

Work-Family Conflict: An Exploration of Causal Relationships in a 10 Year, 4-Wave Panel Study

Patricia Sikora^a, Sarah Moore^b, Leon Grunberg^c, and Edward Greenberg^d

^apat@sikora-research.com

Sikora Associates, LLC

^bsmoore@ups.edu

University of Puget Sound, Psychology

^cgrunberg@ups.edu

University of Puget Sound, Comparative Sociology

^dEdward.Greenberg@Colorado.edu

University of Colorado, Boulder

Abstract

Using four waves of data collected over a 10 year time frame, this paper is aimed at a longitudinal exploration of work-family conflict theories previously examined via cross-sectional methods. Specifically, using a sample of 354 men, we systematically compare six fully cross-lagged competing structural models to simultaneously test: (a) temporal linkages between two forms of work-family conflict (i.e., family-to-work and work-to-family), (b) causal precedence frameworks proposed in previous literature (e.g., the dominant spillover versus other causal frameworks), as well as (c) domain-specificity using work-domain stressors of job stress and work overload. Within wave results replicate previous findings of associations between WF and FW as well as moderate domain specificity with work domain stressors more closely aligned with WF than FW. Longitudinal results, however, show no evidence of a causal connection between FW and WF. In addition we see no evidence to support a spillover framework; instead, models incorporating reverse and reciprocal effects significantly improve fit over a baseline stability model. Finally, cross-domain causal linkages are evident with a reciprocal pattern between work overload and FW conflict. These results contradict prevailing theories reinforcing the need for additional of longitudinal work in the work-family arena.

Introduction

Although early researchers might have assumed that the worlds of work and home were separate (Brotheridge & Lee, 2005), countless empirical studies and several review articles examining the work-home interface have documented that the two domains influence, and are influenced by, each other (e.g., Allen, Herst, Bruck, & Sutton, 2000; Bellavia & Frone, 2005; Boyar, Maertz, Person, & Keough, 2003; Byron, 2005; Eby, Casper, Lockwood, Bordeaux, & Brinley, 2005; Ford, Heinen, & Langkamer, 2007; Grandey, Cordeiro, & Crouter, 2005; Huang, Hammer, Neal, & Perrin, 2004; Voydanoff, 2005). This recognition has prompted many researchers to consider at least two directions of conflict or interference, work-to-family (WF) and family-to-work (FW), as they have tried to establish how work and home-domain variables are related to these forms of conflict. In particular, the literature is replete with studies that have been aimed at identifying which types of variables are predictors, mediators, moderators, and consequences in an effort to more fully understand the nature and processes by which work and home domains interact (e.g., Aryee, Srinivas, & Tan, 2005; Bellavia & Frone, 2005; Boyar et al., 2003; Brotheridge & Lee, 2005; Eby et al., 2005).

Reflecting this debate in the field are the numerous theories, models, and hypotheses researchers have offered as explanations for these interrelationships. *Spillover models*, specifically coming from the perspectives of role theory and a scarcity model approach (i.e., where time, energy, and resources are seen as finite; Grant-Vallone & Donaldson, 2001) have been the predominant theoretical framework. In short, when the demands (i.e., stressors) from work or home exceed one's resources, the pressures associated with that role begin to conflict with one's ability to fulfill the norms associated with the other role, given that time, money, and energy are fixed. Because both work and home roles are assumed to be important to the individual, inability to perform adequately in one or both arenas is viewed as necessarily causing conflict and / or strain.

By contrast, in *reverse causality models* a number of authors have offered rationales as to why, for example, high levels of work-family conflict would *precede* higher levels of job stress, overload, or increased work hours. Peeters, de Jonge, Janssen, and van der Linden (2004) note that those with higher levels of work-family conflict might experience poorer health, greater absenteeism, and/or poorer work performance, which, over time might eventually result in their being placed in lower quality jobs characterized by greater demands and fewer resources (i.e., the "*drift hypothesis*"). Reverse causality might also be explained by a variant of a *strain-stressor* perspective which holds that those experiencing more conflict and strain, might, in turn, evaluate components of their situation (i.e., the stressors) more negatively than would those who are not experiencing such conflict. In contrast to the spillover models, then, reverse causality models treat stressors as outcomes or consequences of work-family conflict.

The infrequently used *congruence hypothesis* (Byron, 2005; Frone et al, 1994) offers a different view for these relationships by positing that some third variable, such as genetic influences, negative affect or domain expectations, is responsible for both increased levels of conflict as well as heightened negative perceptions of work and home-related stressors and strains. In effect, the relationship evidenced empirically is spurious. Other frameworks suggest

that work-family conflict might mediate, or partially mediate, the stressor – outcome relationship (Eby et al., 2005; Ford et al., 2007; Peeters, Montgomery, Bakker, & Schaufeli, 2005).

Unfortunately, the degree to which one or more of these theoretical positions is supported remains unclear given that the vast majority of this research has been characterized by cross-sectionally collected data (e.g., Bellavia & Frone, 2005; Brotheridge & Lee, 2005; Ford et al., 2007; Grandey et al., 2005) and / or cross-sectionally-oriented analyses of longitudinal data (e.g., hierarchical regression), both of which do not allow researchers to discern directional causes and effects of WF or FW conflict. Mesmer-Magnus and Viswesvaran (2005) for example, noted that of the 25 studies used in their meta-analysis, only 1 was longitudinal. Similarly, Peeters, de Jonge, Janssen, and van der Linden (2004) commented that of the studies conducted between 1986-2003 on work-home interference, they located over 200 that employed a cross-sectional design, but only 6 that were longitudinal. Furthermore, our own review failed to identify any longitudinal work that collected more than two waves of data – a necessary condition for testing reciprocal relationships.

