

Construction and Initial Validation of a Multidimensional Measure of Work–Family Conflict

Dawn S. Carlson

Department of Management, Hankamer School of Business, Baylor University

K. Michele Kacmar

Department of Management, College of Business, Florida State University

and

Larry J. Williams

Department of Management, School of Business, Virginia Commonwealth University

This manuscript reports on three studies that utilized five different samples ($N = 1211$) to construct and validate a multidimensional measure of work–family conflict. The six dimensions of conflict measured include the combination of three forms of work–family conflict (time, strain, and behavior) and two directions of work–family conflict (work interference with family and family interference with work). The three studies assessed the content adequacy, dimensionality, reliability, factor structure invariance, and construct validity of the scale. The design of the final scale provides future researchers the flexibility to measure any of the six dimensions of work–family conflict individually. © 2000

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Work–family conflict is a source of stress that many individuals experience. Work–family conflict has been defined as “a form of interrole conflict in which the role pressures from the work and family domains are mutually incompatible in some respect” (Greenhaus & Beutell, 1985, p. 77). Research on work–family conflict has found that this variable influences a number of outcomes including psychological distress, job satisfaction, organization commitment, turnover, and life satisfaction (Frone, Russell, & Cooper, 1992; Higgins, Duxbury, & Irving, 1992; O’Driscoll, Ilgen, & Hildreth, 1992; Parasuraman, Greenhaus, Rabinowitz,

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Address correspondence and reprint requests to Dawn S. Carlson, Department of Management, Baylor University, P.O. Box 98006, Waco, TX 76798–8006.

Bedeian, & Mossholder, 1989). Thus, work–family conflict has become a much investigated topic in today’s organizational behavior research.

Researchers have measured work–family conflict in many ways. Traditionally, researchers have measured work–family conflict unidirectionally. That is, they studied the conflict that occurred when work interfered with family (Greenhaus & Beutell, 1985). More recently researchers have begun to recognize the duality of work–family conflict by considering both *directions*: work interference with family and family interference with work (e.g., Duxbury, Higgins, & Mills, 1992; Frone et al., 1992; Gutek, Searle, & Klepa, 1991). To fully understand the work–family interface, both directions of work–family conflict (WIF and FIW) must be considered (Frone et al., 1992; Greenhaus & Beutell, 1985).

Researchers also have begun to consider the different *forms* of work–family conflict (Netemeyer, Boles & McMurrin, 1996; Stephens & Sommer, 1993). Consistent with Greenhaus and Beutell’s (1985) definition, three forms of work–family conflict have been identified in the literature: (a) *time*-based conflict, (b) *strain*-based conflict, and (c) *behavior*-based conflict. Time-based conflict may occur when time devoted to one role makes it difficult to participate in another role, strain-based conflict suggests that strain experienced in one role intrudes into and interferes with participation in another role, and behavior-based conflict occurs when specific behaviors required in one role are incompatible with behavioral expectation in another role (Greenhaus & Beutell, 1985). In 1991, Gutek et al. argued that each of these three forms of work–family conflict has two *directions*: (a) conflict due to work interfering with family (WIF) and (b) conflict due to family interfering with work (FIW). When these three forms and two directions are combined six dimensions of work–family conflict result: (1) time-based WIF, (2) time-based FIW, (3) strain-based WIF, (4) strain-based FIW, (5) behavior-based WIF, and (6) behavior-based FIW.

While there is some agreement in terms of the forms and directions of work–family conflict, researchers use a wide variety of scales to measure it. Recently, Netemeyer et al. (1996) constructed and validated a 10-item measure that included items for both directions of work–family conflict (WIF and FIW). However, the authors did not consider all three of the forms of work–family conflict. Regarding their measure they stated it is “not as useful as scales that use a multidimensional approach to the measurement of WFC and FWC” (p. 408). Another scale recently developed included items from each of the three forms of work–family conflict (Stephens & Sommer, 1996). However, it considers these forms from only one direction (WIF). As a result, these authors acknowledge that “further study is necessary to adequately measure family to work conflict” (p. 485).

In a recent meta-analysis of work–family conflict the authors suggested that differences in research results were often due to difference in measures (Kossek & Ozeki, 1998). They argue that researchers should strive for “greater consistency and construct development of measures” and that the measures needed to distinguish more clearly between nature and direction of conflict. Hence, there

Directions of Work-Family Conflict

		Work Interference with Family	Family Interference with Work
Forms of Work-Family Conflict	Time	Time Based Work Interference with Family	Time Based Family Interference with Work
	Strain	Strain Based Work Interference with Family	Strain Based Family Interference with Work
	Behavioral	Behavioral Based Work Interference with Family	Behavioral Based Family Interference with Work

FIG. 1. Dimensions of work-family conflict.

still remains a need for a work-family conflict measure that incorporates all six dimensions of work-family conflict.

The purpose of this study was to develop and validate a scale that captures all six unique dimensions of work-family conflict. To do this, scale development procedures which are described in the psychometric literature were followed (i.e., Bagozzi & Yi, 1988; Cortina, 1993; DeVillis, 1991; Schriesheim, Powers, Scandura, Gardiner, & Lankau, 1993). In all, three studies were conducted to develop and initially validate the final scale. Our goal was to produce a comprehensive, yet versatile, measure of work-family conflict that can be used to advance understanding of this complex phenomenon.

SIX-DIMENSIONAL PERSPECTIVE OF WORK-FAMILY CONFLICT

As can be seen in Fig. 1, the combination of the forms and directions of conflict result in six unique dimensions of work-family conflict. Examining work-family conflict from this perspective raises questions about the degree to which the six dimensions have been incorporated in prior measures and research. For background purposes and as a starting point, an investigation of which forms and directions of work-family conflict have been measured in past research was conducted. An ABI/INFORM search of seven top journals known to publish work-family conflict articles (*Academy of Management Journal*, *Human Relations*, *Journal of Applied Psychology*, *Journal of Management*, *Journal of Organizational Behavior*, *Journal of Vocational Behavior*, and *Organizational Behavior and Human Decision Processes*) was conducted. The years included in this search were 1986-1996. The studies and scales from articles prior to 1986 are reviewed in Greenhaus and Beutell (1985). A total of 25 articles were located. Table 1 provides a listing of the authors, the nature of work-family conflict studied, the source of the scales used to measure work-family conflict, the number of items in each scale, and the reliability coefficient for the scales as reported in the articles. Each scale also was evaluated to determine if it distinguished between the direction of conflict, the form of conflict, and if it included

TABLE 1
Representation of the Six Dimensions of Work-Family Conflict in Existing Measures

Author	Conflict measured*	Source of scale	Number of items	Alpha	Distinguish between direction? (WIF/FIW)	Distinguish between form? (time, strain, behavior)	All 6 dimensions represented?
Adams, King, and King (JAP, 1996)	Time & strain WIF	Kopelman, Greenhaus, and Connoly (1983)	4	.72	Yes	No	No
Aryee (HR, 1992)	Time & strain FIW	Burley (1989)	4	.66	No	No	No
	General WFC	Small and Riley, (1990)	15	.78, .77, .73			
Aryee and Luk (JVB, 1996)	General WFC	Kopelman et al. (1983)	4	.84	No	No	No
Bacharach, Bamberger, and Conley (JOB, 1991)	General WIF	Holohan and Gilbert (1979)	4	.77, .87	Yes	No	No
Bedeian, Burke, and Moffett (JOM, 1988)	General WFC	Burke, Weir, and Du Wors (1980)	8	.92	No	No	No
Duxbury and Higgins (JAP, 1991)	Strain WFC	Bohen and Viveros-Long (1981); Pleck (1978)	16	.88 (M) .90 (F)	No	Yes	No
	Time & strain WIF	Developed by authors	2	.76	Yes	No	No
Frone, Russell, and Cooper (JAP, 1992a)	Time & strain FIW	Developed by authors	2	.56	Yes	No	No
	Time & strain WIF	Developed by authors	2	.76			
Frone, Russell, and Cooper (JOB, 1992b)	Time & strain FIW	Developed by authors	2	.56	No	No	No
	Time & strain WFC	Developed by authors; see Frone et al. (1992a)	4	.65			
Frone, Russell, and Cooper (JOB, 1993)					No	No	No

Frone, Russell, and Cooper (JOM, 1994)	Time & strain WIF	Developed by authors	2	.76	Yes	No	No
Greenhaus, Parasuraman, Gramrose, Rabinowitz, and Beutell (JVB, 1989)	Time-based WFC	Kopelman et al. (1983)	6	.72, .82	No	Yes	No
Gutek, Searle, and Klepa (JAP, 1991)	Strain-based WFC Time & strain WIF	Kopelman et al. (1983) Kopelman et al. (1983)	6 4	.72, .72 .81/.83	Yes	No	No
Higgins, Duxbury, and Irving (OBHDP, 1992)	Time & strain FIW Strain WFC	Burley (1989) Bohen and Viveros-Long (1981); Pleck (1978)	4 16	.79/.83 .91	No	Yes	No
Judge, Boudreau, and Bretz (JAP, 1994)	Time & strain WIF	Gutek et al. (1991); Frone et al. (1992a)	4	.82	Yes	No	No
Loerch, Russel, and Rush (JVB, 1989)	Time & strain FIW Time-based WFC	Gutek et al. (1991) Frone et al. (1992a) Thompson (1985)	4 8	.76 .86	No	Yes	No
Matsui, Ohsawa, and Onglatco (JVB, 1995)	Strain-based WFC Behavior-based WFC Time & strain WIF	Wiley (1983) Developed by authors Developed by authors	5 5 5	.68 .82 .85	Yes	No	No
Netemeyer, Boles, and McMurrian (JAP, 1996)	Time & strain FIW Time & strain WIF Time & strain FIW	Developed by authors Developed by authors Developed by authors	5 5 5	.83 .88/.89/ .88 .86/.83/ .89 .72 (M) .72 (F)	Yes	No	No
	Strain WFC	Kopelman et al. (1983)	4				

TABLE 1—Continued

Author	Conflict measured*	Source of scale	Number of items	Alpha	Distinguish between direction? (WIF/FIW)	Distinguish between form? (time, strain, behavior)	All 6 dimensions represented?
O'Driscoll, Ilgen, and Hildreth (JAP, 1992)	Time WINW	Developed by authors	7	.87	Yes	Yes	No
Parasuraman, Greenhaus, and Granrose (JOB, 1992)	Time NWIW	Developed by authors	7	.79	No	Yes	No
	Time WFC						
Parasuraman, Greenhaus, Rabinowitz, Bedeian, and Mossholder (AMJ, 1989)	General WFC	Burke, Weir, and Du Wors (1979)	8	.92	No	No	No
Parasuraman, Purhoit, Godshalk, and Beutell (JVB, 1996)	Time WIF	Kopelman et al. (1983)	6	.87	Yes	No	No
Rice, Frone, and McFarlin (JOB, 1992)	Strain FIW	Kopelman et al. (1983)	4	.64	Yes	No	No
	Strain WFC						
Thomas and Ganster (JAP, 1995)	Time & strain WFC	Kopelman et al. (1983)	8	.87	No	No	No
	General WNC						
Wiley (JOM, 1987)	General WNC	Burke, Weir, and Du Wors (1979)	22	.86, .73 .63, .75	No	No	No
Williams and Alliger (AMJ, 1994)	General WFC	Developed by authors	Diaries	NA	No	No	No

Note. Abbreviations: WIF, work interference with family conflict; FIW, family interference with work conflict; WINW, work interference with nonwork conflict; NWIW, nonwork interference with work conflict; strain, strain-based conflict; WNC, work-nonwork conflict (both directions); WINW, work interference with nonwork conflict; NWIW, nonwork interference with work conflict; strain, strain-based conflict; general, form not specified.

* WFC, work-family conflict (both directions, WIF & FIW).

all six dimensions of work-family conflict. The results of this investigation appear in Table 1.

As can be seen in Table 1, researchers distinguish items by *direction* between WIF and FIW in their scales in less than half of the 25 studies reviewed. Specifically, 12 out of 25 researchers separated the direction of conflict in their scales. Researchers distinguish between the *forms* of conflict (i.e., time, strain, behavior) in their scales even less often. In only 7 of the 25 studies did researchers distinguish between the forms of conflict. Further, only one of the scales examined included behavior-based conflict introduced by Greenhaus and Beutell (1985). Overall, 17 of the 25 measures do make some kind of distinction whether it is by form or direction in measuring work-family conflict. Finally and perhaps most importantly, of all the scales examined, none included items that represent all six of the dimensions of work-family conflict.

STUDY 1: EXISTING WORK-FAMILY CONFLICT SCALES

In Study 1, existing items from the literature were collected and used as the initial foundation of the scale. These items were included in a content adequacy analysis (Part 1) to determine which, if any, form or direction of work-family conflict they best represented. Additional data collected on the retained items were analyzed via exploratory factor analysis (Part 2) to determine the underlying factor structure of the items.

Methods—Part 1

Item generation. A total of 31 nonredundant items were generated from existing measures in the literature (see Appendix A). Items were incorporated from Bohlen and Viveros-Long (1981); Burley (1989); Duxbury et al. (1992); Frone et al. (1992); Gutek et al. (1991); Kopelman, Greenhaus, and Connolly (1983); Pleck (1978); and Stephens and Sommer (1993). The items developed and used by Aryee (1992); Bedeian, Burke, and Moffett (1988); O'Driscoll et al. (1992); and Wiley (1987) were not included because these various measures specifically considered job demands or nonwork conflict and did not fit the scope of the present study. In addition, Netemeyer et al. (1996) had not been published when we collected the items used in Study 1 so their items were not included.

Procedure. The 31 items were included in a content adequacy test following the guidelines provided by Schriesheim et al. (1993). A respondent was asked to determine the degree to which each of the work-family conflict items represented a work-family conflict definition. The six work-family conflict dimensions previously discussed (Fig. 1) were used. The definitions of each dimension were based on the work of Greenhaus and Beutell (1985) and Duxbury et al. (1992). In order to not fatigue the raters and risk a reduction in the accuracy of their ratings, judges only rated two dimensions that were randomly assigned to them. This required them to make only 62 judgements rather than 186 (6×31).

Participants. The raters consisted of 236 undergraduates enrolled in an upper level business course at a southern university. Of the 236, 125 (53%) were male.

The average age of the sample was 21.8 years. Using college students as content adequacy raters has been endorsed in the literature. Schriesheim et al. (1993) noted that the main requirement for a content adequacy judge is "that they possess sufficient intellectual ability to perform the item rating task and that they be relatively free of serious potential bias" (p. 407). Given this requirement, college students appear to be a highly appropriate choice for content adequacy judges as they would have the capability to read and understand the rating task instructions, items, and theoretical definitions (Schriesheim et al., 1993).

Analyses and results. The mean score of the responses on each item provided was calculated for each dimension. In order to be retained, an item's mean had to pass two tests. First, an item's highest mean had to correspond to the intended work-family conflict dimension. In addition, to eliminate items that did not discriminate between dimensions, an item's highest mean had to be sufficiently different from the ratings obtained for the other categories. If the difference between the highest and the next highest mean was not at least .20, the item was discarded.

Four items (i.e., 2, 11, 15, and 31) were dropped because they failed to score highest on their intended dimension. An additional seven items (i.e., 1, 5, 6, 7, 8, 13, and 19) were removed due to failure to discriminate between dimensions. The 20 retained items are marked with an asterisk in Appendix A.

Methods—Part 2

Procedure. A survey was administered to employees in a division of a state government agency in the Southeast. The survey was comprised of the 20 items retained from the content adequacy analyses. Employees rated the degree to which they felt that they experienced the conflict represented in each of the items. Responses were made on a Likert-direction scale with the anchors being strongly agree (5) and strongly disagree (1).

Participants. The state government agency sample provided 390 usable surveys. The sample included 234 males (60%) whose ages averaged to 42 years. With respect to marital status, 257 (66%) of the respondents indicated they were married and 222 (57%) had children.

