

The Impact of Job Characteristics on Work-to-Family Facilitation: Testing a Theory and Distinguishing a Construct

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This study used objective measures of job characteristics appended to the National Survey of Midlife Development in the United States (MIDUS), self-reported job characteristics, and an individual resource characteristic (orientation toward personal growth) to test a theory of work–family facilitation. Results indicated that resource-rich jobs enable work-to-family facilitation. A higher level of work-to-family facilitation was reported by individuals in jobs with more autonomy and variety and whose jobs required greater substantive complexity and social skill. There was no support for the hypotheses that these effects would be more pronounced for individuals with higher levels of personal growth. The authors found significant differences in the strength of the associations of job characteristics with work-to-family facilitation and work-to-family conflict, suggesting they are different constructs with distinct antecedents.

Work–family facilitation, or the extent to which individuals' participation in one life domain (e.g., work) is made easier by the skills, experiences, and opportunities gained by their participating in another domain (e.g., family; Frone, 2003; Grzywacz, 2002), is being increasingly invoked in discussions of the work–family interface. Barnett (1998) referred to the idea of facilitation in conceptualizing and defining work–family fit. Similarly, Frone (2003) suggested that work–family balance likely represents multiple dimensions composed of bidirectional (i.e., work-to-family and family-to-work) conflict and facilitation. Finally, Hammer (2003) called for an explicit expansion of the work–family paradigm to include work–family facilitation. Unfortunately, work–family facilitation remains conceptually and empirically underdeveloped (Frone, 2003), and its distinction from conflict remains unclear.

A better understanding of work–family facilitation

is important. Metalevel concepts such as work–family fit and balance are defined as the combination of conflict and facilitation (Barnett, 1998; Frone, 2003), yet it remains unclear what facilitation is and how it is related to work–family conflict. Answering questions such as “how can organizations promote work–family fit?” or “is balancing work and family equally important to women and men?” requires a better understanding of work–family facilitation because it is an essential element of the broader concepts of “fit” and “balance.” Practically, indicators of work–family facilitation have been correlated with enhanced mental and physical well-being (Grzywacz, 2000; Grzywacz & Bass, 2003), as well as greater family and organizational satisfaction and effort (Kirchmeyer, 1992a, 1992b; Tompson & Werner, 1997; Wayne, Musisca, & Fleeson, 2004). This suggests that work–family facilitation is directly relevant to organizations' bottom-lines.

We focused attention on work-to-family facilitation ($W \rightarrow FF$) because the two directions of facilitation (work-to-family and family-to-work) are likely to be distinct and have different antecedents (Frone, 2003; Grzywacz & Marks, 2000). Evidence suggests, for example, that family structure and processes are the primary antecedents of family-to-work facilitation, whereas job attributes are the primary antecedents of $W \rightarrow FF$ (Grzywacz & Marks, 2000). Additionally, given that $W \rightarrow FF$ is more strongly related to job effort and satisfaction than family-to-work facilitation (Wayne et al., 2004) and that it buffers the effect of work-to-family conflict (WFC) on mental health (Grzywacz & Bass, 2003), it seems likely that $W \rightarrow FF$ is a more compelling target for intervention

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for organizations. Thus, not only is a specific analysis of $W \rightarrow FF$ theoretically necessary, but the results could also guide organizational professionals toward important targets for change for addressing the work–family needs of employees.

The primary goal of this study was to develop a better understanding of the antecedents of work–family facilitation and to distinguish it from work–family conflict. This goal was accomplished through three steps. First, using objective and self-reported measures, we tested the general proposition that individuals in jobs providing more resources that can be exploited in the family context would report higher levels of $W \rightarrow FF$ (Grzywacz, 2002). Second, we tested whether higher levels of personal growth tendencies enabled workers to obtain more family benefit from work-related resources. Finally, we examined if theoretically constructed models of $W \rightarrow FF$ were equally predictive of WFC. This study makes unique contributions over previous studies by testing theoretical propositions of work–family facilitation, using both objective and subjective measures of putative antecedents, and explicitly comparing the magnitude of antecedents' associations with $W \rightarrow FF$ and WFC.

Theoretical and Empirical Background

Work–family facilitation, discussed in the literature under various conceptual labels such as enrichment, integration, and positive spillover (Barnett & Baruch, 1985; Crouter, 1984; Friedman & Greenhaus, 2000; Greenhaus & Powell, in press; Grzywacz & Marks, 2000; Kirchmeyer, 1992b; Thompson & Bunderson, 2001), is fundamentally rooted in expansionist role theory. Sieber (1974) argued that role accumulation is beneficial for individuals and society, and Marks (1977) contended that human energy is not finite but rather recreates itself within limits, thereby enabling individuals to be involved in multiple pursuits. The primary thesis evolving out of these writings or the *expansion hypothesis* (Barnett & Hyde, 2001) is that active engagement in one domain provides access to resources and experiences that contribute to individual fulfillment. These ideas provide the theoretical foundation for positing that an individual's involvement in one domain could benefit his or her involvement in another (Geurts & Demerouti, 2003). Unfortunately, although the idea of facilitation is not new and ample evidence suggests it exists (see Barnett & Hyde, 2001), theory regarding what facilitation is and its putative antecedents remains underdeveloped (Frone, 2003).

