training supervisors to employ family-supportive behaviors is more beneficial for workers in these types of positions who are not able to take advantage of more formal policies such as flexible work schedules. For example, Lambert and Waxman (2005) discussed the issue of work-family policy organizational stratification, which refers to situations in which workers in different parts of the organization are not able to access available work-family policies such as flextime or part-time work. Thus, it is important to ensure that the interventions are tailored to address the workforce needs of employees with higher work-family conflict and that such interventions reach the employee population that is likely to benefit from the intervention. At the same time, we do not want to marginalize disadvantaged, “nonideal” workers who are considered high on work-family conflict by targeting them for work-family interventions (Kossek et al., 2010, p. 3). Rather, we encourage the development of work-family interventions that are integrated into existing core organizational structures that enable such programs and policies to operate more as the norm rather than the exception.

Second, our findings also appear to indicate that although the training was particularly beneficial for those higher in family-to-work conflict, one can see an opposite effect for those who are low in family-to-work conflict for the outcomes of job satisfaction and turnover intentions. We believe that this suggests that there may be some family-friendly backlash occurring and that those with low

family-to-work conflict may actually perceive the intervention as negative or as affecting them adversely. Although the nature of such backlash is not clear, we suggest that there is a need for organizations to pay attention to strategies for reducing or avoiding such potential backlash with any work–family intervention.

Third, many workplace interventions are more individually focused than organizationally focused (Hurrell, 2005). This is a fundamental problem because targeting individual change will not ameliorate stressful organizational contexts in which individuals are embedded. Our intervention improved the psychosocial environment (cf. Hurrell, 2005) by changing the level of managerial support for work and family demands. This is likely to be more effective than training individual employees to solve their own problems but who then return to a stressful, unchanged system. The current intervention was designed with a focus on improving supervisor skills, which we illustrated as an effective psychosocial intervention. Although our findings did not provide strong support for the benefits of the intervention on outcomes across all employee strata, we argue that there is value in any development and testing of a work–family intervention that provides some benefit and that the concepts can be developed and refined in future research and practice.

Although the work–family literature has long lauded the importance of increasing supervisor support for family, and implementing training for supervisors to address work–family issues, no work–family studies in the peer-reviewed literature demonstrate how to increase this support and ensure transfer of training. We have added to knowledge of evidence-based management practice regarding work–family support (cf. Rousseau, 2006). Overall, this study has the potential to advance the work–family field by addressing many of the limitations of existing work–family intervention research, as well as helping to improve the quality of work life in organizations that implement work–family interventions designed to increase FSSB. This study demonstrated the central importance of supervisors to supporting the work–family interface and in workplace intervention design and implementation. We hope the research and practical implications noted above will be incorporated in future work–family and job stress research and practice.

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