Analyses and results. The responses to the items were factor analyzed with an exploratory factor analysis (EFA) applying an oblique rotation. Multiple criteria for determining the number of factors to retain were used (Ford, MacCallum, & Tait, 1986; Kim & Mueller, 1978; Stevens, 1992). The specific criteria used were: Kaiser's criterion, where only factors with eigenvalues greater than 1.0 are retained; cumulative percentage of variance explained; and the scree plot of the factor eigenvalues.

Three factors were identified. The eigenvalues for the three factors were, 5.8, 2.8, and 1.7 respectively. These three factors explained 52.3% of the variance. Each item loaded on only one factor. All of the items had loadings greater than .45, except for item 16, which loaded at .30. Item 16 was the only strain based

WIF item. Therefore, it would not be expected to load as strongly on a factor that did not distinguish between both form and direction of conflict.

The 20 items used for this analysis did not equally represent each of the six dimensions of conflict. For example, the behavior based FIW dimension was not represented. Further, only one item measured the strain-based WIF dimension, only two items measured the time-based FIW dimensions, and only three items measured the strain-based FIW dimension. While these 20 items provide a solid beginning of a comprehensive work-family conflict scale, additional items were needed to cover all six dimensions.

STUDY 2: AUGMENTING EXISTING SCALES

Methods

Item development. The next step was to develop new work-family conflict items to augment each of the six dimensions and have them rated for content adequacy. The items developed were based on a review of the literature as well as on personal and anecdotal experience. An additional 34 items, which can be found in Appendix B, were developed so that each dimension contained a representative set of items.

Participants. The respondents who served as judges for the content adequacy analysis consisted of 132 MBA students enrolled in a business course at a western university. A total of 89 (68%) were male, the average age was 26.2 years, and 74% were employed at least part-time.

Procedure. To test the content adequacy of the 54 items, 20 retained from Study 1 and 34 generated for Study 2, two different approaches were used: categorization and rating. In the first approach, 11 randomly selected respondents used a stacking procedure. These individuals were given the items on separate sheets of paper and asked to stack the sheets on top of the definition they most closely fit. The remaining 121 individuals also were asked to place each item in one dimension, but the items were listed on one sheet of paper, not separate ones. In this case, respondents placed a number from 1 to 6 in front of each item to reflect which dimension definition most accurately represented each item. In the second approach, all of the judges also were asked to follow the content adequacy guidelines outlined by Schriesheim et al. (1993) (i.e., the procedure used in Study 1). Each rater rated all 54 items on three of the six dimension definitions selected at random.

Analyses and results. For the categorization portion of the data, the number of judges who placed an item in a dimension was counted. For the rating portion of the data, the mean for each item on each dimension was calculated. In order for an item to be retained, it had to pass both a categorization and a rating content adequacy test. To pass the categorization test, an item had to be assigned to the correct definition at least 70% of the time. This test was performed on data from the categorization techniques. For the rating-content adequacy testing, a mean score of 3.5 or higher (70%) for an item on the correct definition was considered

acceptable. The 70% cut-off is consistent with the criterion used in previous content adequacy research (i.e., Schriesheim & Hinkin, 1990). Applying these rules to the data indicated that 21 items did not pass both tests, leaving 33 items. All 33 of these items could have been included in the final scale, but for parsimony and equal representation across dimensions, three additional items were removed leaving only the 5 best items for each dimension. The 30 items included in the final scale are shown with an asterisk in Appendix B.

STUDY 3: SCALE VALIDATION

Study 3 was designed to validate the scale developed in Studies 1 and 2. Part 1 of this validation effort included further measure purification analyses. Part 2 used a second sample to examine the dimensionality, reliability, and discriminant validity of the scale. Also in Part 2, the factor structure from Part 1 was applied to various samples and tested on a sample split on gender. Finally, differential relationships were examined. To gather the data needed to perform these tests, a survey composed only of the 30 work–family conflict scale items retained in Study 2 was administered.

Methods—Part 1

Participants 1

The participants consisted of 228 graduates from an Executive MBA program at a large western university. Approximately 380 surveys were distributed to individuals from a mailing list of past graduates (response rate 60%). A cover letter was included guaranteeing confidentiality and explaining the purpose of the survey. Respondents were supplied reply envelopes and asked to return the survey to the researchers through the mail. The participants included 151 (66%) males, were an average age of 40 years old, and had an average organizational tenure of 7.9 years. With respect to marital status, 170 (75%) of the respondents indicated they were married and 137 (60%) had children.

Results

Measure Purification

Structural equation modeling (SEM) was applied to the 30 item measure from Study 2 to isolate items that performed well across a number of different criteria. A six-factor confirmatory model with five items reflecting each of the six factors established in Study 2 was specified using LISREL 8 (Jöreskog & Sörbom, 1993). To determine which items should be *removed*, we applied suggestions found in the scale development literature (Bagozzi & Yi, 1988; DeVillis, 1991). First, we deleted any items that had completely standardized factor loadings of less than .50. Next, we inspected the modification indices and expected change values for all the factor loadings to ensure that an item was not more strongly associated with any factor other than the one for which it was intended. If it was, it was eliminated. Finally, we removed items that consistently resulted in corre-

lated measurement error either within factors, across factors, or both. That is, items were dropped if consistently significant standardized residuals were found.

Applying these criteria resulted in the removal of 11 of the 30 items: 5 items due to correlated measurement error, 2 items due to factor loading issues, 2 items due to values for modification and expected change parameters, and 2 items which were problematic on multiple criteria. One final item was removed from the scale due to the redundancy of its wording. The purification process produced an 18-item scale with 3 items measuring each of the 6 dimensions. Of the remaining 18 items, 5 were from existing scales and 13 items were new. The final items appear in Table 2.

Methods—Part 2

Part 2 of Study 3 was designed to assess dimensionality, reliability, and discriminant validity of the scale and to determine if the factor structure of the scale held for a new sample and across gender. Furthermore, several antecedents and consequences of work–family conflict were collected for construct validation of the new 18 item measure. Hence, in Part 2, not only were responses collected for the work–family conflict items, but several antecedents and consequences of work–family conflict also were included in the survey. The antecedents included were role conflict, role ambiguity, and social support from both the work and family domain as well as work involvement. The outcomes studied were job satisfaction, family satisfaction, life satisfaction, and organizational commitment. All of these variables have been found to be significantly related to work–family conflict. It was expected that the antecedents of role overload and role ambiguity, and involvement from each domain, would be positively related to the respective domains of work–family conflict (e.g., Adams, King, & King, 1996; Frone, Yardley, & Markel, 1997), while the antecedent of social support from each domain would be negatively related to domain specific work–family conflict (Greenhaus, Bedeian, & Mossholder, 1987; Schaubroeck, Cotton, & Jennings, 1989). The three satisfaction outcomes (i.e., job, family, life) and organizational commitment were expected to decrease as work–family conflict increases, so a negative relationship is predicted (Higgins et al., 1992, Parasuraman et al., 1989; O’Driscoll et al., 1992; Rice, Frone, & McFarlin, 1992). Data collected from the second survey (Part 2) were used to perform differential prediction analyses.

Participants 2

Data were collected from 225 individuals who were employed full-time. The respondents were employed by numerous organizations in a midwestern city and secured through a snowball sampling approach. The principal sample included individuals who were enrolled as full-time students in an evening program catering to working adults finishing their undergraduate degrees. Besides completing the survey themselves, these individuals were asked to distribute five surveys to colleagues at their places of employment who would be willing to complete a questionnaire examining work–family conflict. The only selection

TABLE 2
Final Version of Work-Family Conflict Scale

Work-family conflict items

Time-based work interference with family

1. My work keeps me from my family activities more than I would like.^a
2. The time I must devote to my job keeps me from participating equally in household responsibilities and activities.^a
3. I have to miss family activities due to the amount of time I must spend on work responsibilities.

Time-based family interference with work

4. The time I spend on family responsibilities often interfere with my work responsibilities.
5. The time I spend with my family often causes me not to spend time in activities at work that could be helpful to my career.
6. I have to miss work activities due to the amount of time I must spend on family responsibilities.

Strain-based work interference with family

7. When I get home from work I am often too frazzled to participate in family activities/responsibilities.
8. I am often so emotionally drained when I get home from work that it prevents me from contributing to my family.
9. Due to all the pressures at work, sometimes when I come home I am too stressed to do the things I enjoy.

Strain-based family interference with work

10. Due to stress at home, I am often preoccupied with family matters at work.
11. Because I am often stressed from family responsibilities, I have a hard time concentrating on my work.
12. Tension and anxiety from my family life often weakens my ability to do my job.

Behavior-based work interference with family

13. The problem-solving behaviors I use in my job are not effective in resolving problems at home.^a
14. Behavior that is effective and necessary for me at work would be counterproductive at home.^a
15. The behaviors I perform that make me effective at work do not help me to be a better parent and spouse.^a

Behavior-based family interference with work

16. The behaviors that work for me at home do not seem to be effective at work.
 17. Behavior that is effective and necessary for me at home would be counterproductive at work.
 18. The problem-solving behavior that work for me at home does not seem to be as useful at work.
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^a Items from Stephens and Sommer (1996).

criterion applied was that respondents hold full-time jobs. The sample consisted of 83 (37%) males who were an average age of 35.5 years old. A total of 144 (64%) were married and 142 (63%) had children living at home. The results were

examined to determine if the sample was confounded by including a small group of individuals who were not married and had no children living at home. The comparisons for the model based on the full and more constrained sample suggested no differences between samples. Thus, the results for the full sample are reported herein.

Measures

Role conflict. Work-related role conflict was measured using Rizzo, House, and Lirtzman's (1970) eight-item measure of role conflict. A sample item is "I must do things that should be done differently." The internal reliability was .90 for the participants in this study. The same eight items were used to measure family-related role conflict. However, each item was modified to reflect the family domain. The Cronbach alpha was .85 for the participants in this study.

Role ambiguity. Work role ambiguity was measured with Rizzo et al.'s (1970) role ambiguity scale. This scale consists of six items and produced a Cronbach alpha of .82. A sample item is "I know exactly what my responsibilities are." The same items, adjusted for the family domain, were used to measure family role ambiguity. The internal consistency reliability estimate for these six items was .83.

Social support. Social support from the work domain was measured with a 16 item measure of organizational support developed by Eisenberger, Huntington, Hutchison, and Sowa (1986). A representative item is "Help is available from the organization when I have a problem." The alpha coefficient was .94 for the participants in this study. For the family domain these items were adapted to tap the support received from family sources. The alpha coefficient for this scale was .93 for the participants in this study.

Involvement. Two questions (e.g., "I would like more time to spend working") originally from Quinn and Staines (1979) and used by Higgins et al. (1992) were used to tap work involvement. In addition, two questions from Buchanan (1974) (e.g., "I am very much personally involved in my work") were included that were designed to measure absorption in the activities of one's role. The alpha coefficient for this scale was .84. These items were modified to measure the family-related domain as well. The Cronbach alpha coefficient produced by the family scale was .82.

Job satisfaction. The job satisfaction scale was an overall measure of the degree to which an individual is satisfied or happy with his or her job. Our three-item measure of job satisfaction was designed and used by Cammann, Fichman, Jenkins, and Klesh (1979) and Seashore, Lawler, Mirvis, and Cammann (1982). One of the items from this scale is "All in all, I am satisfied with my job." The Cronbach alpha for this scale was .91.

Organizational commitment. The organizational commitment scale measures the degree to which individuals are committed to the organization. The nine items used were developed by Balfour and Wechsler (1996). A sample item is "I am

quite proud to be able to tell people who it is I work for.” The reliability for this scale was .91.

Family satisfaction. The family satisfaction scale is an overall measure of the degree to which an individual is satisfied with his or her family life. The three-item scale was developed by Staines and Pleck (1983). A sample item is “I am happy with my family life.” The internal reliability for this scale was .85.

Life satisfaction. The life satisfaction scale measures an individual’s perceptions regarding the quality of his or her life in general. The five-item scale developed by Diener, Emmons, Larsen, and Griffin (1985) was used. An item from this scale is “I am satisfied with my life.” The Cronbach alpha estimate for this scale was .87.

Analyses

The dimensionality of the items was assessed with confirmatory factor analysis. Next, the reliability of the scales was established with coefficient alpha. Discriminant validity of the scales was examined with SEM. Further, a multiple group SEM test was conducted to determine if the six-factor structure held across samples. The Participants 1 and Participants 2 data from Study 3 were used for this analysis. In addition, a multiple group SEM test was conducted on Participants 2 to determine if the six factor structure held across gender. Differential predictions were investigated through examining path coefficients in structural equation models using the measures developed to tap the work–family conflict dimensions with antecedents and outcomes. This analysis was based on Participants 2.

Results

Dimensionality

Confirmatory factor analysis was used to assess a six-factor model where each of the six categories were represented separately (Anderson & Gerbing, 1988). For comparison purposes, three other possible models similar to models used in prior scales were examined. First, a three-factor model, which represented the three forms of work–family conflict, time, strain, and behavior (collapsing across direction), was tested. Next, a two-factor model representing the two directions of work–family conflict, WIF and FIW (collapsing across form), was estimated. Finally, a one-factor model representing a general work–family conflict perspective was examined.

In each model the items were forced to load on a specified factor and the factors were allowed to correlate. Table 3 presents the X^2 , comparative fit statistic (CFI), and root-mean-square error of approximation for each of the four models. The indices show that the six-factor model is the best fitting model. Further examination of the six-factor model indicated that the factor loadings were all significant. The completely standardized factor loadings for each of the 18 items appear in Fig. 2.

TABLE 3
Estimates of Fit Indices—Sample 2

Model	X^2	<i>df</i>	<i>p</i>	Comparative fit index	Root mean square error of approximation
Six-dimensional model: Unique categories of work-family conflict	237.40	120	.00	.95	.06
Three-dimensional model: Forms of work-family conflict	1166.14	132	.00	.66	.19
Two-dimensional model: Directions of work- family conflict	1326.99	134	.00	.61	.19
One-dimensional model: General work-family conflict	1677.39	135	.00	.50	.23

Note. $N = 225$.

Internal Consistency

The internal consistency of each of the six dimensions was estimated with coefficient alpha. The reliabilities exceeded the conventional level of acceptance of .70 (Nunnally, 1978): time-based WIF = .87; time-based FIW = .79; strain-based WIF = .85; strain-based FIW = .87; behavior-based WIF = .78; behavior-based FIW = .85.

Discriminant Validity

Discriminant validity was assessed by examining the factor correlations from the confirmatory factor analysis. The correlations of the six factors, found in Table 4, ranged from .24 to .83. Only two of the correlations were above .60. Thus, discriminant validity was shown.

Factor Structure Tests

To determine if the factor structure of the six-dimensional model was invariant across various samples, a LISREL two-group measurement procedure was performed. This procedure was used because it allows the factor loadings, correlations, and error variances to be held invariant individually or in combination. Tests of this nature provide a rigorous assessment of the measurement properties of the models (Bagozzi & Yi, 1988; Bollen, 1989; Marsh, 1995).

Four two-group models for the six-dimensional work-family conflict approach were estimated for comparison purposes. The first model required the factor loadings, factor correlations, and the error variances for both data sets to be equivalent. The second model still held the factor loadings and correlations invariant, but allowed the error variances to be different for each dataset. The