Grzywacz (2002) offered a theory of work–family facilitation using ecology theory as its metatheoretical framework. Grzywacz theorized that facilitation occurs because individuals and social systems (e.g., organizations and families) exploit available means to achieve intrinsic propensities toward higher levels of complexity (Bronfenbrenner & Ceci, 1994; Hawley, 1986). It was further argued that facilitation, as one mechanism by which system (e.g., work groups or families) development occurs, is given shape and power by characteristics of both persons and contexts. The dominant contextual antecedent of facilitation is resources (i.e., materials, assets, or commodities) offered by or through interpersonal activities within an environment (Foa & Foa, 1980). Ecological theory also argues that some individuals realize greater benefit from environmental circumstances than others because of specific dispositions and attributes (Bronfenbrenner & Morris, 1998). Applied to facilitation, it was posited that psychological resources, such as an orientation toward personal growth (Ryff, 1989), enable some individuals to gain more benefit for their families from job-related resources. In short, Grzywacz's model uses ecological theory to explain what work–family facilitation is phenomenologically (i.e., a process by which development occurs), why it occurs (i.e., intrinsic propensity to achieve higher levels of complexity), and how it occurs (i.e., contexts provide resources wherein some individuals are better equipped to utilize these resources). These ideas were translated into a set of propositions, two of which were the focus of this study:

1. A higher level of accessible employment-related resources will make possible more $W \rightarrow FF$.
2. Individual characteristics will moderate the effect of accessible workplace resources on $W \rightarrow FF$ such that at comparable levels of job-related resources, people with characteristics that permit resource exploitation will report more $W \rightarrow FF$.

Although Grzywacz's (2002) theorizing is deeper than that demonstrated in earlier work focusing on the valence of person–environment interactions (Grzywacz & Marks, 2000), the offered propositions lack specificity in differentiating among the myriad job-related resources that may benefit family life. Jobs simultaneously provide economic resources (e.g., salary and health insurance), social resources

(e.g., social support and social status), and psychological resources (e.g., sense of identity and personal contribution; House, 1981; Jahoda, 1982; Kanter, 1977). The breadth of possible resources in combination with the likelihood that resources provided by employment will not be equally relevant to all families begs an important question: Which resources are relevant to $W \rightarrow FF$? The underdeveloped literature examining the positive side of the work–family interface offers little assistance (Frone, 2003).

The Present Study

We assessed the impact of resources on $W \rightarrow FF$ indirectly by examining job characteristics. There are several benefits of focusing on job characteristics for testing propositions about $W \rightarrow FF$. First, job characteristics efficiently identify candidate resources relevant to $W \rightarrow FF$ because each characteristic captures a variety of known resources. Friedman and Greenhaus (2000) argued, for example, that one job characteristic—a supportive environment—creates resources that take the shape of time, flexibility, information, or advice, as well as psychological resources such as self-acceptance. Second, resources from work that may be beneficial for family life are largely derived from the structures and processes of the job (with the likely exception of income). Flexibility, for example, is derived from the time structure (e.g., 8–5 vs. rotating shifts) and processes (e.g., flextime policies) of work. By examining the effects of specific job characteristics on $W \rightarrow FF$, there is a more actionable link between empirical findings and potential targets for policy intervention. Finally, and most practically, supporting empirical work has focused primarily on job characteristics as opposed to specific resources.

Certain job characteristics, under various titles, have long been theorized as providing resources that may positively affect workers. The level of independence given to a worker (i.e., authority) and the extent to which jobs vary in content, location, and routine (i.e., variety) are included in several established models in the literature. Hackman and Oldham (1976) argued that authority and variety, what they called autonomy and skill variety, enhanced workers' sense of responsibility and meaning and provided workers with intrinsic motivation (a personal resource). Similarly, Karasek (1979) posited that authority and variety, constructs he called decision authority and skill discretion, contributed to worker well-being because they could be used to effectively cope with the inherent demands of work. Finally, Kohn and Schooler (1978) argued that authority,

labeled self-directedness in their studies, produced cognitive and psychological benefits in workers. Recently, scholars have argued that job characteristics such as authority and variety and the resources they unfold create positive load effects in the form of motivation, energy, new skills, or attitudes that can be mobilized to facilitate functioning in other life domains such as in the family (Friedman & Greenhaus, 2000; Geurts & Demerouti, 2003).

Study results from several disciplines support the idea that authority and variety provide workers with resources beneficial to workers' families. Evidence consistently indicates that workers with more authority in their jobs engaged in developmentally generative parenting practices (e.g., reading to children, engaging children in independent problem solving, and accepting children's intellectual curiosity) more consistently than workers with less authority in their jobs (Grimm-Thomas & Perry-Jenkins, 1994; MacDermid & Williams, 1997; Menaghan & Parcel, 1991; Ritchie, 1997). Barnett, Marshall, and Sayer (1992) found that the effect of poor parental role quality on women's distress was significantly attenuated for women whose jobs had more variety. Lower levels of positive spillover from work to family were associated with lower levels of decision latitude (Grzywacz & Marks, 2000), a measure that captures aspects of both autonomy and variety. Thus, there is theoretical and empirical evidence supporting the plausibility that jobs with high levels of authority and variety provide workers with resources that create positive load effects that may benefit family life. This evidence provided the foundation for our first hypothesis:

Hypothesis 1. Workers in jobs with more self-reported authority and variety will report a higher level of $W \rightarrow FF$.

Reliance on Self-Report

One limitation of the work–family literature that is overcome in this study is an almost exclusive reliance on self-reported data and vulnerability to common method variance leading to inaccurate results. Although common method variance need not be construed as a fatal flaw (e.g., Kline, Sulsky, & Revormoriyama, 2000), it is important to complement studies based on self-report data with those using measures that attenuate the risk of common method variance. We examined both objective and self-reported job characteristics in the present study.

Objective characterizations of individuals' jobs

were derived from *Fourth Edition Dictionary of Occupational Titles* (DOT) codes. The DOT, the predecessor of O*NET (Jeanneret, Borman, Kubisiak, & Hanson, 1999), was originally designed for use by Employment Services offices to facilitate matching workers with available jobs (Miller, Treiman, Cain, & Roos, 1980). The *4th Edition DOT* contains scores on 44 variables reflecting various aspects of a job, including work functions (e.g., complexity of tasks), education and training required for a job, and physical demands of the job, among others. Because many of the 44 DOT variables overlap, previous researchers attempted to derive meaningful job characteristic dimensions by subjecting the variables to factor analysis. Although there is some variability in results, these analyses frequently yield four distinguishable factors (Hayward, Friedman, & Chen, 1998; Miller et al., 1980; Parcel, 1989). These factors have been labeled (a) *substantive complexity*, representing the degree to which a job requires handling data and requires high levels of training or preparation; (b) *manipulative skills*, or the extent to which jobs require working with “things” and require motor coordination, finger dexterity, and eye–hand coordination; (c) *physical and environmental demands*, or the extent to which a job involves strength and exposure to extreme temperatures or environmental hazards; and (d) *social skills*, or the extent to which a job requires dealing with people and requires the physical capabilities of talking, hearing, and seeing.

The DOT factors clearly characterize jobs, but they are not theoretically based measures of job characteristics. To make theoretical predictions, we mapped DOT factors to the authority and variety characteristics; however, this mapping is not seamless. For example, substantive complexity, characterized as the amount of judgment required on the job and self-directedness (Kohn & Schooler, 1982; Schooler, 1999), clearly captures authority; however, judgment likely reflects a higher, second-order form of independence or “authority.” Nonetheless, we conceptualized the substantive complexity factor as an indicator of authority. We also reasoned that greater manipulative skills and more social skills would be indicators of “variety” because the jobs requiring high levels of these attributes (e.g., teachers, social workers, secretaries) involve multiple tasks and an array of skills but tend to be externally constrained. Jobs with high levels of physical and environmental demands were posited to provide little authority and variety because workers in jobs requiring the most physical exertion (e.g., construction laborers, freight handlers) also reported the lowest decision latitude

(Karasek & Theorell, 1990). Thus, we predicted that objective job characteristics indicative of more authority and variety would be associated with more $W \rightarrow FF$. We hypothesized the following:

Hypothesis 2a. Workers in jobs requiring more substantive complexity (authority) will report a higher level of $W \rightarrow FF$.

Hypothesis 2b. Workers in jobs requiring more manipulative skills and social skills (variety) will report a higher level of $W \rightarrow FF$.

Hypothesis 2c. Workers in jobs imposing fewer physical and environmental demands (authority and variety) will report a higher level of $W \rightarrow FF$.

Personal Growth

Next, we examined whether individual differences might permit some workers to take better advantage of job resources, proxied by job characteristics, and gain more positive effects in their family life. The individual difference factor we examined was personal growth, defined as the degree to which individuals see themselves engaging in activities that promote growing, expanding, or improving over time (Ryff, 1989). In essence, we believe that individuals higher in personal growth are interested in learning and improving their competence within a performance domain. There may be several mechanisms that permit individuals higher in personal growth to facilitate family life from the job characteristics in our model. First, personal growth may predispose one to positive attitudinal responses about enriched work characteristics, and these positive attitudes may spill over to the family. Second, personal growth may increase the likelihood that knowledge and skills gained from the job characteristics are transferred to the family. For example, individuals high in personal growth may have a stronger desire to improve family functioning and may, therefore, more readily recognize knowledge and skills acquired at work that could enhance performance in the family. These arguments, like those outlined in the job characteristics model, suggest that only individuals with a need for personal growth benefit from enriched job characteristics (Hackman & Oldham, 1976). Thus, we predicted the following:

Hypothesis 3. Subjective and objective indicators of authority and variety will have a more

positive effect on $W \rightarrow FF$ for individuals higher in personal growth.

Distinguishing Constructs

Finally, it remains unclear if work–family facilitation is the bipolar opposite of work–family conflict, so this study sought to add evidence to that question. Conceptual distinctions between work–family facilitation and conflict suggest that there will be differences between the putative antecedents of these constructs. Conflict, conceptually, reflects incompatibility between work and family and is driven by competing pressures emanating from each domain (Greenhaus & Beutell, 1985). By contrast, facilitation reflects development in one domain that is made possible by resources gained from an individual's involvement in another (Grzywacz, 2002). This comparison highlights the simple but important distinction that pressure is the primary antecedent of conflict whereas resources are the primary antecedent of facilitation. If accurate, these conceptual distinctions suggest that one way to determine if facilitation and conflict are distinct concepts is to test if job-related resources relate more strongly to $W \rightarrow FF$ than to WFC.

There is conceptual and empirical reason to anticipate that resources will be stronger predictors of work–family facilitation than work–family conflict. Conceptually, resources directly enable facilitation by providing the physical or psychological wherewithal for enhanced functioning across life domains (Kirchmeyer, 1992a; Sieber, 1974). The confidence, skills, and esteem generated by individuals who control their jobs, for example, shape the individuals' interactions in other life domains (Kohn & Schooler, 1978, 1982). By contrast, resources are secondary in the production of work–family conflict by modifying how work and family pressures are interpreted and acted on (Greenhaus & Beutell, 1985). For example, the pressures created by the competing demands of a next-day deadline and a child's championship soccer game are attenuated for those with greater schedule flexibility. Evidence supports the differential salience of job resources and pressures for facilitation and conflict. Two studies using nationally representative data sets find that resources (e.g., decision latitude and learning opportunities) are strongly related to $W \rightarrow FF$ and unrelated to WFC, whereas pressures (e.g., psychological demands, unscheduled extra hours) were strongly related to WFC and unrelated to $W \rightarrow FF$ (Grzywacz & Marks, 2000; Voydanoff, 2004). On the basis of conceptual and empirical

evidence and suppositions that the theoretical antecedents of work–family facilitation are distinct from those of work–family conflict (Frone, 2003), we made the following hypothesis:

Hypothesis 4. Job characteristics and the interaction terms between job characteristics and personal growth will be more strongly associated with $W \rightarrow FF$ than WFC.