Zapf, Dormann, and Frese (1996) and others (de Jonge, Dormann, Janssen, Dollard, Landeweerd, & Nijhuis, 2001; de Lange, Taros, Kompier, Houtman, & Bongers, 2003; Farrell, 1994; Finkel, 1995; Frone & Cooper, 1994) call for more deliberate consideration of causality and review the relative strengths and weaknesses of various forms of longitudinal analyses. Virtually all end with the recommendation of fully cross-lagged panel models analyzed via SEM. The fully cross-lagged panel model incorporates autoregressive or stability effects for all variables in the model, synchronous effects (usually in the form of covariances between endogenous disturbance terms), as well as proposed cross-lagged direct effects.

Present Study's Purpose

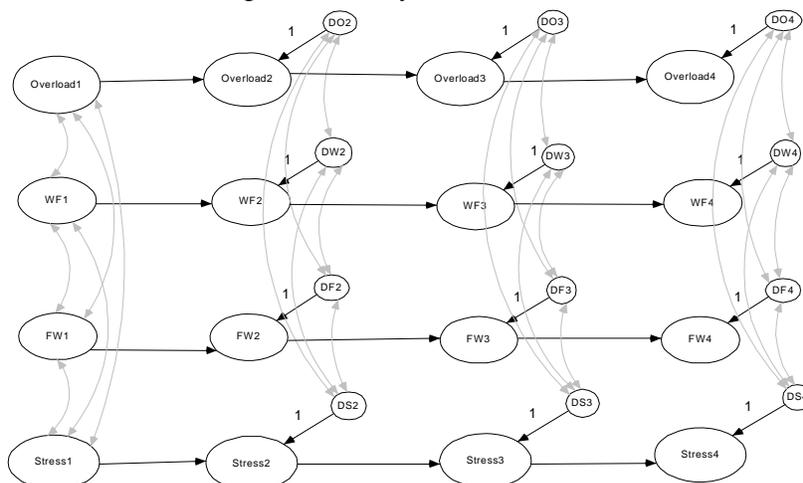
In this paper, we are primarily interested in addressing the general issue of causal precedence debated in the work-family conflict literature. Using the aforementioned longitudinal analytic techniques that permit us to answer such questions, we address two specific issues which have been raised repeatedly in the work-family conflict literature. First, we explore how WF and FW are related to each other, both within and across time frames. While many studies have confirmed that the two constructs are empirically distinct (Bellavia & Frone, 2005; Boyar et al., 2003; Byron, 2005), there is a prevailing sense that the two domains must influence each other in some way. In past studies where correlational analyses have been used, researchers have found moderate, positive correlations between the two forms of conflict. Aryee et al. (2005), for example, reported a correlation or $r = .59$, Grandey et al. (2005) obtained correlations of $r = .29$ (men) and $r = .48$ (women), and Huang et al. (2004) noted a range of correlations between $r = .33$ to $r = .59$ between WF and FW conflict measured at two time periods. By contrast, Boyar et al. (2003), using a full measurement model, found a positive (.76) path coefficient from WF to FW, but a *negative* (-.53) coefficient from FW to WF, leading them to speculate that workers will alter their home lives in order to reduce pressures or conflict at work. How this type of responsiveness might play itself out over several time periods has not been, to our knowledge, addressed in any previous study.

Second, in an effort both to establish the construct validity of WF and FW measures as well as to aid in theory building, many studies have been directed toward investigating the degree to which work stressors are *particularly* related to WF conflict and family stressors are *particularly* related to FW conflict. Research evidence for this “domain specificity” between type of stressors and conflict has been somewhat mixed, but generally speaking researchers have found that work stressors are more strongly associated with WF conflict (e.g., Boyar et al., 2003; Brotheridge & Lee, 2005; Byron, 2005; Ford et al., 2007; Mesmer-Magnus & Viswesvaran, 2005), than they are with FW conflict (e.g., Byron, 2005; Mesmer-Magnus & Viswesvaran 2005; Peeters, et al, 2005). Similarly, home-based stressors have often times been found to show more of a relationship to FW than to WF, but the correlations have often been weaker and not as distinct (e.g., Brotheridge & Lee, 2005; Byron, 2005; Mesmer-Magnus & Viswesvaran, 2005). Still others have found various work stressors predict both forms of conflict at about the same level (e.g., Aryee, et al, 2005). In this study, we will use measures of job stress and work overload as exemplars of work-domain-specific stressors¹. These two stressors have been used frequently in this literature as both antecedents and consequences of work-family conflict (Byron, 2005; Eby, et al. 2005; Mesmer-Magnus & Viswesvaran, 2005; Peeters, et al, 2004).

Using four waves of data, the present paper is aimed at examining a series of models proposed by the various dominant theories and research findings reviewed above. Following recommendations of de Lange et al. (2003) and others (de Jonge et al., 2001; Zapf, 1996), we systematically test competing structural models to simultaneously explore: (a) temporal linkages between two forms of work-family conflict (i.e., family-to-work and work-to-family), (b) causal precedence frameworks proposed in previous literature (e.g., the dominant spillover versus other causal frameworks), as well as (c) the domain-specificity of work-family conflict relationships. Specifically, by combining the above three issues, we arrived at the following models for exploration in this study:

Baseline/Stability Model (Model 1 – Figure 1). As recommended by Zapf et al.(1996) and de Jonge et al. (2001) a stability model is used as the basis for comparison of plausible alternative models. This also allows us to examine within wave relationships between the variables.

Figure 1. Stability Model: Model 1.



Note: all models include covariances among endogenous variables and disturbances; hidden for visual clarity

WF-FW Model (Model 2-Figure 2 below). This model incorporates cross-lagged paths between the two forms of work-family conflict. This model proposes reciprocal relationships over time as it is not clear in the literature what form of conflict temporally precedes the other.

Spillover-Within Domain Model (Model 3 – Figure 3). Incorporating cross-lagged paths from workplace stressors to WF, this model proposes that workplace stressors are antecedent to work-to-family conflict (within domain) but do not influence family-to-work conflict *Spillover-Across Domain Model (Model 4 – Figure 4).* This model incorporates cross-lagged paths from workplace stressors to FW. It proposes that workplace stressors are antecedent to family-to-work conflict (i.e., across domain relationship) but do not influence work-to-family conflict.

Reverse-Within Domain Model (Model 5 – Figure 5). By incorporating cross-lagged paths from WF to workplace stressors (i.e., within domain), this model proposes that work-to-family conflict is antecedent to workplace stress, or conversely that stressors are a consequence of, not antecedent to, domain-specific WF. *Reverse-across domain (Model 6 – Figure 5).* Last, this model incorporates cross-lagged paths from FW to workplace stressors (i.e., across domain), thereby proposing that family-to-work conflict is antecedent to workplace stressors.

Figure 2. Cross Domain Relationships of WF and FW Conflict Over Time: Model 2.

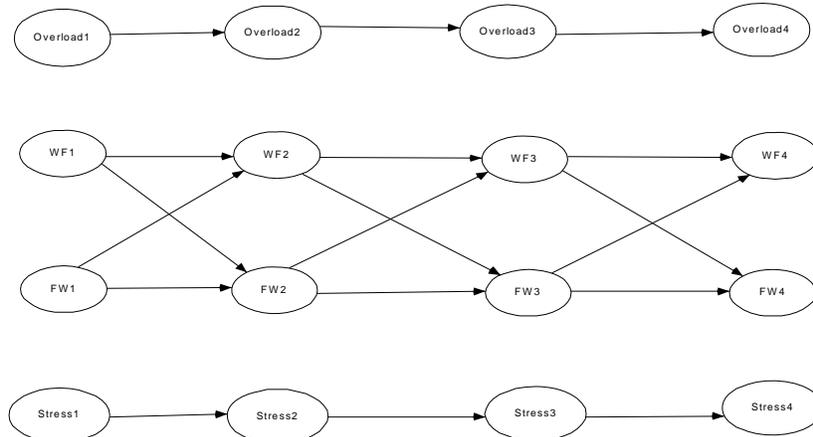


Figure 3: Spillover Models

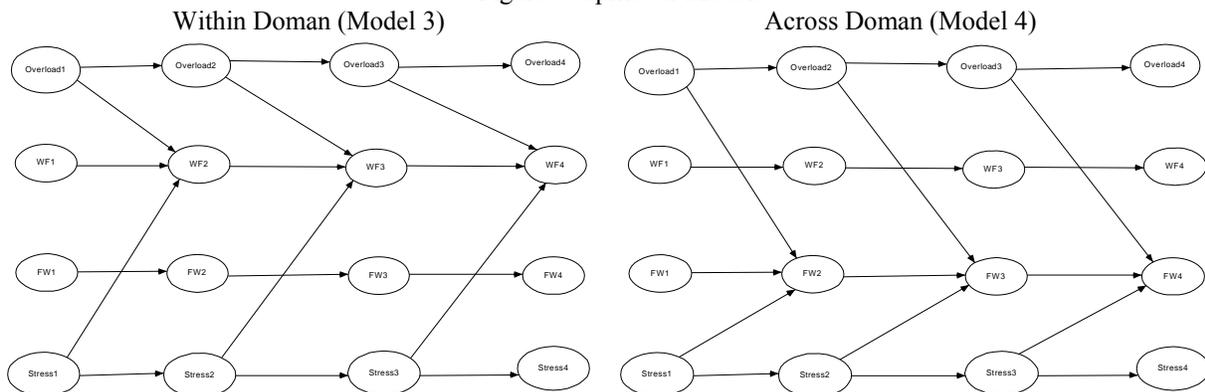
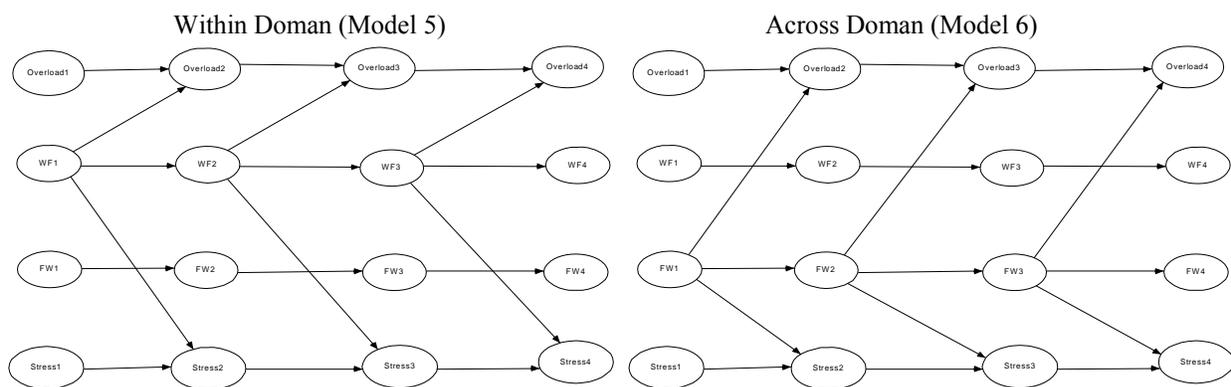


Figure 4 – Reverse Causality Models



Method

Participants

Respondents were employed at a large designer and manufacturer of advanced technology products on the West Coast. Three thousand, seven hundred white and blue-collar workers were initially selected at random, mailed a letter explaining the nature and aims of the research, and asked if they would be willing to participate in a longitudinal study that examined the work attitudes and health and well-being effects stemming from organizational change. Of these 3700 workers, 525 (14.2%) responded to each of the four surveys conducted in 1997, 2000, 2003, and 2006. Table 1, which displays the response rate history over the course of the 10 years, shows that some 70% of these workers discontinued their participation for reasons of their own ($n = 2613$), while slightly more than 15% left the company during the course of the study ($n = 562$). Comparison of this final sample of 525 workers to company records data reveals that the sample was similar in terms of gender (80% male in sample, 80% male in company). The mean age of the employees at Wave 1 was 42.8 (SD = 7.7) years, and they had served an average of 14.8 (SD=7.3) years with the company.

As noted above, representation of women in our four wave sample was limited to 20% or 105 individuals and, due to the complexity of the models under investigation, we found this to be too small to produce stable, reliable results for multigroup comparisons. Because gender has been found to moderate the relationship between work stressors and various types of conflict, we felt results would be less ambiguous if we limited our analyses to the 420 men in our sample. In addition to this pragmatic reason, we also note that relatively few, if any, studies in this research area focus on men. In effect, men are somewhat underrepresented in this literature, and we hope this sample can highlight the WFC dynamics of this large group of employees (we will review gender implications further in the Discussion Section). Our initial sample of 420 men was further reduced to 354 due to list-wise deletion during the creation of the covariance matrix.

Table 1
Sample Sizes and Response Rate History

Time	Left Company Since Previous Survey	Mailed Survey	Responded	Rate
Wave 1 (1997)	NA	3700	2279	62%
Wave 2 (2000)	319	1960	1244	63%
Wave 3 (2003)	198	1046	773	74%
Wave 4 (2005)	45 ^a	728	525	72%

Note. ^a Due to difficulties associated with company records, the number of employees leaving the company between the third and fourth waves is estimated

Measures

In this paper, we report on those measures for which we had complete data across the four waves of data collection. Below are the latent variables used in the study with the descriptions of indicators used to reflect the latent construct.

Work to family conflict (WF). This two item latent reflects the degree to which work interferes with family responsibilities (e.g., “how often does your job interfere with your responsibilities at home?”; Frone, Russell, & Cooper, 1992). Response options are based on a four point frequency scale of *very often*, *often*, *not very often*, and *never*.

Family to work conflict (FW). This two item latent reflects the degree to which family interferes with work. Items are also derived from Frone et al. (1992), for example: “how often does your home life keep you from spending time you would like on job-related responsibilities?” Response options are based on a four point frequency scale of *very often*, *often*, *not very often*, and *never*.

Work Overload (OVERLOAD). This two item latent is based on Cammann, Fichman, Jenkins, and Klesh’s (1983) measure of job demands and reflects the degree to which the employee feels overloaded by work responsibilities, including too much work to do things well and not having enough time to get everything done. Response options utilize a 5 point *agree/disagree* scale.

Work Stress (STRESS). Three items derived from Stanton, Balzer, Smith, Parra, and Ironson’s (2001) Stress in General measure reflect the degree to which the individual feels his or her job is tense, stressful, or pressured most of the time. Response options are *yes, this describes my job*, *can’t decide if it describes my job* and *no, this doesn’t describe my job*.

A table (Table 2) summarizing descriptive information for the individual indicators as well as their factor loadings on the four waves of latent variables is provided below.

Table 2

Measurement Indicators - Descriptive Statistics and Latent Parameter Estimates

Indicator	Description	Min	Max	Wave 1		Wave 2		Wave 3		Wave 4		Standardized Estimates*					
				Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	W1	W2	W3	W4		
Work-to-Family Interference (WF)																	
jhome	How often does job interfere with responsibilities at home	1	4	2.36	0.73	2.14	0.70	2.16	0.68	2.13	0.75	.83	.85	.78	.78		
jbfam	How often does job keep you from spending time with family	1	4	2.57	0.80	2.36	0.84	2.33	0.82	2.30	0.83	.78	.69	.80	.85		
Family-to-Work Interference (FW)																	
hnjob1	How often does home life interfere with responsibilities at job	1	4	1.76	0.64	1.64	0.58	1.68	0.60	1.68	0.63	.68	.74	.69	.80		
hnjob2	How often does home keep you from spending time at job	1	4	1.62	0.61	1.47	0.55	1.51	0.58	1.54	0.61	.78	.72	.73	.73		
Work Overload (OVERLOAD)																	
jbmuch	I have too much work to do everything well	1	5	3.18	1.16	2.97	1.10	3.13	1.15	3.13	1.10	.85	.84	.91	.86		
jbdone	I never have enough time to get everything done	1	5	3.50	1.10	3.31	1.14	3.34	1.10	3.44	1.09	.81	.84	.85	.82		
Work Stress (STRESS)																	
stressfl	My job is has many things that are stressful most of the time	1	3	1.94	1.37	1.65	1.41	1.82	1.41	1.74	1.43	.79	.75	.79	.84		
pressr	My job is pressured most of the time	1	3	2.07	1.31	1.86	1.42	1.92	1.41	1.95	1.40	.74	.76	.74	.77		
tense	My job is tense most of the time	1	3	1.34	1.42	1.17	1.46	1.34	1.45	1.30	1.44	.70	.69	.72	.75		

* all estimates sign. $p < .001$

Analytic Approach

A covariance matrix was submitted to AMOS 6.0 using maximum likelihood with list-wise deletion of missing cases. No convergence or identification problems were evident for the sample. Per standard practice, one indicator per latent was fixed to 1 to scale the latent construct. Following the two-step approach advocated by Anderson and Gerbing (1988), we first evaluated measurement models for convergent and divergent validity before testing structural models. No other controls or third variables were explicitly included in the models as the inclusion of disturbance terms and covariances provides a form of control, albeit non-specific, for omitted third variables and bias from confounders is relatively limited in fully cross-lagged designs because “participants act as their own controls” (de Lange et al, 2003, p292). Following recommended practice in longitudinal SEM, all models include measurement error covariances across time based on the assumption that errors of repeated measures covary (Burkholder & Harlow, 2003; Kline, 1998). Also, all covariances for exogenous and disturbances were modeled regardless of statistical significance to account for shared common causes that are not included in the model as well as synchronous relationships within waves.

As recommended by Zapf et al. (1996) and de Jonge et al. (2001) we conducted systematic evaluation of models in which a baseline model including only stability paths was compared to more complex models incorporating cross-lagged paths as outlined in the Introduction. Because our alternative models are nested models we can utilize the χ^2 difference test to assess if the loss of parsimony due to freeing paths in the more complex models (models with cross-lagged paths included) comes at too high a cost in fit (Bentler & Bonnett, 1980; Joreskog & Sorbom, 1998; Garson, 2001; Kline, 1998). A significantly different chi-square result suggests that improvement in fit over the baseline model justifies retaining the paths in the more complex model.

Results

Measurement Model

Table 2 above also summarizes the factor loadings for all latent variables across the four waves of data collection; Table 3 below provides zero-order correlations for the latent variables

used in this analysis. Kline (1998) suggests that convergent validity of the measurement model is established if standardized factor loadings for all latent factors exceed .50 while divergent validity is established when inter-latent zero-order correlations are less than .85. All factor loadings were well over .50, with many exceeding .70; while moderate zero-order correlations are evident, particularly across waves for the same latent factor, no correlation approaches the .85 threshold. We conclude, then, that the measurement model provides a solid foundation for assessment of structural models.

Table 3

Zero-Order Correlations Between Latent Factors

	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p
a WF1	--															
b WF2	.57	--														
c WF3	.44	.51	--													
d WF4	.51	.55	.62	--												
e FW1	.19 ^b	.20 ^b	ns	.21 ^b	--											
f FW2	ns	.24 ^b	ns	.18 ^a	.52	--										
g FW3	.16 ^a	.18 ^a	.29	.25 ^b	.55	.65	--									
h FW4	.18 ^b	.17 ^a	.20 ^b	.40	.57	.52	.56	--								
i Overload1	.40	.31	.21 ^b	.26	.28	.20 ^b	.20 ^b	.32	--							
j Overload2	.28	.40	.21 ^b	.23	.23 ^b	.29	.33	.33	.63	--						
k Overload3	.20 ^b	.25	.47	.33	.21 ^b	.16 ^a	.31	.23	.49	.53	--					
l Overload4	.29	.27	.40	.43	.29	.22 ^b	.32	.39	.49	.56	.55	--				
m Stress1	.38	.26	.24	.23	.20 ^b	ns	ns	.19 ^b	.59	.33	.34	.34	--			
n Stress2	.32	.51	.31	.30	.18 ^a	.16 ^a	.16 ^a	ns	.35	.49	.30	.29	.57	--		
o Stress3	.32	.32	.47	.41	ns	.15 ^a	ns	ns	.28	.21 ^b	.51	.35	.58	.64	--	
p Stress4	.32	.22 ^b	.33	.37	ns	.15 ^a	ns	ns	.25	.29	.34	.52	.55	.54	.68	--

Note. ns not significant, ^a .05 > p > .01, ^b .01 > p > .001, all others p < .001

Structural Model Comparisons

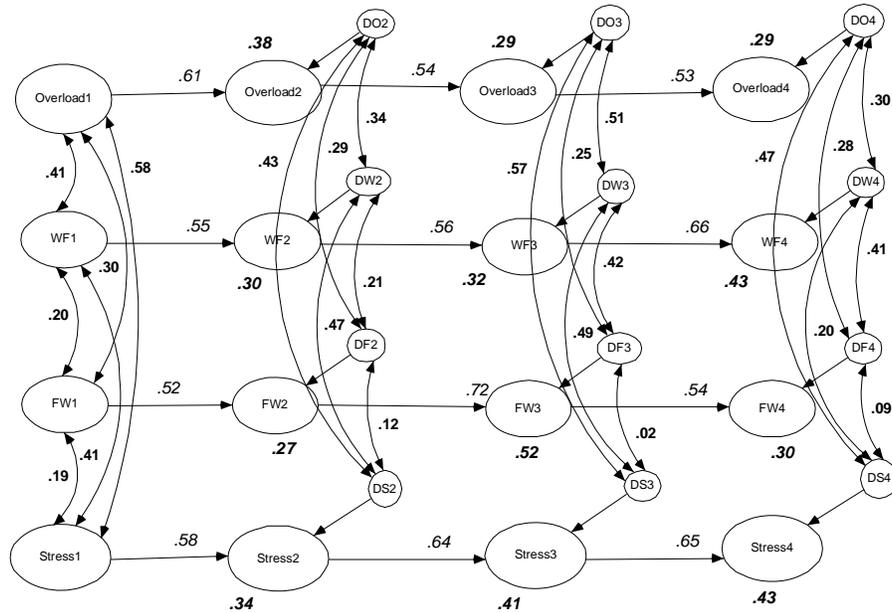
Baseline model. Fit for the baseline model (Table 4, first row) was very good with Chi2/df, CFI, and RMSEA above established “adequate fit” thresholds at 1.66, .94, and .04 respectively. At .88 the GFI is a bit under the traditional fit threshold of .90, but taken in context of all other fit indices, we can conclude that this baseline model fits the data quite well and can serve as a good basis of comparison for plausible alternative models. Before moving into these comparisons, however, it is useful to examine the parameters of this baseline model as it provides initial insights into the issues of causality and domain specificity.

Table 4

Model Fit and Chi-square Difference Test of Structural Models

	Chi/df	CFI	GFI	RMSEA	Chi ²	df	Δ Chi ²	Signif.
Model 1: Baseline (Stability)	1.66	.94	.88	.04	882	531	na	na
Model 2: FW-WF only	1.68	.94	.88	.04	880	525	2	ns
Model 3: Spillover-Within Domain	1.68	.94	.88	.04	875	525	7	ns
Model 4: Spillover-Across Domain	1.66	.94	.88	.04	871	525	11	ns
Model 5: Reverse-Within Domain	1.65	.94	.88	.04	869	525	13	0.05
Model 6: Reverse-Across Domain	1.66	.94	.88	.04	872	525	10	ns
Model 7: Best Parsimonious	1.63	.94	.89	.04	858	527	24	0.001

Figure 5: Stability/Baseline Model Results



First, the direct paths in the baseline model indicate a moderate amount of stability for each of the latent constructs in the model. All autoregressive direct path coefficients are over .50 (standardized) and significant at $p < .001$. Variance explained by each latent's predecessor, combined with unmeasured third causes (i.e., disturbance terms), is also modest ranging from 27% for FW2 to 52% for FW3. These results suggest that employee perceptions of interference, overload, and stress are fairly consistent over time; however, there is certainly room for other factors to explain additional variance in each construct. Put another way, it is important for readers to put findings regarding antecedents and consequences within a context of relative stability: individuals may tend to hold similar attitudes across time regardless of changes in external circumstances.

Second, this model highlights why many cross-sectional studies conclude that there are strong relationships between workplace stressors and work-family conflict: many of the within wave correlations (between exogenous latents for Wave 1 and between disturbances of endogenous latents within Waves 2, 3, and 4) are, indeed, quite large. Relationships between FW and WF are .20 and .21 for Wave 1 and Wave 2, respectively, and increase to .42 and .41 at Waves 3 and 4 (all correlations significant at $p < .001$). Work-family interference (WF) is consistently related to work-domain stressors of overload and work stress. For example, at Wave 3 we see the largest correlations (between WF and work domain disturbances) at .51 and .49 for Overload3 and Stress3 respectively ($p < .001$). The weakest relationships between WF and these work-domain stressors occur at Wave 4, but remain modest at .30 for the WF4-Overload4 relationship and .20 for the WF4-Stress4 relationships ($p < .001$ and $p < .01$ respectively). Consistent with other research (e.g., Boyar et al., 2003; Brotheridge & Lee, 2005; Byron, 2005; Ford et al., 2007; Mesmer-Magnus & Viswesvaran, 2005), we do not see strong evidence for across domain relationships; that is, within wave correlations are not as consistently high between family-work interference (FW) and the work-domain stressors. Relationships appear strongest between FW and Overload with correlations ranging between .25 at Wave 3 and .30 at

Wave 1 ($p < .01$ and $p < .001$). The relationship of FW with Stress is relatively small at Wave 1 (.19, $p < .01$) and is nonsignificant at Waves 2, 3 and 4.

In general, then, these within wave correlational findings are consistent with other studies that demonstrate strong associations within domain, and more modest or even nonexistent relationships across work and family domains. The correlational pattern within waves, however, merely replicates existing cross-sectional work and still begs the question of causality. The structural models that follow allow us to explore between wave relationships among these constructs.

Structural model comparisons. The remaining rows of Table 4 summarize fit indices and Chi^2 difference tests between models outlined in the Introduction. All models show very good fit with Chi^2/df under 2.00, CFI over .90, and RMSEA under .05. Again, GFI tracks a bit below the .90 threshold, but within the context of other solid fit findings, we conclude that all models fit the data reasonably well. The core question is which model or models, if any, fit better than the most parsimonious baseline model. We determine this by examining the Chi^2 difference results in Table 4. Note first that Model 2, the model proposing causal linkages between WF and FW over time, does not improve fit over the baseline model; in addition, no statistically significant paths emerged in this model. This indicates that the FW-WF relationship is limited to within timeframe and there appears to be little if any causal connection between the two constructs over time. Likewise, the two Spillover Models, Models 3 and 4, fail to improve fit over the Baseline Model.

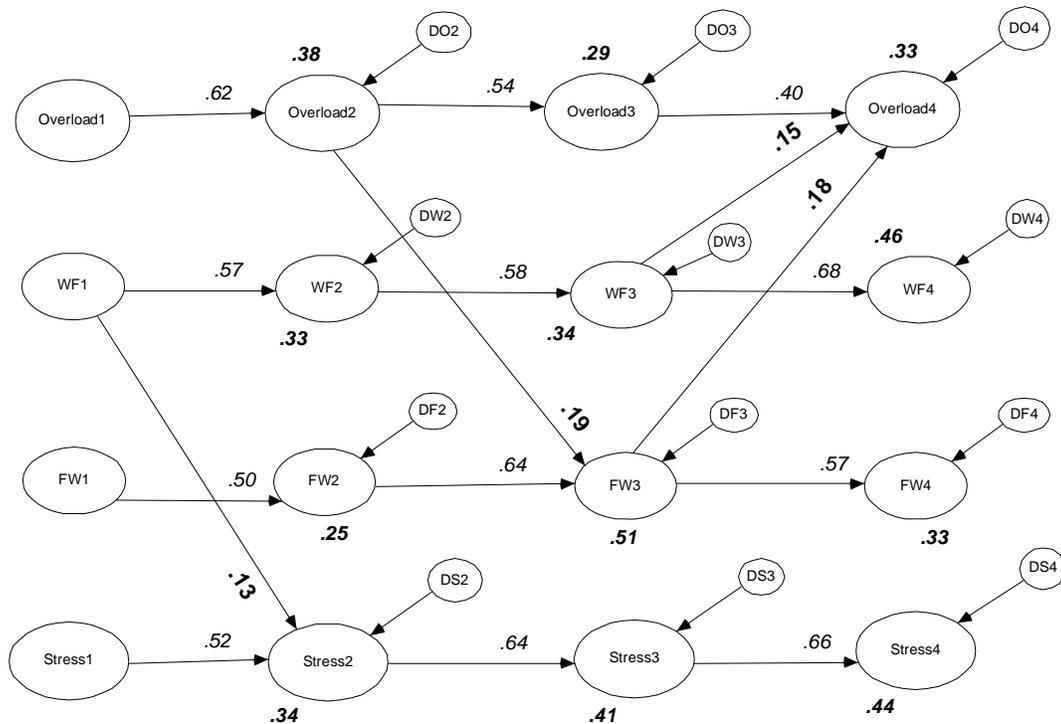
The only theorized comparison that shows improvement in fit over the baseline model is Model 5 in which we model reverse causality within domain ($\Delta\text{Chi}^2 = 13$, $\Delta\text{df} = 6$, $p < .05$). This suggests that perceptions of WF are antecedent to or predict perceptions of work-place stress and overload, not vice versa as proposed in the dominant spillover framework. Specifically, two of the six cross-lagged paths included in this model are statistically significant: the path from WF1 to Stress2 (.14, $p < .05$) and the path from WF3 to Overload4 (.20, $p < .01$). In both cases increases in perceptions of work-to-family interference lead to increases in stress or overload perceptions at subsequent waves.

Because none of the other hypothesized models show improvement in fit with the addition of cross-lagged paths, we might conclude that spillover and across domain frameworks are not good descriptions of the dynamics of work-family conflict over time. However, the above analysis only allows us to accept or reject general theoretical frameworks (e.g., six paths that as a unit reflect a particular theoretical orientation) and this broad brushed analysis may overlook specific paths that are relevant in understanding causal relationships over time. While we concur with recommendations that models not be based purely on empirical grounds (Tanaka, Panter, Winborne, & Huba, 1990), it may be helpful to use information from across these theoretically derived models to propose a more complex, yet parsimonious view of the work-family conflict dynamic.

With the exception of Model 2 (FW-WF relationships) which contains no significant direct effects, each of the rejected alternative models includes one significant cross-lagged path. If we create a new “best” model that drops all nonsignificant paths and incorporates only these

significant paths along with the significant paths from our “preferred” Model 5, we obtain the model found in Figure 6 below².

Figure 6: “Best” Model Results



Note: Covariances are included in the analysis, but are hidden in figure for visual clarity

As noted in Table 4, this Best model shows a substantial improvement in fit over the Baseline model ($\Delta\text{Chi}^2 = 24$, $\Delta\text{df} = 4$, $p < .001$). That is, the addition of these four significant paths improves fit even more substantially than the addition of the six paths associated with each of the proposed general theoretical frameworks. Conceptually, this model primarily reflects a reverse causality model with only one path, the path between Overload2 and FW3, consistent with a spillover hypothesis. However, when this spillover path is placed within the context of the whole model, we see that it may be part of a reciprocal causal pattern where perceptions of work overload at Wave 2 lead to increases in perceptions of FW at Wave 3 (.19, $p < .01$) which in turn lead to further increases in work overload at Wave 4 (.18, $p < .01$). This finding suggests that there may be an across-domain mutually reinforcing relationship between the work stressor of overload and perceptions of family-to-work interference.

In terms of within domain relationships, we continue to see no evidence of spillover from the workplace to perceptions of WF; on the contrary, the model suggests that perceptions of WF set the stage for increased perceptions of work stress ($\text{WF1} \rightarrow \text{Stress2} = .13$, $p < .05$) and work overload ($\text{WF3} \rightarrow \text{Overload4} = .15$, $p < .05$). In general then, these results indicate that a simple within-domain spillover model does not adequately capture the causal relationship between work-family conflict and workplace stressors; a more complex model incorporating reverse and reciprocal relationships may more appropriately describe the dynamics of work-family conflict over time.

Discussion

Despite voluminous work in the work-family conflict arena, persistent questions remain regarding causal precedence and domain specificity of relationships between stressors and work-family conflict measures. This paper addresses these questions within the context of a series of fully cross-lagged four wave longitudinal models.

The baseline model suggests that there is a fair amount of stability within the constructs of work-to-family interference (WF), family-to-work interference (FW), work overload (Overload), and job stress (Stress). That is, these perceptions tend to be persistent over time, regardless of external events or situations. However, with only 25-50% variance explained in these latents, there is clearly room for other factors to influence change over time. The baseline model also shows evidence of within wave relationships between the FW and WF constructs with correlations ranging from a modest .20 Waves 1 and 2 to .40 at Waves 3 and 4. And, replicating a predominant theme in cross-sectional work, we also see some evidence of domain-specificity in the “within wave” covariances, with stronger relationships between WF and work stressors than between FW and work stressors.

However, these cross-sectional (i.e., within wave) findings are not replicated longitudinally. First, we see no evidence of a causal linkage between the two forms of work-family conflict; specifically, the model incorporating paths between WF and FW over time did not improve fit over the baseline and, importantly, no paths approached statistical significance. The contrast of relatively strong within wave relationships and virtually zero between wave relationships is striking. In effect, cross-sectional associations found between FW and WF in past studies may be limited to exactly that: association, but not causal connection. These results are most consistent with a congruence hypothesis (Byron, 2005; Frone et al, 1994) that posits the relationship is spurious and some third variable(s) is responsible for relationships found between these two aspects of work-family conflict. Future work in this area may benefit from identifying temperamental (e.g., negative affect, locus of control), attitudinal (e.g., gender role expectations, job involvement) and/or situational factors (e.g., social support, organizational work-family culture) that jointly influence these two constructs

Also, there was evidence that there may be some cross domain connections over time. Consistent with cross-sectional findings and our own within wave results, WF was linked to both work stressors of work overload and job stress at each wave, but the magnitude of the association was not consistent. However, we also found that FW was predictive of and predicted by perceptions of work overload; these linkages were as strong, if not stronger, than the “within domain” linkages of WF and work stressors. These results suggest that efforts to confirm domain specificity may unduly constrain efforts to identify patterns of longitudinal relationships. That is, different forms of work-family conflict (e.g., WF versus FW) may be temporally linked to different types of stressors, some within domain and some not. Why would perceptions of overload, but not job stress, be causally linked to FW? Rather than seeking broad conclusions regarding domain-specificity, it may be appropriate to pursue more a fine-grained analysis and understanding of predictors of FW versus WF. Or, perhaps a different dimension, such as the time-based versus strain-based distinction (Greenhaus & Beutell, 1985), will help illuminate causal linkages across domains.

Finally, and importantly, our longitudinal modeling calls into question the theoretical framework that dominates most work in this area. Specifically, comparisons of models specifying alternative causal linkages between stressors, FW, and WF showed virtually no support for spillover theories. The model that received the most empirical support was one that proposed reverse (within domain) causal linkages across waves (Model 5): work stressors appear to be consequent to, not predictive of, perceptions of WF. When we explored a more parsimonious model incorporating only significant direct paths, we saw evidence of reciprocity between FW and Overload as well as reverse causality. While a single study cannot allow us to conclude that these are “the” causal patterns between these variables, it is surprising that we see absolutely no evidence of a spillover pattern. Future empirical work clearly needs to replicate these findings, but future thinking regarding causal linkages may be enriched if we expand the range of plausible alternatives beyond the somewhat entrenched assumptions associated with the spillover framework.

Limitations of Study

While this analysis offers the strengths of a longitudinal panel design, it includes the weaknesses of common method and self-report biases. In particular, self-report bias may inflate size of correlation of construct across time and reduce unexplained variance available for other latents (Marsh, 1992). We note, though, that for several latents in this study, total variance explained by stability paths (and disturbances) was approximately 33%. Only one latent, FW3, reduced unexplained variance to less than 50%. There appears to be room for additional factors to emerge as causal agents in the models. Clearly, theory would benefit from multimethod and/or multisource longitudinal modeling; however, we believe this study helps fill a large gap in this primarily cross-sectional literature and can help move theory beyond the current “associated with” gridlock.

Also, an important element in any longitudinal study is the element of time. As noted by de Lange, et al (2003), “it is important that the time lag suits the process and etiology of the relationships between the research variables over time” (p 302). It is possible that the two year period between our waves is too long (or too short) for meaningful relationships to emerge. Given the dearth of longitudinal work in this area, we concur with de Lange, et al. (2003) who note that there is relatively little information available to researchers to guide the amount of time needed to realize a given effect. In different work-related topics, de Lange, Taris, Kompier, Houtman, and Bongers (2004) report effects of demand-control on mental health after time lags of 1 year and also note that other work in the social support domain supports both 8 month and 2 year time lags. Thus, based on a very limited number of multi-wave studies, we might conclude that our two-year lag between waves is not an unreasonable timeframe. In an ideal world, we would incorporate time as a variable of study, along with multimethod and multisource data collection. Despite these methodological weaknesses, we believe that this is one of the only multi-wave studies available in the work-family arena and hope that this analysis can stimulate more work via these largely untapped approaches.

Finally, our focus on men, specifically middle-aged men, could be viewed as both a strength and weakness of this study. Clearly, we cannot generalize these findings to women, nor to very young, “Generation X” men. It is worth noting, however, that research to date has found

no consistent gender effects. For example, gender has been found to moderate the stressor-conflict relationship in some research (Martins, Eddleston, & Veiga et al., 2002; Mesmer-Magnus & Viswesvaran, 2005), while others have concluded that men and women do not respond differently to WF and FW conflicts (Bryon, 2005; Bellavia & Frone, 2005). Given these inconclusive gender findings, it would seem that researchers should not assume that results by gender are not generalizable.

More importantly, it could be argued that work-family conflict has been largely viewed (and studied) as a “woman’s issue” (Eby et al., 2005; Moen & Yu, 2000; Perry-Jenkins, Repetti, & Crouter, 2000) and that men are an underrepresented group in this literature. Even though it would be incorrect to say that men have been ignored in previous investigations, they are usually used as a point of contrast for women and, while it is relatively common to find studies focused exclusively on women, it is quite rare for men to be the focal point of a work-family study.

A number of authors have documented that men are spending increasingly more time with their children and engaged in more housework than they did a generation ago (Catalyst, 2003; Halpern, 2005). Likewise, McDonald and Almeida (2004) argue that men are no longer seen solely as breadwinners, but also as contributing members to the household and childrearing duties. Brady (2004) further suggests that the “era of the disposable worker” has led to less organizational loyalty and job involvement and has increased the focus on family for men of all ages. We believe work-family conflict is increasingly, albeit slowly, becoming an “equal opportunity issue” and our emphasis on men’s responses to work-family conflict can highlight their experiences in their own right rather than as a point of contrast to that of women.

Conclusion

Over the last several decades, work in the work-family conflict domain has mushroomed with literally hundreds of articles published in psychology, sociology, business, gender studies, and health-related journals. Visibility of the construct is also evident in the popular press as high profile sources such as the Wall Street Journal and BusinessWeek routinely run articles devoted to work-family issues (e.g., Brady, 2004; Shellenbarger, 2004) and books are targeted to the lay as well as academic reader (e.g., Jacobs & Gerson, 2005; Moen & Roehling, 2005).

Much of the new theoretical work over the last decade has focused on establishing divergent validity for the WF – FW distinction and differentiating between time-, strain-, behavior-based variations of conflict (Eby, et al, 2005). While it is absolutely essential to clarify and crystallize the construct that is central to all theory in this area, it seems that persistent questions remain regarding the antecedents, consequences, and mediating relationships of these various forms of conflict. We believe an important barrier to moving theory forward is over-reliance on cross-sectional work that focuses on “relationships” and “associations” between variables. In addition, conclusions drawn from these cross-sectional analyses often tend to assume a spillover framework; our longitudinal findings show no evidence of spillover and we suggest that directional paths need to be explicitly articulated and tested rather than implicitly assumed.

This paper seeks to advance theory by placing some perennial research questions (e.g., domain specificity) within the context of four waves of longitudinal panel data *analyzed longitudinally* via a fully cross-lagged SEM framework. We acknowledge, of course, that even this non-experimental approach cannot provide “proof” of true causal relationships, but we hope our findings regarding temporal precedence can help clarify muddy waters and move theory forward in this area.

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¹ This paper is part of a larger longitudinal study of employee attitudes and responses to organizational change. Stressors specific to the family domain are not used as they were not included as variables in this organizationally focused program of research. We acknowledge that a full analysis of domain specificity should include stressors from both domains.

² Note that when all significant paths were included in a single model, the single significant path from Model 3, the Spillover-within domain model, became nonsignificant within this new system of equations - in the interests of parsimony, this path was also dropped from the final model.