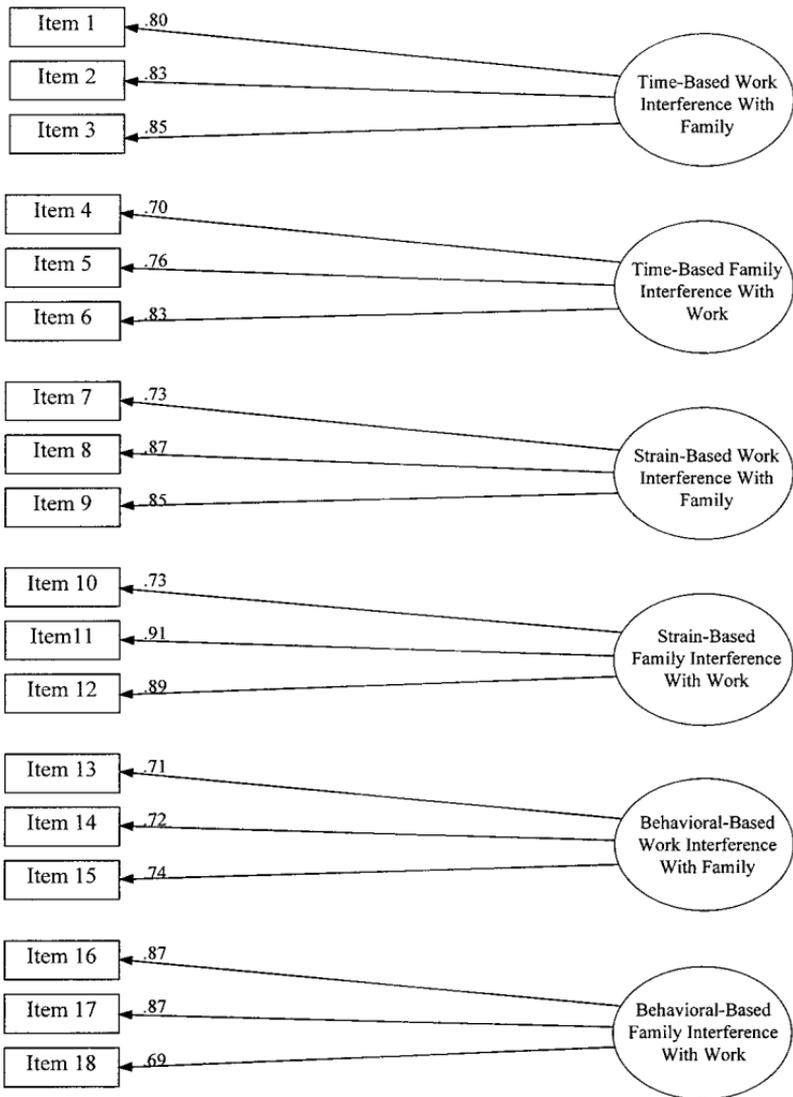


FIG. 2. Completely standardized path loadings for 18-item scale.

next model allowed the factor correlations and error variances to vary, but the factor loadings remained invariant. The final model allowed the factor loadings, correlations, and error variances to vary across the samples. The fit for each of the four models as well as the X^2 difference tests between the baseline model and each of the other models can be found in Table 5.

These results suggest that the two different data sets map well to the model with respect to the factor loadings, factor correlations, and error variances, indicating that the model is generalizable across the data sets. The baseline model was not significantly different from the model with the factor loadings held

TABLE 4
Discriminant Validity of the Six Dimensions of Work-Family Conflict:
Phi Matrix from CFA Analysis

Dimension of work-family conflict	1	2	3	4	5	6
1. Time-based work interference with family	—					
2. Time-based family interference with work	.31	—				
3. Strain-based work interference with family	.58	.45	—			
4. Strain-based family interference with work	.24	.76	.48	—		
5. Behavior-based work interference with family	.31	.40	.54	.47	—	
6. Behavior-based family interference with work	.28	.26	.51	.45	.83	—

invariant or from the model with the factor loadings and factor correlations held invariant. The only instance where the factor structure did not hold across the samples was the most constrained model, where factor loadings, factor correlations, and error variances were all invariant. However, invariant error variances are considered the least important in testing measurement property invariance across groups (Bollen, 1989; Netemeyer et al., 1996). Furthermore, statistical tests of invariance have limitations so fit indices also should be used to assess invariance (Marsh, 1995; Williams, Bozdogan, & Aiman-Smith, 1996). An examination of the fit statistics for the model in which factor loadings, correlations, and error variances were fixed indicated adequate fit on all indices. Thus, evidence of measurement invariance across samples was found, further confirming the structure of the six-factor model.

Gender Differences

To determine if the factor structure of the six-dimensional model was invariant across gender, the same analytic procedure used to examine the factor structure in the

TABLE 5
Test of Measurement Invariance

Six-dimensional model	X^2	df	X^2_{diff}	df_{diff}	Comparative fit index	Root-mean-square estimate of approximation
No constraints (baseline model)	451.20*	246			.96	.039
Factor loadings invariant	472.78*	264	21.58	18	.96	.039
Factor loadings & factor correlations invariant	487.52*	273	36.32	27	.96	.039
Factor loadings, factor correlations, & error variances invariant	579.90*	291	119.70*	45	.94	.043

* $p < .01$.

TABLE 6
Test of Gender Differences

	X^2	df	X^2_{diff}	df_{diff}	Comparative fit index	Root-mean-square estimate of approximation
Six-dimensional model						
No constraints (baseline model)	427.63*	246			.92	.07
Factor loadings invariant	460.59*	264	32.96	18	.92	.08
Factor loadings & factor correlations invariant	487.27*	273	59.84*	27	.91	.08
Factor loadings, factor correlations & error variances invariant	518.79*	291	91.16*	45	.90	.08

t test for Gender Differences

Dimension	Mean for males	Mean for females	<i>t</i>	<i>p</i>
Time-based work interference with family	2.91	2.82	.52	.601
Time-based family interference with work	1.77	2.01	-2.05	.042
Strain-based work interference with family	2.45	2.81	-2.52	.013
Strain-based family interference with work	1.71	1.93	-2.02	.045
Behavior-based work interference with family	2.43	2.63	-1.58	.116
Behavior-based family interference with work	2.36	2.65	-2.09	.038

* $p < .01$.

previous section was applied. A LISREL two-group measurement procedure was performed in which four two-group models (i.e., male versus female) for the six dimensional work-family conflict approach were estimated for comparison purposes. The fit for each of the four models as well as the X^2 difference tests between the baseline model and each of the other models appear in Table 6.

These results suggest that the two different data sets map well to the model with respect to the factor loadings. The baseline model was not significantly different from the model when the factor loadings were held invariant. However, there were differences across gender when the factor loadings and factor correlations were held invariant and in the most constrained model in which the factor loadings, factor correlations, and error variances were all invariant. While it is not surprising to find differences in error variance the differences in factor correlations suggest that women and men may experience conflict differently. Examination of the factor correlations suggest that men and women had the same pattern of significance. The average overall correlation for males was .47 and for females was .45. Furthermore, two-thirds of the individual differences were less than .20 and the largest difference between correlations was .37.

To further examine gender differences, *t* tests were conducted on the level of experienced conflict across all six dimensions. On four of the six dimensions of conflict significant differences were found. More specifically, females were found to experience more conflict than men in terms of all three family interference with work forms of conflict (time, strain, behavior) as well as strain based work interference with family conflict. It is possible that the inconsistent findings in past research on gender differences (Eagle, Miles, & Icenogle, 1997, Frone et al., 1992, Pleck, 1977, Williams & Alliger, 1994) may be explained by the fact that females are likely to experience more conflict than men on only some, not all, forms of conflict. Thus, the way in which conflict was measured may explain whether gender differences were found.

Differential Relationships

Differential relationships between the dimensions of work-family conflict and several antecedent and outcome measures were examined. To examine the differences in the work-family conflict dimensions two models were tested, one for each direction, which included relevant antecedents and consequences. The first model included the three forms of WIF conflict. In addition, the antecedents of work-role conflict, work-role ambiguity, work involvement, and work social support were included since they all represent the work domain. This model is consistent with past research that showed domain-specific antecedents were related to different directions of work-family conflict (i.e., Adams et al., 1996; Frone et al., 1997; Thomas & Ganster, 1995). The four outcomes (job satisfaction, family satisfaction, life satisfaction, and organizational commitment) also were included in the model. Finally, consistent with past research, direct paths from the antecedents to outcomes were included. The second model examined was similar to the first except that it included the three FIW forms of conflict and family specific antecedents and consequences. The model approach described above was chosen because of its advantages relative to a more traditional correlational analysis (e.g., accounts for measurement error, omnibus statistical test).

To determine if the dimensions of conflict were differentially related to the antecedents and outcomes considered here, the significance of the path coefficients from the model were examined. These path coefficients appear in Table 7. The three forms of WIF conflict have differential relationships such that three of the four antecedents (role conflict, ambiguity, and involvement) were significantly related to strain based conflict, two (ambiguity and involvement) were related to behavior based, and only one (involvement) to time based. The three forms of WIF conflict also differentially predicted the three types of satisfaction and commitment. More specifically, two of the forms of conflict (strain and behavior) were significantly related to the outcomes of family and life satisfaction. However, time-based conflict was not significantly related to any of the outcomes of interest.

Similar findings of differential relationships were found for the FIW variables. All four of the family domain antecedents significantly predicted behavior-based

TABLE 7
Completely Standardized Path Loadings

Measure	Time-based work interference with family	Strain-based work interference with family	Behavior-based work interference with family
Three forms of work interference with family conflict			
Antecedents			
Work role conflict (+)	.11	.29*	.21
Work role ambiguity (+)	.17	.24*	.22*
Work social support (-)	.00	-.03	-.09
Work involvement (+)	.37*	.37*	.21*
Outcomes:			
Job satisfaction (-)	.04	-.03	.00
Family satisfaction (-)	.07	-.25*	-.39*
Life satisfaction (-)	.13	-.24*	-.36*
Organizational commitment (-)	.04	.03	-.06

Measure	Time-based family interference with work	Strain-based family interference with work	Behavior-based family interference with work
Three forms of family interference with work conflict			
Antecedents			
Family role conflict (+)	.25*	.27*	.27*
Family role ambiguity (+)	-.09	.02	.20*
Family social support (-)	-.38*	-.35*	-.23*
Family involvement (+)	.00	-.02	.12*
Outcomes:			
Job satisfaction (-)	-.03	-.24*	-.14
Family satisfaction (-)	.02	-.22*	.11
Life satisfaction (-)	.07	-.23*	.09
Organizational commitment (-)	-.15	-.11	-.22*

Note. $N = 225$.

* $p < .05$.

conflict but only two (role conflict and social support) predicted time- and strain-based conflict. Furthermore, while family role conflict had similar relations to all three forms of conflict, social support was more highly related to time and strain conflict than behavior conflict. The strain-based form of conflict significantly predicted three of the four outcome variables not predicted by the other two forms of conflict. In addition, organizational commitment was significantly related to the behavior-based form of conflict but not the other two forms of FIW. These findings would suggest that the six dimensions of work-family conflict are differentially related to various antecedents and outcomes commonly found in the work-family conflict literature.

DISCUSSION

The present research constructed and initially validated a comprehensive scale of work-family conflict that incorporated the multiple dimensions of the construct. The items composing the scale are a combination of items from previous work and new items developed specifically for this study. Content adequacy, content analysis, exploratory and confirmatory factor analyses, and correlation analyses were performed on these items. The end result was an 18-item scale with six different subscales that measured the six dimensions of work-family conflict: time-based WIF, time-based FIW, strain-based WIF, strain-based FIW, behavior-based WIF, and behavior-based FIW. Each of the scales in the six-dimensional model showed discriminant validity, internal consistency, and invariance of the factor structure across samples. In addition, each of the scales differentially related to various antecedents and consequences of work-family conflict, further suggesting the potential predictive validity of the scales.

Other scales exist that measure work-family conflict (i.e., Frone et al., 1992; Gutek et al., 1991), and some have even been subjected to substantial validation efforts (Netemeyer et al., 1996; Stephens & Sommer, 1996). However, none of the existing scales provide a way to measure each of the six dimensions of conflict. In fact, Netemeyer et al. (1996) stated that their scale was "not as useful as scales that use a multidimensional approach" (p. 408) to measure work-family conflict. Stephens and Sommer (1996), whose measure consisted of WIF items, acknowledged that "further study is necessary to adequately measure family to work conflict" (p. 485). The scale developed in the present study overcomes both limitations of previous scale development efforts and answers the call for a measure that considers the importance of both nature and direction of conflict (Kossek & Ozeki, 1998). The multidimensional measure of the concept of work-family conflict developed in the present study is a more accurate depiction of the construct as it allows each of the six dimensions to be examined. Future use of this scale should provide a greater understanding regarding how the separate work-family conflict dimensions relate to attitudes and behaviors of interest.

Strengths, Limitations, and Future Research

The research performed to construct and validate this scale has several strengths. First, the research consisted of three different studies that together provide a very thorough scale-development effort. Hence, the resulting scale has been subjected to rigorous development and validation procedures. Another strength of this research is that it incorporated five different samples. Thus, the potential for sample specific bias has been reduced by using unique and independent samples for each phase of the project. Using multiple samples also allowed us to examine the invariance of the final scale across samples. Furthermore, the new scale includes each of the six dimension of work-family conflict, some of which have been missing in previous measures. Finally, the scale measures all of the dimensions of work-family conflict using only 18 items.

However, the study is not without limitations. First, the scale was validated on only two samples. Additional validation of the scale across organizations and occupations is needed to further establish the scale and provide generalizability. Second, we did not incorporate all of the items from the Netemeyer et al. (1996) scale, as this scale was not published while the current research was underway. Future research should include the Netemeyer scale and the one developed here in one study to determine the degree of difference or overlap between them. Finally, only eight constructs were used to examine the differential relations of the work–family conflict scales. Future research should incorporate additional constructs thought to be uniquely related to different dimensions of work–family conflict. While the current research included traditional variables found in the work–family conflict literature, it would be useful to examine differential predictions with additional antecedents and consequences.

While each of these limitations provides an opportunity for future research, there is also the need for more research on behavior-based conflict. More research is needed to clarify the meaning of behavior-based conflict and subsequently its measurement. It has been historically considered as the recognition that different behaviors are necessary at work and at home, which in and of itself does not reflect conflict. However, the inability of the individual to adjust that behavior from one role to the other more clearly represents the construct. In fact, in the current study the results from the CFA (Table 4) suggest the dimensions of behavior-based conflict are highly correlated (.83). This correlation, however, could be inflated due to the restrictive assumptions of confirmatory factor analysis that all secondary factor loadings are zeros. Thus, an exploratory factor analysis was conducted and the factor correlation between the two behavior factors was significantly lower (.42). In addition, the factor loadings demonstrated an appropriate simple structure. Thus, while the existing factors do discriminate, further research also may be needed to provide additional conceptual distinction.

Finally, further research is needed on the unique antecedents and outcomes for each of the dimensions of work–family conflict measured by this scale. While a great deal is known about work–family conflict in general, very little is known about the strength of the relationships of the six dimensions of work–family conflict with other variables. Does each uniquely explain different outcomes? Does each have unique predictors? Furthermore, different questions need to be asked about the directions of work–family conflict. Most research suggests that WIF conflict is greater than FIW conflict (Gutek et al., 1991; Judge, Boudreau, & Bretz, 1994; Netemeyer et al., 1996). However, little is known about when the forms of work–family conflict are combined with the directions. That is, are all forms of conflict (time, strain, behavior) greater from the WIF direction than from the FIW direction? All of these questions and more beg to be answered. It is hoped that when researchers set out to explore these issues in the future, the scale developed and validated in the present study will be employed to measure the complex nature of work–family conflict.

APPENDIX A

Initial 31 Items from Existing Scales

Item	Source
1. After work, I come home too tired to do some of the things I'd like to do.	Gutek et al. (1991); Stephens and Sommer (1993)
2. I feel I have more to do than I can comfortably handle.	Duxbury et al. (1992)
3. My work keeps me from my family activities more than I would like. ^a	Duxbury et al. (1992); Stephens and Sommer (1993, 1996)
4. On the job I have so much work to do that it takes away from my personal interests. ^a	Gutek et al. (1991)
5. I feel physically drained when I get home from work.	Duxbury et al. (1992); Stephens and Sommer (1993)
6. The tensions and anxieties I feel from my family and work responsibilities often become so great that my efforts to cope suffer.	Stephens and Sommer (1993)
7. My family/friends dislike how often I am preoccupied with my work while I am at home.	Gutek et al. (1991); Duxbury et al. (1992); Stephens and Sommer (1993)
8. I feel emotionally drained when I get home from work.	Duxbury et al. (1992)
9. The demands of my job make it difficult for me to maintain the kind of relationship with my spouse and children that I would like. ^a	Duxbury et al. (1992); Stephens and Sommer (1993, 1996)
10. My work takes up time that I'd like to spend with family/friends. ^a	Frone et al. (1992a); Gutek et al. (1991); Stephens and Sommer (1993, 1996)
11. I feel I have to rush to get everything done each day.	Duxbury et al. (1992)
12. My work often interferes with my family responsibilities. ^a	Frone et al. (1992a)
13. Because my work is so demanding, at times I am irritable at home.	Duxbury et al. (1992); Stephens and Sommer (1996)
14. I'm often too tired at work because of the things I have to do at home. ^a	Gutek et al. (1991)
15. I feel I don't have enough time for myself.	Duxbury et al. (1992)
16. It is difficult for me to relax when I am away from my work. ^a	Stephens and Sommer (1993)
17. My personal demands are so great that it takes away from my work. ^a	Gutek et al. (1991); Duxbury et al. (1992); Stephens and Sommer (1993)
18. I often bring work home to do on the evenings and weekends. ^a	Stephens and Sommer (1993)
19. I generally do not seem to have enough time to fulfill my potential both in my career and as a spouse or parent.	Stephens and Sommer (1993, 1996)
20. My superiors and peers dislike how often I am preoccupied with my personal life while at work. ^a	Gutek et al. (1991); Duxbury et al. (1992)

APPENDIX A—*Continued*

Item	Source
21. My personal life takes up time that I'd like to spend at work. ^a	Frone et al. (1992a); Gutek et al. (1991); Stephens and Sommer (1993)
22. The time I must devote to my job keeps me from participating equally in household responsibilities and activities. ^a	Stephens and Sommer (1993, 1996)
23. My family life often interferes with my responsibilities at work. ^a	Frone et al. (1992a)
24. I am <i>not</i> able to act the same way at home as I do at work. ^a	Stephens and Sommer (1993, 1996)
25. The problem-solving approaches I use in my job are not effective in resolving problems at home. ^a	Stephens and Sommer (1993, 1996)
26. I act differently in responding to interpersonal problems at work than I do at home. ^a	Stephens and Sommer (1993, 1996)
27. Behavior that is effective and necessary for me at work would be counterproductive at home. ^a	Stephens and Sommer (1993, 1996)
28. The things I do that make me effective at work do not help me to be a better parent and spouse. ^a	Stephens and Sommer (1993, 1996)
29. What works for me at home does not seem to be effective at work as well, and vice versa. ^a	Stephens and Sommer (1993, 1996)
30. In order for me to succeed at work, I must be a different person than I can be at home. ^a	Stephens and Sommer (1993)
31. I often feel the strain of attempting to balance my responsibilities at work and home.	Stephens and Sommer (1993, 1996)

^a Items retained for Study 2.

APPENDIX B

Revised Items for Second Round of Content Adequacy

Time-based work interference with family (10 items)

Existing Items

3. My work keeps me from my family activities more than I would like.^a
4. On the job I have so much work to do that it takes away from my personal interests.
9. The demands of my job make it difficult for me to maintain the kind of relationship with my spouse and children that I would like.
10. My work takes up time that I'd like to spend with family/friends.^a
12. My work often interferes with my family responsibilities.
18. I often bring work home to do on the evenings and weekends.
22. The time I must devote to my job keeps me from participating equally in household responsibilities and activities.^a

New Items

1. I feel I don't have enough time to fulfill my responsibilities at home due to time I have to spend on my career.^a
2. I feel guilty for spending too much time at work and not enough time with my family.

Time-based work interference with family (10 items)

APPENDIX B—*Continued*

3. I have to miss family activities due to the amount of time I must spend on work responsibilities.^a

Time-based family interference with work (10 items)

Existing Items

20. My superiors and peers dislike how often I am preoccupied with my personal life while at work.
21. My personal life takes up time that I'd like to spend at work.^a

New Items

1. The time I spend on family responsibilities often interfere with my work responsibilities.^a
2. My family responsibilities prevent me from effectively performing my job.
3. I find myself making family related phone calls or running personal errands during work time.
4. The demands of my family life prevent me from developing important career relationships.
5. The time I spend with my family often causes me to not spend time in activities at work that could be helpful to my career.^a
6. I feel guilty for spending time with my family when I know I should be concentrating on work.
7. I have to miss work activities due to amount of time I must spend on family responsibilities.^a
8. I feel I don't have enough time to fulfill my potential in my career because I need to spend time with my family and friends.^a

Strain-based work interference with family (10 items)

Existing Item

16. It is difficult for me to relax when I am away from my work.

New Items

1. The stress from my job often makes me irritable when I get home.^a
2. When I get home from work I am often too physically tired to participate in family activities/responsibilities.^a
3. Tension and anxiety from work often creep into my family life.^a
4. I often feel I am rushing to get my nonwork responsibilities taken care of in order to get back to work.
5. I am often stressed trying to balance my responsibilities when work interferes with the rest of my life.
6. I am often so emotionally drained when I get home from work that it prevents me from contributing to my family.^a
7. I am often preoccupied with work while I am at home.
8. Due to all the pressures at work, sometimes when I come home I am too stressed to do the things I enjoy.^a
9. Sometimes I feel overwhelmed by all of my responsibilities at work.

Strain-based family interference with work (10 items)

Existing Items

14. I'm often too tired at work because of the things I have to do at home.
17. My personal demands are so great that it takes away from my work.
23. My family life often interferes with my responsibilities at work.

New Items

1. Due to stress at home, I am often preoccupied with family matters at work.^a

APPENDIX B—*Continued*

Time-based work interference with family (10 items)

2. Due to my family responsibilities, sometime others in the organization have to pick up the slack (i.e., stay late, travel).
3. The stress from my family life interferes with my work life.^a
4. I feel rushed at work so that I can go home to my family.
5. Because I am often stressed from family responsibilities, I have a hard time concentrating on my work.^a
6. Tension and anxiety from my nonwork life often extend into my job.^a
7. Due to all the pressures at home, sometimes it is hard for me to do my job well.^a

Behavior work interference with family (7 items—all existing items)

24. I am *not* able to act the same way at home as I do at work.^a
25. The problem-solving approaches I use in my job are not effective in resolving problems at home.^a
26. I act differently in responding to interpersonal problems at work than I do at home.
27. Behavior that is effective and necessary for me at work would be counterproductive at home.^a
28. The behaviors I perform that make me effective at work do not help me to be a better parent and spouse.^a
29. What works for me at home does not seem to be effective at work as well.
30. In order for me to be as successful at home as I am at work, I must behave differently.^a

Behavior family interference with work (7 items—all new items)

1. The behaviors that work for me at home do not seem to be effective at work.^a
2. Behavior that is effective and necessary for me at home would be counterproductive at work.^a
3. The things I do that make me effective at home help me to be more successful at my job.
4. The problem solving behavior that work for me at home does not seem to be as useful at work.^a
5. In order for me to succeed at work, I must be a different person than I can be at home.
6. The behaviors I use to respond to interpersonal problems at work perform better at home than at work.^a
7. I do not succeed at work when I use the same behaviors that are effective at home.^a

^a Items retained for Study 3.

REFERENCES

- Adams, G. A., King, L. A., & King, D. W. (1996). Relationships of job and family involvement, family social support, and work-family conflict with job and life satisfaction. *Journal of Applied Psychology*, **81**, 411–420.
- Aryee, S. (1992). Antecedents and outcomes of work-family conflict among married professional women: Evidence from Singapore. *Human Relations*, **45**, 813–837.
- Aryee, S., & Luk, V. (1996). Work and nonwork influences on the career satisfaction of dual-earner couples. *Journal of Vocational Behavior*, **49**, 38–52.
- Bacharach, S. B., Bamberger, P., & Conley, S. (1991). Work-home conflict among nurses and engineers: Mediating the impact of role stress on burnout and satisfaction at work. *Journal of Organizational Behavior*, **12**, 39–53.
- Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, **16**, 74–94.
- Balfour, D. L., & Wechsler, B. (1996). Organizational commitment: Antecedents and outcomes in public organizations. *Public Productivity and Management Review*, **29**, 256–277.

- Bedeian, A. G., Burke, B. G., & Moffett, R. G. (1988). Outcomes of work-family conflict among married male and female professionals. *Journal of Management*, **14**(3), 475-491.
- Bohen, H. C., & Viveros-Long, A. (1981). *Balancing jobs and family life: Do flexible work schedules help?* Philadelphia: Temple Univ. Press.
- Bollen, K. (1989) *Structural equations with latent variables*. New York: Wiley.
- Buchanan, B. (1974). Building organizational commitment: The socialization of managers in work organizations. *Administrative Science Quarterly*, **19**, 533-546.
- Burley, K. (1989). *Work-family conflict and marital adjustment in dual career couples: A comparison of three time models*. Unpublished doctoral dissertation, Claremont Graduate School, Claremont, CA.
- Cammann, C., Fichman, M., Jenkins, D., & Klesh, J. (1979). *The Michigan Organizational Assessment Questionnaire*. Ann Arbor, Michigan: Univ. of Michigan.
- Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and application. *Journal of Applied Psychology*, **78**, 98-104.
- DeVillis, R. F. (1991). *Scale development: Theory and applications*. Newbury Park, CA: Sage.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, **49**(1), 71-75.
- Duxbury, L. E., Higgins, C. A., & Mills, S. (1992). After-hours telecommuting and work-family conflict: A comparative analysis. *Information Systems Research*, **3**, 173-190.
- Eagle, B. W., Miles, E. W., & Icenogle, M. L. (1997). Interrole conflicts and permeability of work and family domains: Are there gender differences? *Journal of Vocational Behavior*, **50**, 168-184.
- Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986). Perceived organizational support. *Journal of Applied Psychology*, **71**, 500-507.
- Ford, J. K., MacCallum, R. C., & Tait, M. (1986). The application of exploratory factor analysis in applied psychology: A critical review and analysis. *Personnel Psychology*, **39**, 291-314.
- Frone, M. R., Russell, M., & Cooper, M. L. (1992). Antecedents and outcomes of work-family conflict: Testing a model of the work-family interface. *Journal of Applied Psychology*, **77**(1), 65-75.
- Frone, M. R., Yardley, J., & Markel, K. S. (1997). Developing and testing an integrative model of the work-family interface. *Journal of Vocational Behavior*, **50**, 145-167.
- Greenhaus, J. H., Bedeian, A. G., & Mossholder, K. W. (1987). Work experiences, job performance, and feelings of personal and family well-being. *Journal of Vocational Behavior*, **31**, 200-215.
- Greenhaus, J. H., & Beutell, N. J. (1985). Sources of conflict between work and family roles. *Academy of Management Review*, **10**(1), 76-88.
- Greenhaus, J. H., Parasuraman, S., Granrose, C. S., Rabinowitz, S., & Beutell, N. J. (1989). Sources of work-family conflict among two career couples. *Journal of Vocational Behavior*, **34**, 133-153.
- Gutek, B., Searle, S., & Klepa, L. (1991). Rational versus gender role-explanations for work-family conflict. *Journal of Applied Psychology*, **76**, 560-568.
- Higgins, C.A., Duxbury, L. E., & Irving, R. H. (1992). Work-family conflict in the dual-career family. *Organizational Behavior and Human Decision Processes*, **51**, 51-75.
- Jöreskog, K., & Sörbom, D. (1993). *LISREL 8: Structural equation modeling with the SIMPLIS command language*. Hillsdale, NJ: Erlbaum.
- Judge, T. A., Boudreau, J. W., & Bretz, R. D. (1994). Job and life attitudes of male executives. *Journal of Applied Psychology*, **79**, 767-782.
- Kim, J. O., & Mueller, C. W. (1978). *Factor analysis: Statistical methods and practical issues*. New Park, CA: Sage.
- Kopelman, R. E., Greenhaus, J. H., & Connolly, T. F. (1983). A model of work, family, and interrole conflict: A construct validation study. *Organizational Behavior and Human Performance*, **32**, 198-215.
- Kossek, E. E., & Ozeki, C. (1998). Work-family conflict, policies, and the job-life satisfaction relationship: A review and directions for organizational behavior-human resources research. *Journal of Applied Psychology*, **83**, 139-149.

- Loerch, K. J., Russell, J. E., & Rush, M. C. (1989). The relationship among family domain variables and work-family conflict for men and women. *Journal of Vocational Behavior*, **35**, 288-308.
- Marsh, H. W. (1995). Confirmatory factor analysis models of factorial invariance: A multifaceted approach. *Structural Equation Modeling*, **1**, 5-34.
- Netemeyer, R. G., Boles, J. S., & McMurrian, R. (1996). Development and validation of work-family conflict and family-work conflict scales. *Journal of Applied Psychology*, **81**, 400-410.
- Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.
- O'Driscoll, M. P., Ilgen, D. R., & Hildreth, K. (1992). Time devoted to job and off-job activities, interrole conflict, and affective experiences. *Journal of Applied Psychology*, **77**, 272-279.
- Parasuraman, S., Greenhaus, J. H., Rabinowitz, S. R., Bedeian, A. G., & Mossholder, K. W. (1989). Work and family variables as mediators of the relationship between wives' employment and husbands' well-being. *Academy of Management Journal*, **32**, 185-201.
- Pleck, J. H. (1977). The work-family role system. *Social Problems*, **24**, 417-427.
- Pleck, J. H. (1978). *Work-family conflict: A national assessment*. Presented at the Annual meeting of the Society for the Study of Social Problems, Boston, MA.
- Quinn, R., & Staines, G. (1979). *The 1977 quality of employment survey*. Ann Arbor: Univ. of Michigan: Survey Research Center.
- Rice, R. W., Frone, M. R., & McFarlin, D. B. (1992). Work-nonwork conflict and the perceived quality of life. *Journal of Organizational Behavior*, **13**, 155-168.
- Rizzo, J. R., House, R. J., & Lirtzman, S. I. (1970). Role conflict and ambiguity in complex organizations. *Administrative Science Quarterly*, **15**, 150-163.
- Seashore, S. E., Lawler, E. E., Mirvis, P., & Cammann, C. (1982). *Observing and measuring organizational change: A guide to field practice*. New York: Wiley.
- Schaubroeck, J., Cotton, J. L., & Jennings, K. R. (1989). Antecedents and consequences of role stress: A covariance structure analysis. *Journal of Organizational Behavior*, **10**, 35-58.
- Schriesheim, C. A., & Hinkin, T. R. (1990). Influence tactics used by subordinates: A theoretical and empirical analysis and refinement of the Kipnis, Schmidt, and Wilkinson Subscales. *Journal of Applied Psychology*, **75**, 246-257.
- Schriesheim, C. A., Powers, K. J., Scandura, T. A., Gardiner, C. C., & Lankau, M. J. (1993). Improving construct measurement in management research: Comments and quantitative approach for assessing the theoretical content adequacy of paper-and-pencil survey-type instruments. *Journal of Management*, **19**, 385-417.
- Staines, G. L., & Pleck, J. H. (1983). *The impact of work schedules on the family*. Institute for Social Research, Ann Arbor, MI.
- Stephens, G. K., & Sommer, S. M. (1993). *Work-family conflict, job attitudes, and workplace social support: Investigations of measurement and moderation*. Presented at the meeting of Academy of Management, Atlanta, Georgia.
- Stephens, G. K., & Sommer, S. M. (1996). The measurement of work to family conflict. *Educational and Psychological Measurement*, **56**, 475-486.
- Stevens, J. (1992). *Applied multivariate statistics for the social sciences*. New Jersey: Erlbaum.
- Thomas, L. T., & Ganster, D. C. (1995). Impact of family-supportive work variables on work-family conflict and strain: A control perspective. *Journal of Applied Psychology*, **80**, 6-15.
- Wiley, D. L. (1987). The relationship between work/nonwork role conflict and job-related outcomes: Some unanticipated findings. *Journal of Management*, **13**, 467-472.
- Williams, K. J., & Alliger, G. M. (1994). Role stressors, mood spillover, and perceptions of work-family conflict in employed parents. *Academy of Management Journal*, **37**, 837-868.
- Williams, L. J., Bozdogan, H., & Aiman-Smith, L. (1996). Inference problems with equivalent models. In G. A. Marcoulides & R. E. Schumacker (Eds.), *Advanced structural equations modeling*. Mahwah, NJ: Erlbaum.