Method

Data and Sample

The data for this study are from the National Survey of Midlife Development in the United States (MIDUS) collected in 1995 under the auspices of the John D. and Catherine T. MacArthur Foundation Research Network on Successful Midlife Development. MIDUS respondents were a nationally representative general population sample of noninstitutionalized persons, ages 25–74 years, who had telephones. The sample was obtained through random-digit dialing, with an oversampling of older respondents and men made to guarantee a good distribution on the cross-classification of age and gender. Sampling weights correcting for selection probabilities and nonresponse allow this sample to match the U.S. population on age, sex, race, and education.

MIDUS respondents first participated in a telephone interview lasting approximately 40 min. The cooperation rate for the telephone questionnaire was 70%. Telephone participants were then asked to complete two self-administered mailback questionnaires; 86.8% of telephone participants returned the mailback questionnaire, yielding an overall response rate of 60.8% ($0.70 \times .868$; for report of field procedures, estimated response rates, and weighting, see <http://midmac.med.harvard.edu/research.html#tchrpt>). The analytic sample used here includes all part-time and full-time employed respondents age 24–65 years ($N = 2,045$; 1,074 men and 971 women). The sample was predominantly middle-aged (see Table 1), with the majority (68%) of respondents age 31–53 years. Approximately 48% of the sample was female; the modal level of education was a high school degree; and respondents worked, on average, 44 hr per week.

Measures: Dependent Variables

$W \rightarrow FF$. The extent to which an individual's participation in family is made easier by the skills, experiences, and opportunities gained by participating in paid employment or work was assessed with responses to three items: (a) "The things you do at work help you deal with personal and practical issues at home," (b) "The things you do at work make you a more interesting person at home," and (c) "The skills you use on your job are useful for things you have to do at home" ($\alpha = .73$). Response categories were from *never* (1) to *all of the time* (5).

WFC. The extent to which individuals' work interfered with their family was assessed with responses to the following: How often have you experienced each of the following in the past year?: (a) "Your job reduces effort you

Table 1
Means, Standard Deviations, and Correlations Among Variables ($N = 2,045$)

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Age (years)	43.29	10.53	—													
2. Gender ^a			.03	—												
3. Earnings	48.87	38.13	.07	-.13	—											
4. Extraversion	3.21	0.56	-.01	.08	.00	—										
5. Neuroticism	2.24	0.65	-.14	.14	-.03	-.16	—									
6. Personal growth	1.73	0.95	-.01	-.01	.03	.30	-.18	—								
7. DOT Factor 1			-.01	-.06	.30	.00	-.09	-.11	—							
8. DOT Factor 2			-.01	.06	-.05	-.03	.07	.06	.12	—						
9. DOT Factor 3			-.03	-.27	-.14	-.01	.01	.06	-.49	-.25	—					
10. DOT Factor 4			.04	.26	.14	.09	-.02	-.10	.44	.42	-.63	—				
11. Autonomy	3.73	1.01	.05	-.07	.16	.13	-.10	-.14	.23	.13	-.04	.15	—			
12. Skill	3.63	0.89	.03	-.04	.14	.12	-.09	-.20	.26	-.03	-.01	.09	.61	—		
13. W→FF	2.64	0.83	.08	.06	.06	.19	-.10	-.19	.15	.00	.04	.11	.30	.36	—	
14. WFC	2.64	0.73	-.13	-.03	.12	-.16	.35	.08	.12	.07	-.05	.05	-.04	.04	-.04	—

Note. Means and standard deviation are weighted. Earnings are reported in thousands of dollars. Correlations greater than .05 are significant at $p < .05$. Correlations greater than .06 are significant at $p < .01$. DOT Factor 1 = skill discretion; DOT Factor 2 = manipulative skill; DOT Factor 3 = physical and environmental demands; DOT Factor 4 = social skills; W→FF = work-to-family facilitation; WFC = work-to-family conflict; DOT = *Dictionary of Occupational Titles*.

^a Females are coded 1, males are coded 0.

can give to activities at home," (b) "Stress at work makes you irritable at home," (c) "Your job makes you feel tired to do the things that need attention at home," and (d) "Job worries or problems distract you when you are at home" ($\alpha = .85$). Response categories were from *never* (1) to *all of the time* (5).

The items used to construct W→FF and WFC have been reported in several published studies, and the results of these studies suggest discriminant validity of the two measures. The first study reported results from principal-axis analyses indicating that facilitation and conflict items loaded on separate factors, that the intercorrelation of these factors was low ($r = -.02$), and that the work- and family-related correlates of W→FF and WFC were distinct (Grzywacz & Marks, 2000). Subsequent papers found that WFC prospectively predicted the incidence of work-family stress while W→FF did not (Grzywacz, Almeida, & McDonald, 2002). Additionally, WFC and W→FF were uniquely associated with individual health and well-being (Grzywacz, 2000; Grzywacz & Bass, 2003). Most recently, Wayne et al. (2004) reported that W→FF and WFC were more strongly predicted by extraversion and neuroticism, respectively, and that more W→FF was associated with putting more effort into work while WFC was unrelated to this outcome.

