

## An exploration of the relationship between the work-family demands and work-family conflict of teachers at science and technology universities in Taiwan

David W.S. Tai, Isabelle Y-W. Hsiao, Teresa P-H. Li & Yu-Jeng Shu

National Changhua University of Education  
Changhua, Taiwan

**ABSTRACT:** The purpose of this study was to explore the relationship between the work-family demands and work-family conflict of teachers at science and technology universities in Taiwan. It has been found that there is duality of work-family conflict along two directions: work interference with family and family interference with work. