



A Chinese longitudinal study on work/family enrichment

Work/family enrichment

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Abstract

Purpose – The purpose of this paper is to explore reciprocal relationships between work/family resources, work/family enrichment (WFE), and work/family satisfaction in a Chinese society.

Design/methodology/approach – A longitudinal design was adopted using a three-wave panel sample. Data were obtained from 310 Taiwanese employees on three occasions, six months apart.

Findings – Results of cross-lagged structural equation modeling analyses offered strong support for the hypothesized reciprocal relationships between the focal constructs. The authors found that while modeling WFE, work resources (supervisory support), WFE and job satisfaction were mutually related to one another over time. While modeling family-to-work enrichment (FWE), family resources (family support), FWE and family satisfaction were again mutually related to one another over time.

Originality/value – This is the first longitudinal study on WFE with a non-Western sample. Basing upon the findings, the authors suggest that the common theoretical models postulating a linear causal chain of work/family antecedents → work/family interaction (WFI) → work/family consequences are inadequate. Instead it is recommended that more elaborate and recursive models including reciprocal relationships need to be formulated to better represent the dynamic and fluid nature of WFI processes.

Keywords Work/family enrichment, Work/family resources, Job satisfaction, Family satisfaction, Work, Family, China, Reciprocity

Paper type Research paper

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For nearly 30 years, concerted research efforts have established a clear connection between work/family antecedents, work/family conflict (WFC), and strains (Allen *et al.*, 2000; Byron, 2005; Geurt and Demerouti, 2007). The dominant theoretical approach for studying such a negative interaction between work and family domains has been the role stress theory (Greenhaus and Beutell, 1985), which assumes that managing multiple roles is difficult and inevitably creates “strain”, stemming from the “scarcity hypothesis” regarding human role performance (Kahn *et al.*, 1964). However, with the rise of positive psychology, recent evidence has portrayed a more optimistic outlook of human role experiences, that of positive spillover between work and family domains (Frone, 2003; Geurt and Demerouti, 2007; Grzywacz and Marks, 2000). Evidence has already shown that negative and positive spillovers are discernable bi-directional constructs forming a four-factor structure of the work/family interaction (WFI, Grzywacz and Marks, 2000). Though research focusing on the positive side of the interaction is gaining momentum, empirical evidence has been largely based on studies with cross-sectional design. While there have recently been a few longitudinal studies on WFC (Demerouti *et al.*, 2004), only one has looked at the positive aspects of WFI (Hammer *et al.*, 2005). Thus, the primary aim of the present three-wave panel study



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is to delineate the processes through which positive WFI arises and affects employees' role satisfaction. Such an effort can remedy the methodological limitation caused by the scarcity of longitudinal data in the existing work and family literature, which should provide a stronger basis for causality inferences than cross-sectional data. In particular, we examine the reciprocal relations of work and family resources, positive WFI, and work and family role satisfaction.

A secondary aim of our present study is to examine the extent to which existing Western findings can be generalized to a Chinese population. This is due to the fact that the vast majority of studies concerning work and family related concepts have been done in the USA and other Western countries. The emerging research on the positive aspects of WFI has too been done with Western populations (Siu *et al.*, 2010 being one rare exception). Consequently, a major limitation in this literature is its decidedly Western focus. The thrust of the present study was to use a longitudinal three-wave panel design to systematically examine some presumed antecedents and consequences of positive WFI over time across both work and family domains, in a sample of cultural Chinese in Taiwan. Such a design is nonexistent in the field of work and family issues, not to mention with non-Western populations.

Positive WFI: the resources perspective

Greenhaus and Powell (2006, p. 73) suggested that work-family enrichment (WFE) best captured the essence of positive WFI and defined it as "the extent to which experiences in one role improve the quality of life in the other role". Carlson *et al.* (2006) further defined WFE as family roles benefit from work roles through developmental resources, positive affect, and psychosocial capital derived from involvement in work. Similarly, they defined family-to-work enrichment (FWE) as work roles benefit from family roles through developmental resources, positive affect, and gains in efficiency derived from involvement in family. In the present study, we adopt the constructs of WFE and FWE thus defined and measured as they have recently been proven useful for Chinese employees (Siu *et al.*, 2010).

Such a positive view of human role experiences has its root in Marks' (1977) expansion approach on the fulfillment of multiple roles and human energy. The basic assumption is that the fulfillment of multiple roles is not necessarily difficult, nor is it invariably associated with the spending or depletion of energy resources which in turn leads to the development of strain. In contrast, participation in multiple roles might provide a greater number of opportunities and resources to the individual that can be used to promote growth and better functioning in other life domains (Barnett, 1998).

Similarly, the conservation of resources (COR) theory (Hobfoll, 1989) offers a fresh vantage point for work-family studies, focusing on the dynamism of resources mobilization. The model proposes that people seek to acquire and maintain resources. The resources may include conditions (e.g. married status, tenure), personal characteristics (e.g. self-efficacy), and energies (e.g. time, money, and knowledge that allow one acquire other resources). Different from the traditional role stress theory, COR theory asserts that the fulfillment of multiple roles is not inevitably related to strain; rather, each role might also offer resources that help individuals to deal with other demands associated with the fulfillment of other roles.

Putting resources at the center of generating positive work and family interaction, research guided by the COR theory or role enhancement perspective has shown that work and family resources were more strongly related to positive interaction than to negative

interaction between both domains (Geurt and Demerouti, 2007). The beneficial effects of supervisory support (one form of work resources) for reducing WFC are stronger for Taiwanese employees working in organizations with greater power distance compared to their British counterparts (Lu *et al.*, 2009). Siu *et al.* (2010) too found a direct beneficial effect of supervisory support for WFE in a sample of mainland Chinese workers. Furthermore, Kamerman and Kahn (1987) have found that support at work not only helps employees to integrate work and family roles, but also benefits their work attitudes and performance. Researchers later confirmed that supervisory support could predict job satisfaction for both British and Taiwanese workers (Lu *et al.*, 2009). To sum, existing research has established connections between work resources with both WFE and job satisfaction.

Parallel in the family domain, family support has been identified as an important form of social support promoting personal adjustment in the west (Cohen and Syme, 1985) and in Taiwan (Lu, 2006). Consistent with the COR theory, King *et al.* (1995) regarded social support as a critical form of resources which generate feelings of love, care, and value. Such a positive state of mind then enables individuals to transfer resources gained in the family domain to the work domain more efficiently (Wayne *et al.*, 2006). Indeed, family support has been found as an antecedent of both WFE and FWE in the west (Grzywacz and Marks, 2000; Greenhaus and Powell, 2006; Wayne *et al.*, 2007) and in mainland China (Siu *et al.*, 2010). Furthermore, support gained from family members is pivotal to one's well-being and satisfaction toward family life (Cutrona *et al.*, 2005; Lu, 2006). In a cross-cultural study of WFI, researchers also found that family support predicted family satisfaction for both British and Taiwanese workers (Lu *et al.*, 2009). To sum, existing research has established connections between family resources with both FWE and family satisfaction.

As WFE is still a new foci of WFI, existing research has mostly focused on identifying possible antecedents of WFE and FWE (Geurt and Demerouti, 2007; Innstrand *et al.*, 2010; Innstrand *et al.*, 2009; Siu *et al.*, 2010; Wayne *et al.*, 2006, 2007). Few studies have examined potential impact of such positive WFI on role experiences (Witt and Carlson, 2006 as an exception). Consequently, unlike that of WFC, we know very little about consequences of WFE and FWE. Limited evidence showed that WFE was more strongly related to job satisfaction, while FWE was more strongly related to family satisfaction (Carlson *et al.*, 2006). This implies that since it is the work role benefiting the family role (or vice versa), satisfaction should be higher with the initiating (or contributing) role rather than the recipient role. A recent meta-analysis seems to support such a domain-specificity effect indicating that WFE was more strongly related to work-related variables while FWE was more strongly related to non-work-related variables (McNall *et al.*, 2010). To sum, existing research has established a connection between WFE and job satisfaction, as well as that between FWE and family satisfaction.

We thus hypothesized:

- H1. Work resources (supervisory support) would be positively related to (a) WFE and (b) job satisfaction.
- H2. WFE would be positively related to job satisfaction.
- H3. Family resources (family support) would be positively related to (a) FWE and (b) family satisfaction.
- H4. FWE would be positively related to family satisfaction.

Positive WFI: alternative perspectives

Taken together, the above *H1-H4* come close to represent the classical causality view, which seems to be the consensus in the present theorization of work and family enrichment. That is, role resources cause positive WFI, and positive WFI in turn enhances role fulfillment. In this emerging field, nearly all supportive evidence comes from cross-sectional studies, which may unnecessarily constrain our view of a complex human phenomenon and turning it into an artificially flat and simplistic version. In fact, the COR theory (Hobfoll, 1989) emphasizes the dynamism of creating, conserving, and utilizing various resources in the process of human adaptation. Nonetheless, empirical studies testing this theory, restricted by the nature of cross-sectional design, tend to replace the process model with a content model, stagnating dynamic loops into a linear flow from resources to (reduction of) strains. Similarly, Marks' (1977) role expansion hypothesis purports that the process of consumption of human energy is inseparably related to the process of production of human energy. Even while we are spending energy we are also converting more of it for later use. In other words, adequately managing multiple roles may create energy and enhance the availability of resources.

Drawing insights from the above theories, we propose that in addition to the path of resources leading to WFE and role satisfaction, the opposite paths may also operate in the WFI. That is, fulfillment and enhanced performance in one or two roles may generate further resources to enable later positive interactions between the two domains, thus completing a positive feedback loop. This is the opposite of so-called "loss spiral" observed in the negative WFI process using a longitudinal research design (Demerouti *et al.*, 2004). Unfortunately, no study has formulated and tested our proposed reciprocal relations among resources, enrichment, and role satisfaction. The only longitudinal study with a panel design in the positive WFI literature attempted to predict depressive symptoms from both positive and negative WFI while controlling for baseline depression (Hammer *et al.*, 2005). Those researchers did not measure work and family resources, nor test for the possibility of reversed causality (i.e. earlier depression leading to later WFI).

Outside the WFI literature, when this reversed causality was tested in the context of generic life adjustment, at least partial evidence was obtained. For instance, Lu (1991) found that previous stressors influenced people's subsequent coping behaviors, which in turn affected their health and perception of stress at a later time. Specifically, previous experiences of successful mastery of stress led to more confidence and better coping skills in later encounters of stress. A two-wave panel study on parenthood transition of Taiwanese mothers and fathers also noted that previous health symptoms were related to later reports of both stress and social support over six months apart (Lu, 2006).

Lacking direct supporting empirical evidence, our following hypotheses regarding reversed causation were largely based on theoretical considerations stemming from the COR theory and role expansion perspective, partly inspired by the empirical finding of a "loss spiral" in the negative WFI process and reversed causality in general life adjustment. We thus hypothesized:

- H5.* Job satisfaction would have a lagged positive effect on (a) WFE and (b) work resources.
- H6.* Family satisfaction would have a lagged positive effect on (a) FWE and (b) family resources.

H7. WFE would have lagged positive effects on work resources.

H8. FWE would have lagged positive effects on family resources.

Taken together, our *H1-H8* come close to represent a dynamic view of reciprocal relations among work and family resources, positive WFI, and role satisfaction. This dynamic process goes as follows: work and family resources evoke feelings of work benefiting family and family benefiting work, thus enhances work satisfaction and family satisfaction. These feelings of satisfaction will subsequently generate more work and family resources thus create more positive WFI. Of course, such a dynamic view of reciprocal relations can only be tested with longitudinal data.

Method

Procedure and participants

The participants in our study were full-time employees working in different organizations of diverse industries across Taiwan. We employed a longitudinal design in which all variables were measured three times with six months in between the waves. The only longitudinal study pertaining to the positive WFI used a one-year interval between the two waves of data collection (Hammer *et al.*, 2005). These researchers did not provide a rationale for such a time frame. The few longitudinal studies pertaining to the negative WFI adopted shorter (six weeks) and longer (six months) time intervals, and generally found that WFC to be quite stable for such a time lag, with autocorrelation of 0.46-0.83 (Demerouti *et al.*, 2004; Kelloway *et al.*, 1999; Leiter and Durup, 1996). We expected that the positive WFI would be as stable as the negative WFI, and thus chose the time lag of six months to both allow sufficient fluctuation over time (providing sufficient variance), and to enable us to examine both the medium-term (six months) and long-term (one year) effects among focal constructs.

A variety of recruitment methods were used. For example, some participants were those enrolled in executive education programs who were recruited in classes; some were recruited through personal contacts, and some were invited to participate through personnel managers in various organizations. All participants were approached three times, six months apart.

At Time 1 (T1), along with the first questionnaire, each participant received a cover letter informing them the purpose of the study, the commitment required, and assuring them of anonymity and confidentiality. Participants completed structured questionnaires in their leisure and returned them in sealed envelopes either to researchers or to their contact persons. A total of 381 questionnaires were sent out and 340 returned (the initial response rate of 89 percent). At the end of the study period, 310 participants had data for all three times (retention rate of 91 percent). Through briefing and strong commitment of the contact persons, repeated reminders and the incentive of a gift for staying in the study may have all contributed to such a high retention rate.

As response and retention rates are high in the present study, selection bias caused by attrition is not likely a major problem. Nonetheless, as a precaution, we systematically examined differences between employees in the panel sample and the dropouts with regard to demographic characteristics as well as the mean scores on the study variables. As expected, analyses revealed no significant differences whatsoever. We thus concluded that no serious selection problems due to panel loss had occurred.

The sample was 50.2 percent male and 49.8 percent female, with a mean age of 36.87 (SD = 10.85, range = 19-64), and mean job tenure of 9.51 years (SD = 9.08). Just over half of the sample (50.9 percent) was married. Mean years of formal education was 15.81 (SD = 2.01). Over a quarter of the respondents (28.8 percent) were managers at various levels. More people worked in manufacturing (20.2 percent), service industry (16.2 percent), culture and education (15.9 percent), than other occupations.

Measures

Role resources. Two areas were surveyed:

- (1) Supervisory support was assessed by a three-item scale developed by Clark (2001), tapping perceived understanding and psycho-emotional support provided by direct supervisors regarding workers' family role obligations (e.g. "My supervisor listens when I talk about my family", 1 – strongly disagree and 5 – strongly agree).
- (2) Family support, in which four statements (e.g. "Sympathetic understanding and concern", 1 – never and 6 – always) were listed describing informational, emotional, feedback, and practical support received from family members (O'Driscoll *et al.*, 2004).

Higher aggregate scores represented higher levels of work and family resources. The internal consistency of the supervisory support scale was 0.90 and that of the family support scale was 0.93 in the current sample.

WFE and FWE. To correspond to our dual-direction conceptualization of WFE, the WFE scale (Carlson *et al.*, 2006) was used to assess WFE and FWE separately. Sample items are: "My involvement in my work provides me with a sense of accomplishment and this helps me be a better family member" (WFE) and "My involvement in my family helps me expand my knowledge of new things and this helps me be a better worker" (FWE). Five-point rating scales were used (1 – completely disagree and 5 – completely agree), with higher scores representing high levels of WFE and FWE. The internal consistency of the WFE scale was 0.87 and that of the FWE scale was 0.86 in the current sample.

Role satisfaction. Both work and family outcomes were measured:

- three items from the *Michigan Organizational Assessment Questionnaire* (Cammann *et al.*, 1979) were used to assess job satisfaction: "In general, I like working here", "All in all, I am satisfied with my job", and "In general, I don't like my job" (reversed score); and
- participants were asked to rate their family satisfaction on three items: "My family life is very enjoyable", "All in all, the family life I have is great", and "In general, I am satisfied with my family life" (Edwards and Rothbard, 1999).

Five-point rating scales were used for both satisfaction measures (1 – disagree very much and 5 – agree very much), with higher scores representing higher levels of job satisfaction and family satisfaction. The internal consistency of the job satisfaction scale was 0.80 and that of the family satisfaction scale was 0.97 in the current sample.

In addition, information on sex (coded male = 0 and female = 1), age, marital status (coded married = 1 and never married = 0), education attainment (converted to years), tenure on the job (in years) and rank (coded managers = 1 and employees = 0) were recorded.

Results

Temporal stability

Prior to the model testing, the means, SD, and bi-variate correlations (including auto-correlations) were computed, for WFE and FWE model variables separately (Tables I and II). As can be seen from the tables, all variables had significant auto-correlations of at least 0.45. The highest average auto-correlation was for work resources (0.68), followed by job satisfaction (0.60), WFE (0.58), family resources (0.52), and finally FWE (0.51). This means that WFE/FWE and their correlates are quite stable experiences.

Hypothesis testing

Our panel data were analyzed with structural equation modeling (SEM) techniques using the AMOS computer program. To facilitate understanding of two distinct aspects of the positive WFI, separate models were tested for WFE and FWE rather than a full saturated one. Similarly, work and family resources were tested separately

	Mean	SD	1	2	3	4	5	6	7	8	9
1. Work resources 1	8.91	2.69	1								
2. Work resources 2	8.95	2.65	0.71*	1							
3. Work resources 3	9.06	2.68	0.65*	0.69*	1						
4. WFE 1	9.04	2.51	0.40*	0.34*	0.33*	1					
5. WFE 2	9.31	2.34	0.39*	0.44*	0.36*	0.60*	1				
6. WFE 3	9.67	2.35	0.32*	0.32*	0.49*	0.57*	0.56*	1			
7. Job satisfaction 1	10.76	2.46	0.31*	0.27*	0.28*	0.54*	0.44*	0.43*	1		
8. Job satisfaction 2	10.63	2.28	0.35*	0.35*	0.31*	0.48*	0.52*	0.41*	0.62*	1	
9. Job satisfaction 3	10.88	2.25	0.39*	0.35*	0.44*	0.49*	0.46*	0.54*	0.55*	0.62*	1

Notes: * $p < 0.001$; $n = 310$

Table I.
Means, SD, and correlations for the WFE model variables

	Mean	SD	1	2	3	4	5	6	7	8	9
1. Family resources 1	16.01	5.09	1								
2. Family resources 2	16.33	4.54	0.60**	1							
3. Family resources 3	16.33	4.66	0.45**	0.51**	1						
4. FWE 1	10.00	2.22	0.43**	0.30**	0.31**	1					
5. FWE 2	10.12	2.10	0.34**	0.43**	0.33**	0.54**	1				
6. FWE 3	10.29	2.14	0.36**	0.45**	0.48**	0.45**	0.55**	1			
7. Family satisfaction 1	12.13	2.63	0.45**	0.40**	0.33**	0.31**	0.30**	0.25**	1		
8. Family satisfaction 2	11.90	2.57	0.35**	0.40**	0.28**	0.22*	0.26**	0.21*	0.58**	1	
9. Family satisfaction 3	12.08	2.41	0.44**	0.42**	0.40**	0.27**	0.27**	0.22*	0.56**	0.54**	1

Notes: * $p < 0.01$ and ** $p < 0.001$; $n = 310$

Table II.
Means, SD, and correlations for the FWE model variables

for their concomitant relations with either WFE or FWE. Thus, a total of two sets of SEM models (four each) were compared (Tables III and IV).

As a preliminary analysis, we tested effects of demographics (as covariates) on model variables. None was systematically related to the model variables, nor changed the results of the model testing. Thus, to facilitate model estimation, the demographics were excluded from all further analyses.

Following Demerouti *et al.*'s (2004) procedure for analyzing cross-lagged data, four competing models were fitted to the data in each set by means of a cross-lagged SEM. First of all, a model without cross-lagged structural paths but with temporal stabilities and synchronous correlations (stability model) was specified. The temporal stabilities were specified as correlations between the constructs for each possible pair of measurement waves. This model estimates therefore the total stability coefficient between waves 1 and 2, waves 2 and 3, and between waves 1 and 3, without decomposing the variance into constituent paths (direct and indirect effects) (Pitts *et al.*, 1996). Second, this stability model was compared with three more complex models that were nearest in likelihood to the hypothesized structural model.

Causality model. This is identical to stability model but also includes cross-lagged structural paths from T1 work/family resources to T2 and T3 WFE/FWE and job/family satisfaction, as well as T2 work/family resources to T3 WFE/FWE and job/family satisfaction. Additionally, this model includes cross-lagged structural paths from T1 WFE/FWE to T2 and T3 job/family satisfaction, and from T2 WFE/FWE to T3 job/family satisfaction. This represents the classical view of WFE (our *H1-H4*).

Reversed causality model. This is identical to stability model but also includes cross-lagged structural paths from T1 job/family satisfaction to T2 and T3 WFE/FWE and from T2 job/family satisfaction to T3 WFE/FWE. Additionally, this model includes cross-lagged structural paths from T1 job/family satisfaction to T2

Table III.
Goodness-of-fit indices
for the alternative
WFE models, *n* = 310

Model	χ^2	<i>df</i>	<i>p</i>	GFI	CFI	RMSEA
M1, stability model (work resources)	40.83	18	0.001	0.96	0.96	0.11
M2, causality model (WR → WFE/JS, WFE → JS)	35.24	13	0.001	0.97	0.97	0.09
M3, reversed causality model (JS → WFE/WR, WFE → WR)	22.21	9	0.01	0.98	0.99	0.07
M4, reciprocal model (M2 + M3)	10.44	4	0.05	0.99	0.99	0.06

Notes: WR, work resources; WFE, work-to-family enrichment; JS, job satisfaction

Table IV.
Goodness-of-fit indices
for the alternative
FWE models, *n* = 310

Model	χ^2	<i>df</i>	<i>p</i>	GFI	CFI	RMSEA
M1, stability model (family resources)	82.30	18	0.001	0.93	0.89	0.18
M2, causality model (FR → FWE/FS, FWE → FS)	76.00	13	0.001	0.94	0.93	0.17
M3, reversed causality model (FS → FWE/FR, FWE → FR)	30.79	9	0.01	0.97	0.97	0.10
M4, reciprocal model (M2 + M3)	12.75	4	0.05	0.98	0.98	0.05

Notes: FR, family resources; FWE, family-to-work enrichment; FS, family satisfaction

and T3 work/family resources, as well as from T2 WFE/FWE and job/family satisfaction to T3 work/family resources. This represents an alternative view of WFE (our *H5-H8*).

Reciprocal model. This model includes reciprocal relationships between work/family resources, WFE/FWE and job/family satisfaction (including all paths of causality model and reversed causality model). This represents yet another alternative view of WFE (our *H1-H8* together).

The various nested models were compared by means of the χ^2 difference test. Model evaluation is usually not a simple procedure, and no single descriptive index seems to be superior to the others and impeccable in this regard (Bentler, 1990; Hoyle, 1995). Basically, evaluating a model is to strike a balance between simplicity vs complexity (reflected in the parsimony indices), and good fit vs poor fit (reflected in the fit indices). Thus, in addition to the χ^2 -statistic, we also assessed the goodness-of-fit index (GFI), the χ^2/df ratio and the root mean square error of approximation (RMSEA). Furthermore, AMOS provides the comparative fit index (CFI) that reflects the discrepancy between the hypothesized model and the baseline, null model. The CFI is relatively robust across sample size compared to the χ^2 -statistic and other fit indices (Bentler, 1990). In general, models with fit indices > 0.90 and RMSEA < 0.08 indicate a good fit (Hoyle, 1995). Demerouti *et al.* (2004) used the same set of criteria to test their competing theoretical models using cross-lagged data.

Tables III and IV display the overall fit indices of competing models of WFE and FWE, respectively. In general, the WFE models indicate a better fit than that of the FWE models, since the former set has higher fit indices, lower ratios between the χ^2 -statistic and the number of degrees of freedom, and lower RMSEA coefficients. We will now focus on model comparisons.

For the WFE models using supervisory support as an indicator of work resources (see M1-M4 in Table III), M2 was not different from M1 ($\Delta\chi^2 = 5.59$, $df = 5$, $p > 0.05$). However, M3 proved superior to M1 ($\Delta\chi^2 = 18.62$, $df = 9$, $p < 0.05$), suggesting that the inclusion of cross-lagged paths representing reversed causality is substantial. M4 ($\Delta\chi^2 = 30.39$, $df = 14$, $p < 0.01$) too proved superior to M1, suggesting that the inclusion of reciprocal cross-lagged paths is substantial. Finally, when M3 was compared against M4, the delta χ^2 -test was significant ($\Delta\chi^2 = 11.77$, $df = 5$, $p < 0.05$). This means that the theoretical model including cross-lagged reciprocal relationships between work resources, WFE and job satisfaction fits the best to the empirical data. Thus, our *H1*, *H2*, *H5*, and *H7* were supported.

For the set of FWE models using family support as an indicator of family resources (see M1-M4 in Table IV), M2 was not different from M1 ($\Delta\chi^2 = 6.30$, $df = 5$, $p > 0.05$). However, M3 ($\Delta\chi^2 = 51.51$, $df = 9$, $p < 0.001$) proved superior to M1, suggesting that the inclusion of cross-lagged paths representing reversed causality is substantial. M4 ($\Delta\chi^2 = 69.55$, $df = 14$, $p < 0.001$) again proved superior to M1, suggesting that the inclusion of reciprocal cross-lagged paths is substantial. Finally, when M3 was compared against M4, the delta χ^2 -test was significant ($\Delta\chi^2 = 18.04$, $df = 5$, $p < 0.001$), indicating that the theoretical model including cross-lagged reciprocal relationships between family resources, FWE and family satisfaction fits the best to the empirical data. Thus, our *H3*, *H4*, *H6*, and *H8* were supported.

To sum, in both the cases of WFE and FWE, using supervisory support and family support to indicate role resources, the reciprocal model consistently proved

to be superior to other alternative theoretical formulations. It thus suggests that theoretical conceptions of reciprocal relationships between work and family resources, positive WFI, and work and family satisfaction come closest to our data. These two specific reciprocal models are shown in Figures 1 and 2, showing statistically significant cross-lagged paths. For the clarity of presentation, though all the auto-relations were significant, only those between adjacent data waves are shown in these figures.

Discussion

The primary purpose of the present three-wave panel study is to expand the existing linear view of WFI, and to examine the role of positive WFI in the resources-satisfaction relation. The panel design was adopted to respond to the scarcity of longitudinal data in the work and family literature, and to enable testing of competing theoretical hypotheses depicting a classical causal view, a reversed causal view, and a dynamic recursive view of relations between resources, positive WFI, and role satisfaction. The very few existing longitudinal studies in the work and family literature nearly all focused on the negative side of WFI, namely WFC (Demerouti *et al.*, 2004; Kelloway *et al.*, 1999; Leiter and Durup, 1996), our attention instead is on the positive side of WFI, namely WFE, as we examined both directions of this positive WFI (WFE and FWE) and their concomitants from work and family domains. In particular, we assessed work and family role resources, WFE, FWE, work and family satisfaction in three waves with a six-month interval between each assessment point. This design allowed us to investigate not only the fluctuations of the study variables, but also their relations over an extended period of time (the longest time lag being one year). To our knowledge, only one two-wave panel study was conducted in the USA, looking at the impact of both WFC/FWC and WFE/FWE on depression (Hammer *et al.*, 2005). None was done in the understudied non-Western societies.

The most important findings emerged from our study are:

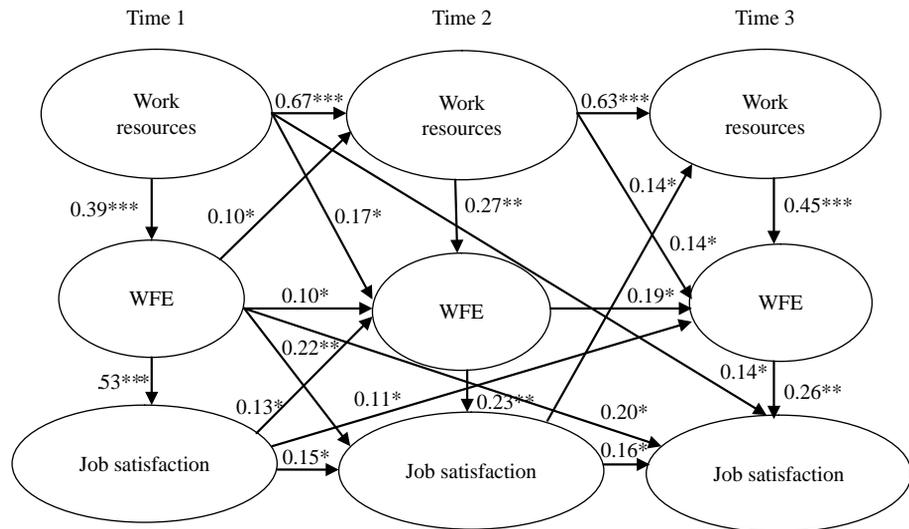


Figure 1. Significant paths in the reciprocal model of WFE, showing both causal and reversed causal relations among work resources, WFE, and job satisfaction

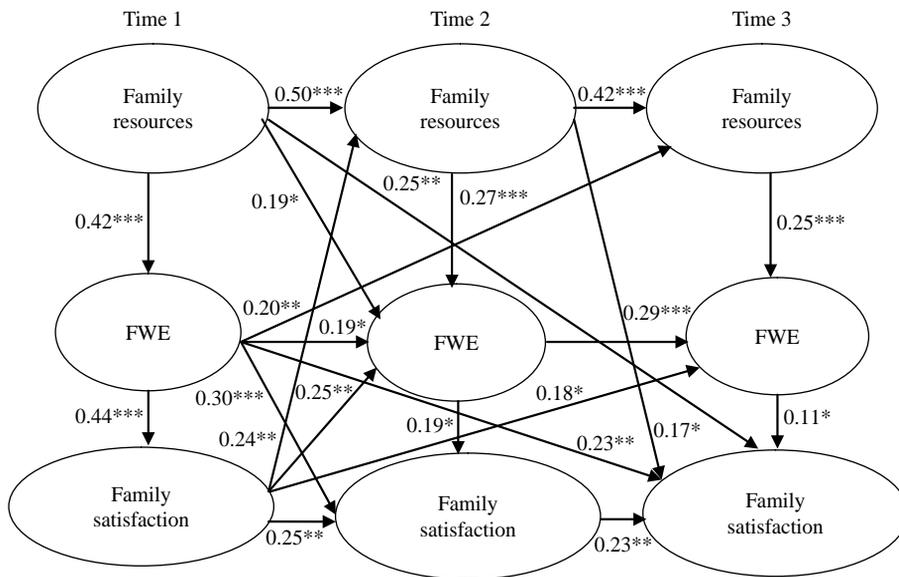


Figure 2. Significant paths in the reciprocal model of FWE, showing both causal and reversed causal relations among family resources, FWE, and family satisfaction

- while modeling WFE, work resources, WFE and job satisfaction were mutually related to one another over time; and
- while modeling FWE, family resources, FWE and family satisfaction were mutually related to one another over time.

Regarding the first finding, as shown by cross-lagged SEM analysis (Figure 1), work resources had a medium-term (six months) lagged effect on WFE, which in turn had both medium- and long-term lagged effects on job satisfaction. Work resources had a further long-term positive effect on job satisfaction. The same pattern of reciprocal relationships was found between WFE and job satisfaction. In addition, we found a medium-term (six months) lagged effect of WFE on work resources, and a long-term lagged effect of job satisfaction on work resources. The tentative conclusion we can draw seems to be that constructs of work resources, WFE, and job satisfaction are mutually and recursively interlocked in a dynamic process of positive work and family interaction. Regarding the second finding, as shown by cross-lagged SEM analysis (Figure 2), family resources, FWE and family satisfaction seem to be mutually related to one another over time. These diachronic relations were both medium- and long-term ones. The conclusion we can draw seems to be that constructs of family resources, FWE, and family satisfaction are mutually and recursively interlocked in a dynamic process of positive work and family interaction.

Taken together, our findings revealed that WFE is both a precursor and a consequence of work role satisfaction; similarly, FWE is both a precursor and a consequence of family role satisfaction. Furthermore, FWE may also be both a precursor and a consequence of role resources gained from family members. While our findings are first to be reported in the work and family literature, they mirror results of previous studies on WFC. For instance, Demerouti *et al.* (2004) found cross-lagged

relationships between work pressure, WFC, and exhaustion. These reciprocal relationships were termed a “loss spiral” to capture the negative nature of dynamism in WFI. In contrast, our first time unraveled reciprocal relationships among role resources, WFE/FWE, and role satisfaction may be termed a “gain uplift” to depict the positive nature of dynamism in WFI.