Measures: Independent Variables

Control factors. We included several control factors that previous research has related to work-family facilitation (Grzywacz et al., 2002; Grzywacz & Marks, 2000; Wayne et al., 2004). The demographic controls included age, gender (male = 0), and household earnings. Extraversion and neuroticism, which could underlie response tendencies to both criteria and proposed antecedents, were also used as controls. These factors were measured using adjective-based items culled from various personality scales

(Lachman & Weaver, 1997). Participants rated how well each adjective described them on a scale from *a lot* (1) to *not at all* (4), and the scales were reverse scored prior to analyses. Extraversion was constructed by taking the mean of 10 adjectives (e.g., outgoing, active, adventurous; $\alpha = .85$), whereas neuroticism was measured with 4 adjectives (e.g., moody, worrying, nervous; $\alpha = .74$).

Personal growth was measured with a 2-item scale that included the following: (a) "For me, life has been a continuous process of learning, changing, and growth" and (b) "I think it is important to have new experiences that challenge how I think about myself and the world." Response categories for these items ranged from *strongly disagree* (1) to *strongly agree* (7). The MIDUS included a 3-item scale of personal growth found to be a valid indicator of its 14-item parent scale (Ryff & Keyes, 1995), but reliability analyses indicated poor internal consistency ($\alpha = .40$). However, item statistics indicated that removing 1 item would improve the reliability to an acceptable level ($\alpha = .70$); consequently, we used a 2-item version of the measure.

Self-reported job characteristics. Authority and variety were assessed by means of self-reported autonomy and skill level, respectively, with items adapted from the 1992 Whitehall Health Survey of British Civil Servants. Job autonomy consisted of four items, such as "How often do you have a choice in deciding how you do your tasks at work?" ($\alpha = .88$), and skill level was assessed with three items, such as "How often do you learn new things at work?" ($\alpha = .73$). Response categories for these items ranged from *never* (1) to *all of the time* (5).

DOT job characteristics. Following Parcel's (1989) procedure we submitted 44 DOT characteristics to a factor analysis with promax rotation to derive occupational characteristic dimensions. Characteristics that did not load greater than .60 on a factor or that cross-loaded greater than .40 on another factor were dropped from the analysis, leav-

ing 20 characteristics for the final analysis. Factors with eigenvalues greater than 1 were retained, yielding a four-factor solution (see Table 2). The DOT items represent aggregated means; consequently, it was not possible to recode items to produce summed or averaged scale scores. Instead, scales were created through factor scores calculated using the regression method (Gorsuch, 1983). The factors, which were similar to those obtained from different data sources (Hayward et al., 1998; Miller et al., 1980; Parcel, 1989), along with the characteristics comprising them, are outlined below.

Factor 1: Substantive complexity represents the general complexity and intellectual capability required of a job. This factor consists of six job characteristics: (a) specific vocational preparation needed to acquire the skills and information to perform the job at an average level; (b) general education development (i.e., the occupation's required training time); (c) complexity in relation to data (i.e., the degree to which the job is complex with regard to working with numbers, symbols, and concepts); (d) intelligence aptitude; (e) numerical aptitude; and (f) verbal aptitude. Results are reported such that higher factor scores reflect greater substantive complexity.

Factor 2: Manipulative skill assesses the level to which the job requires fine motor skills and physical manipulation. This factor consisted of five job characteristics: (a) finger dexterity; (b) motor coordination; (c) complexity in relation to things (i.e., the degree to which the job is complex with regard to working with inanimate objects); (d) manual dexterity; and (e) seeing. Results are reported such that higher factor scores reflect a greater manual aptitude requirement.

Factor 3: Physical and environmental demands captures

the degree to which the job requires physical strength and the degree of exposure to difficult environmental conditions. This factor consisted of five characteristics assessing the extent to which the job exposes the worker to or requires (a) hazardous environmental conditions; (b) climbing and/or balancing; (c) stooping, kneeling, crouching, and/or crawling; (d) strength; and (e) atmospheric conditions. Higher factor scores reflect a greater physical and environmental demand.

Factor 4: Social skills represents the extent to which the job requires interacting socially with others and consists of four characteristics: (a) adaptability to dealing with people (i.e., the percentage of workers who deal with people beyond giving and receiving instructions); (b) machine preference (i.e., doing the work entails a preference for working with processes, machines, and techniques); (c) talking and/or hearing (i.e., demand of the work for that capacity); and (d) a preference for communicating. Higher scores reflect more social skill.

Results

We conducted hierarchical linear regression analyses to test the study hypotheses. At Step 1, demographic and personality factors were entered to partial out their effects prior to entering job characteristics. At Step 2, the two self-reported job characteristics and the four DOT job characteristic factors were entered. It is important to recognize that

Table 2
Factor Analysis (Promax) Loadings of DOT Characteristics

DOT characteristic	1	2	3	4
Specific vocational preparation	−1.05	−.01	.27	−.03
General education development	−.94	−.01	.04	.09
Complexity with data	.92	−.08	−.02	−.03
Intelligence aptitude	.90	.02	.05	−.10
Numerical aptitude	.85	−.01	.22	.27
Verbal aptitude	.80	−.01	.08	−.24
Finger dexterity	−.02	.99	.12	−.15
Motor coordination	−.13	.97	.13	−.15
Complexity with things	.15	.79	−.10	.27
Manual dexterity	−.18	.73	−.21	.03
Seeing	−.10	−.71	−.07	−.19
Hazards	−.10	−.03	.87	.10
Climbing, balancing	−.18	.07	.79	−.15
Stooping, kneeling, crouching, crawling	.12	.09	.79	−.06
Strength	.25	−.10	.75	.04
Atmospheric conditions	−.01	−.05	.65	.10
Adaptability to people	.03	−.01	.11	1.03
Machine preference	−.20	−.08	.06	−.84
Talking, hearing	−.17	−.01	.06	.83
Data preference	−.17	−.05	−.06	.78
Eigenvalue	8.69	3.93	2.38	1.49
% variance	43.47	19.66	11.89	7.43

Note. DOT = *Dictionary of Occupational Titles*.

effects attributable to the DOT characteristics must be interpreted as residual effects of authority and variety because the effects of self-reported autonomy and skill variety will have been partialled out. At Step 3, the interaction terms between personal growth and job characteristics were entered. We centered continuously measured predictors prior to running the analyses (Aiken & West, 1991), and we explored significant interactions using standard procedures (Cohen & Cohen, 1983). Descriptive statistics and correlations are presented in Table 2, and regression results appear in Table 3.

We tested Hypothesis 4 using the MTEST option for PROC REG in SAS (Version 8.2). This option simultaneously fits two models (for W→FF and WFC) and estimates cross-equation differences in the effects of each antecedent on both outcomes. This is possible because W→FF and WFC have the same metric and are being predicted by the same antecedents (Woolridge, 2002). The estimates from the simultaneous model are the difference of corresponding parameter estimates for each respective predictor that would be obtained from separate models of W→FF and WFC. The *t* values for the parameter estimates from the simultaneous model essentially test if the slope coefficient for the antecedent–W→FF association is equal to the coefficient for the antecedent–WFC association.

The demographic and personality factors entered at Step 1 explained more variance in WFC ($R^2 = .16$) than W→FF ($R^2 = .07$). As in other studies using these data (Grzywacz & Marks, 2000; Wayne et al., 2004), a higher level of neuroticism was related to more WFC (see Table 3). However, higher levels of extraversion and being older were related to lower levels of WFC. More extraversion, more personal growth, being female, and being older were associated with more W→FF (Grzywacz et al., 2002; Grzywacz & Marks, 2000).

The addition of the job characteristics at Step 2 significantly increased the variance explained in W→FF ($R^2 = .21$, $\Delta R^2 = .14$, $p < .001$). As predicted by our first hypothesis, both of the self-reported job characteristics were significantly related to W→FF. Individuals in jobs with more autonomy and skill level, as proxies of authority and variety respectively, reported higher levels of W→FF. The DOT substantive complexity score and the DOT social skills score were also significantly related to W→FF. As predicted by Hypotheses 2a and 2b, individuals whose jobs provided more substantive complexity and higher social skill reported higher levels of W→FF. Contrary to Hypothesis 2c, individuals in jobs posing greater physical and environmental demands reported higher rather than lower levels of W→FF. Finally, contrary to our prediction in Hy-

Table 3
Hierarchical Moderated Regression Analyses

Variable	Work-to-family facilitation				Work-to-family conflict			
	Step 1	Step 2	Step 3	R^2	Step 1	Step 2	Step 3	R^2
Age	.07**	.06**	.06**		-.09**	-.08**	-.08**	
Gender (female = 1)	.07**	.10**	.11**		-.05*	-.03	-.04	
Earnings	.06*	-.01	-.01		.12**	.09**	.09**	
Extraversion	.14**	.11**	.10**		-.11**	-.11**	-.11**	
Neuroticism	-.06*	-.04	-.04		.34**	.35**	.35**	
Personal growth (PG)	.13**	.07**	.08**	.07**	.01	-.01	-.02	.16**
Autonomy (A)		.13**	.13**			-.11**	-.11**	
Skill level (SL)		.24**	.23**			.10**	.10**	
DOT Factor 1 (D1)		.09**	.09**			.12**	.12**	
DOT Factor 2 (D2)		.03	.03			-.10**	-.10**	
DOT Factor 3 (D3)		.19**	.19**			.02	.02	
DOT Factor 4 (D4)		.11**	.11**	.21**		-.02	-.02	.19**
PG × A			-.02				.05*	
PG × SL			-.04				-.01	
PG × D1			-.02				-.03	
PG × D2			.00				-.04	
PG × D3			.02				.01	
PG × D4			.03	.21			.04	.20

Note. Results are unweighted. Earnings are reported in thousands of dollars. Values are standardized regression coefficients. DOT = *Dictionary of Occupational Titles*.
* $p < .05$. ** $p < .01$.

pothesis 3, the addition of the interaction terms at Step 3 between personal growth and the job characteristics did not significantly increase the variance explained in $W \rightarrow FF$ ($R^2 = .20$, $\Delta R^2 = .004$, $p = .10$).

As predicted in Hypothesis 4, the addition of the job characteristics indicative of greater job-related resources at Step 2 added relatively less explanation to the model of WFC ($R^2 = .19$, $\Delta R^2 = .03$, $p < .001$) compared with their contribution to the model of $W \rightarrow FF$ ($\Delta R^2 = .14$, $p < .001$). More autonomy at work was related to less WFC, and more skill level at work was related to more WFC. The DOT factor representing substantive complexity was significantly related to WFC, such that individuals in jobs with more substantive complexity, controlling for self-reported autonomy, reported higher levels of WFC. Similarly, individuals in jobs requiring more manipulative skill reported higher levels of WFC. Also, consistent with Hypothesis 4, the addition of the interaction terms involving personal growth ($R^2 = .20$, $\Delta R^2 = .003$, $p = .22$) did not increase the variance explained in WFC.

Cross-equation tests of difference in the associations of job characteristics with $W \rightarrow FF$ and WFC lend mixed support to Hypothesis 4. Consistent with our hypothesis, the estimated association of self-reported skill variety with $W \rightarrow FF$ was stronger than its association with WFC, $t(1) = 9.31$, $p < .001$. Likewise, the estimated association of social skills (DOT 4) was stronger for $W \rightarrow FF$ than for WFC, $t(1) = 2.14$, $p < .05$. In contrast to our hypotheses, there was no difference in the estimates for self-reported autonomy and substantive complexity (DOT 1) for $W \rightarrow FF$ and WFC. Associations of manipulative skill (DOT 2) and physical demands (DOT 3) with $W \rightarrow FF$ and WFC were different, $t(1) = 2.34$, $p < .05$ and $t(1) = 2.14$, $p < .001$, respectively; however, the differences were inconsistent with our hypotheses.

Discussion

The goal of this study was to develop a better understanding of work-family facilitation. To accomplish this goal, we tested propositions from an emerging theory of work-family facilitation and sought to demonstrate differential prediction for the model when it was applied to work-family conflict. The results of these analyses provide three major contributions to the literature. First, our results provide strong support for the theoretical proposition that work-family facilitation is enabled by environ-

mental resources (Grzywacz, 2002). Second, this study contributes to the literature because we tested our findings using both objective and subjective measures of job characteristics. This feature of the study, although imperfect because the DOT factors did not cleanly map onto the authority and variety constructs, lessens vulnerability to common method variance and suggests that specific attributes of jobs enable work-family facilitation. Finally, notable differences in the ability of different clusters of variables to account for variance in $W \rightarrow FF$ and WFC add strong evidence to suggest that these constructs are distinct.

The results of this study provide strong support for the proposition that resources provided by an individual's work arrangement enable higher levels of $W \rightarrow FF$ (Grzywacz, 2002). Four of the five indicators of authority and variety, job characteristics conceptualized to reflect resource-rich employment arrangements, were associated with more $W \rightarrow FF$. Two objective measures (i.e., substantive complexity and social skill) were strongly associated with $W \rightarrow FF$, which provides solid evidence that resources enabled by broad job characteristics are important for family life. While the mechanisms involved in some of these associations are fairly apparent, others are less clear. For example, jobs requiring a high amount of social skill may improve workers' interpersonal skills at home, thereby enriching their ability to maintain or promote intimate family relations (Kanter, 1977). The operative resources gained from jobs with high authority are less apparent; however, we think that our use of self-reported autonomy and substantive complexity to assess different features of authority is instructive. Perhaps self-reported autonomy is capturing scheduling flexibility, which allows family-related issues to take on priority as needed, or autonomy could improve self-esteem, which can be used to enhance performance in the family (Friedman & Greenhaus, 2000). Substantive complexity may be capturing skill development from decision making and judgment around divergent needs on the job, skills essential for accomplishing the tasks of family life (Ruderman, Ohlott, Panzer, & King, 2002). Although not conclusive in themselves, the results of this study provide compelling support for the proposition that work-family facilitation requires resources in the initiating domain (e.g., work) that are exploitable in another domain of life (e.g., family; Grzywacz, 2002).

We observed one relationship that was significant in the opposite direction of our hypothesis. Individuals whose jobs were more physically and environmentally demanding reported *more* $W \rightarrow FF$. If con-

sidered from a stress perspective, as work–family questions frequently are (Eckenrode & Gore, 1990), it might be expected that such a stressor would be associated with less $W \rightarrow FF$. We conducted several post hoc exploratory analyses to understand the counterintuitive relationship between physical and environmental demands and $W \rightarrow FF$. On the basis of earlier work indicating that workers in farming, forestry, and fisheries occupations, in contrast to those in service occupations, reported higher levels of $W \rightarrow FF$ (Grzywacz et al., 2002), we posited that the effect we observed for physical and environmental demands could be capturing a self-employment effect. To explore this possibility, we ran analyses controlling for self-employment. Although self-employment was associated with more $W \rightarrow FF$ ($\beta = .12, p < .001$), it did not attenuate the parameter estimate for the physical and environmental demands factor. We also considered the possibility that this DOT characteristic was capturing a type of deprivation effect, such that any work for some people could benefit the family. To consider this possibility, we examined an interaction effect between household earnings and the DOT demands factor, anticipating that this DOT characteristic would only be beneficial for individuals with very low household earnings (i.e., bottom quintile). However, the interaction term was not significant ($\beta = -.01, p = .90$). It is clear that more research is necessary to understand the processes underlying this association.

Personal growth is an individual attribute that is relevant to work–family facilitation. Like prior studies linking dispositional variables to work–family facilitation (Grzywacz & Marks, 2000; Wayne et al., 2004), as well as the general idea that facilitation is a developmental process (Grzywacz, 2002), we found that individuals with more personal growth reported more $W \rightarrow FF$. However, we found no evidence supporting the moderating effect of personal growth on the relationship between job-related resources, proxied by job characteristics, and $W \rightarrow FF$. There are several possible explanations for these null findings. First, the modest reliability of our personal growth measure would have compromised the reliability of the interaction terms (Aiken & West, 1991), and thereby attenuated associations. Second, although there is value in approaching job-related resources from the broad perspective of job characteristics, one disadvantage of this approach is that resources inherent within job characteristics are essentially aggregated. Aggregation of specific resources offered by broader job characteristics (e.g., authority provides both flexibility and self-esteem; Friedman & Green-

haus, 2000) would likely introduce noise and attenuate possible interaction effects. A more definitive test of the role of personal growth in work–family facilitation would examine interaction effects with specific resources (e.g., flexibility, self-esteem). Finally, the theoretical basis for our predictions regarding the job characteristics and their interaction with personal growth (i.e., Hackman & Oldham's [1976] job characteristics model) may be irrelevant to $W \rightarrow FF$. Other tests of the job characteristics model have also failed to find that personal growth strength moderates relationships between job characteristics and outcomes predicted by the model (e.g., Johns, Xie, & Fang, 1992; Tiegs, Tetrick, & Fried, 1992). Although the findings of this study do not support the theoretical proposition that some workers will be better able to exploit accessible resources from their jobs to benefit their family, they strongly suggest that job characteristics such as authority may be beneficial to families regardless of workers' personal needs or desires.

Distinguishing Facilitation From Conflict

The results also add further evidence to the theoretical argument that work–family facilitation is not the bipolar opposite of work–family conflict. First, the incremental increases to explained variance in subsequent steps of our model suggest that the factors hypothesized to contribute to $W \rightarrow FF$ are not the same as those that contribute to WFC. The R^2 for WFC progressed from .16 to .20 across the models, whereas it changed from .07 to .21 across the $W \rightarrow FF$ models. Next, although the pattern of results was not entirely consistent with our hypotheses, multivariate tests of cross-equation difference indicated that the associations of four of the six job characteristics with $W \rightarrow FF$ differed from their associations with WFC. Of particular importance for this article, self-reported skill level and social skills were more strongly associated with $W \rightarrow FF$ than WFC. It is interesting that, in one case in which the association of the job characteristic with $W \rightarrow FF$ and WFC did not differ (i.e., substantive complexity), the job characteristic was associated with more $W \rightarrow FF$ but also more, rather than less, WFC. We believe that this finding can be explained by the fact that some jobs, such as high-level managers and executives (occupations heavily represented by the substantive complexity factor), are both resource rich and demanding, which may contribute to more $W \rightarrow FF$ and WFC, respectively. Finally, only in the case of self-reported autonomy did we find a parameter estimate of equal magnitude and

opposite sign. Although more theoretical and empirical work remain to be done to resolve the issue, these results suggest that work–family facilitation and work–family conflict are conceptually distinct and orthogonal constructs.

In sum, the results of this study provide a better understanding of $W \rightarrow FF$. First, the results consistently supported the proposition that jobs providing employees with resources foster greater opportunities for $W \rightarrow FF$. Workers in jobs allowing various aspects of authority and variety measured both subjectively and objectively reported higher levels of $W \rightarrow FF$. Second, the evidence suggests that the effects of job-related resources on $W \rightarrow FF$ are invariant by an individual's level of personal growth. Finally, the associations of job characteristics with $W \rightarrow FF$ and WFC predominantly differed, suggesting that work–family facilitation is not the bipolar opposite of work–family conflict. Thus, it is unlikely that models of work–family conflict will be effective for informing attempts to enhance work–family facilitation (Frone, 2003). Taken together, these results suggest that work–family facilitation is a theoretically distinct and empirically viable construct.

Limitations and Future Research

This study's findings must be interpreted within the context of three methodological shortcomings. First, the cross-sectional design of the survey undermines our ability to make causal inferences, and it makes it difficult to appreciate possible biases introduced by selection effects. Next, our hypothesis testing used a measure of positive spillover from work to family as a proxy for $W \rightarrow FF$ because validated measures of work–family facilitation do not exist. Positive spillover incompletely captures facilitation (Grzywacz, 2002; Hammer, 2003) because it represents beneficial changes to individual employees as a result of their work rather than enhancements to employees' involvement in their families. Finally, our mapping of the DOT factors onto the concepts of authority and variety was imperfect. Although the bivariate correlations of the DOT factors with autonomy and variety were generally consistent with our conceptual mapping, the average intercorrelation among these concepts was low, and in some cases unrelated (e.g., manipulative skill [DOT2] with self-report variety). This indicates that the DOT factors and the self-report items were tapping different phenomenon, and it undermines our ability to attribute the DOT effects on $W \rightarrow FF$ to resources made available by jobs. Nonetheless, the fact that three of the

four DOT factors were differentially predictive of $W \rightarrow FF$ and WFC lends solid support for the theoretical distinction between $W \rightarrow FF$ and WFC.

Despite the additional clarity provided by this study, there is a profound need for additional theoretical and empirical development around the work–family facilitation construct. First, as others have argued (Wayne et al., 2004), the development and validation of a theoretically based measure of work–family facilitation is essential. Second, despite the strengths of the approach taken in this study, it remains unclear which specific resources offered by different job characteristics are operative for $W \rightarrow FF$. Detailed studies are necessary to determine whether authority, for example, contributes to $W \rightarrow FF$ because it provides flexibility, opportunities for individual development (e.g., time management or task delegation), or some other process beneficial to family life. Next, research is needed to test other individual characteristics that may moderate the capacity of jobs to stimulate $W \rightarrow FF$. It is conceivable that cognitive attributes such as creativity or behavioral attributes such as life management skills (e.g., selective optimization with compensation; see Baltes & Heydens-Gahir, 2003) enable some employees to better extract benefit from their jobs for their families. Finally, direct tests of the apparent independence of work–family conflict and work–family facilitation are needed.

It is premature to outline policy or programmatic recommendations; however, the results do provide fodder for thinking about how jobs might be designed to promote $W \rightarrow FF$ and help workers balance work and family. Some recommendations are apparent; the results clearly suggest that building autonomy into jobs, such as through flexible scheduling or self-directed work groups, may simultaneously increase $W \rightarrow FF$ and decrease WFC, and presumably lead to greater work–family balance. Likewise, building opportunities into jobs for workers to acquire and refine social skills, such as through training opportunities or expanded opportunities for interpersonal contact, may also increase $W \rightarrow FF$. Other recommendations are less straightforward because job design may simultaneously promote $W \rightarrow FF$ and WFC. For example, building judgment and decision making (i.e., substantive complexity) and variety into jobs may promote $W \rightarrow FF$, but it may also exacerbate WFC. In cases in which these are essential functions, the job should be designed with additional attributes that lessen WFC (e.g., more flexibility).

Work–family facilitation is increasingly recognized as an important construct for understanding the

work–family interface. This study and others like it are beginning to give the construct meaning and the potential for impact; however, much more research needs to be undertaken. Nonetheless, consistent with theory, the results of this study suggest that job attributes provide opportunities for work–family facilitation to occur and that work–family facilitation is distinct from work–family conflict.

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