Our newly discovered “gain uplift” (spanning six months to one year in time) comes close to represent a dynamic view of reciprocal relations among work and family resources, positive WFI, and work and family well-being. Applying the COR theory (Hobfoll, 1989) which emphasizes the generation, creation, and recycling of human energy and resources in optimal adjustment, individuals constantly interact with the environment in a recursive circle rather than in a static fashion. Similarly, Marks’ (1977) role expansion hypothesis also suggests that the process of consumption of human energy is inseparably related to the process of production of human energy. Activities in managing multiple roles are necessary to stabilize the production of human energy, and even while we are spending it we are also converting more of it for later use. In other words, role performance leads to further creation of energy. Consistent with insights from these theories, we found empirical support that in addition to the path of resources leading to WFE and role satisfaction, the opposite paths also operate in the WFI. That is, fulfillment and enhanced performance in one or two roles generated further resources to enable later positive interactions between the two domains, thus completing a positive feedback loop. This is indeed a more optimistic outlook for human role experiences in general, and WFI in particular, corroborating the positive psychological approach to human adjustment.

Our findings of long-term reciprocal relationships have important implications for the in-depth understanding of the work and family interface. As reviewed earlier (see Introduction section), most theoretical models position (both positive and negative) WFI as a cause, mediator, or consequence in the WFI chain, whereas role satisfaction is always considered as an outcome. These models represent a linear view of human adjustment. Our three-wave longitudinal study integrates the emerging research findings pertaining to the positive WFI by showing that both WFE/FWE and role satisfaction are causes and consequences in a dynamic process in which supportive and fulfilling experiences (e.g. resources and enrichment) breed more positive experiences over time, while rewarding experiences (e.g. role satisfaction) protect people through generating or encountering more subsequent supportive experiences. Such a dynamic view of reciprocal relations can only be supported by longitudinal data. This also implies that theories accounting for the work and family interface need to move away from the simplistic one-way causal models, to capture the more fluid and recursive nature of relationships between focal constructs.

Besides our findings of reciprocal relationships over time, we also note that work and family role resources, enrichment, and role satisfaction were all quite stable experiences. Again these findings are first to be reported, but mirror those found from the few longitudinal studies on WFC (Demerouti *et al.*, 2004; Leiter and Durup, 1996). However, our findings further expand the time lag to one year, to more generic role experiences of satisfaction, and to the direction of family contributing to work. Taken together, our findings show that an individual who feels supported (or satisfied) is likely to be supported (or satisfied) at a later time point unless something significant happens to alter this emotional state (Lu, 2006). The challenge now for organizations

and individuals is to nurture and maintain sufficient resources to initiate this constructive circle of support → enrichment → satisfaction.

Creating and effectively employing family-supportive resources can be one way for organizations to meet such a challenge. In the west, flextime has been found useful in assisting employees in balancing their work and family responsibilities (Allen, 2001; Thomas and Ganster, 1995). Though flextime is not a prevalent practice in Taiwan, its adoption was found to buffer negative impacts of WFC on both job performance and job satisfaction for Taiwanese employees (Chang *et al.*, n.d.). For HR professionals working to develop policies and procedures, introducing practices such as flextime at the organizational level may help to kick start the positive feedback loop as described in the present study.

In addition to formal organizational family-supportive policies, informal work flexibility such as leave allowance practices as a managerial discretion has been found beneficial for reducing WFC and enhancing work attitudes in a national sample of Taiwanese employees (Lu *et al.*, 2009). Furthermore, supervisory family support was found effective in reducing WFC and enhancing work satisfaction for both British and Taiwanese workers (Lu *et al.*, 2009). For managers who must deal with employees struggling with work and family balance on a daily basis, psycho-emotional support and managerial discretion may be pivotal to creating a flow of support, enrichment, and well-being as shown in this study.

Finally, for employees striving to balance work and family roles, making use of organizational resources especially wining support from direct supervisors may be crucial; gaining support from family members may be equally important. Family support can help transfer gains in family realm to work, which in turn fosters more positive experiences of family life and generates more support from family members, such is the reciprocation process depicted in the present study. Family resources have been largely overlooked in the extant work and family research and practice, which is an opportunity for future work.

Overall, our results suggest that the main nexus of work/family resources, enrichment, and role satisfaction at work and family are applicable to Taiwanese workers. Furthermore, these constructs are locked in a reciprocal and recursive web of relations over time. In other words, the general theoretical framework of Western work/family research can be applied to a large extent to the Chinese context. Our study is thus an endeavor in bridging the gap of causality inferences and in-depth knowledge in work/family issues, and our findings may be useful in informing effective organizational strategies for achieving work/family balance in a collectivist cultural context. Future efforts should further broaden the scope of study by including more constructs, such as those from the family domain which were unfortunately not assessed in this study. Also, the inclusion of additional sources of data such as coworkers, supervisors, and family members can enrich our understanding even further.

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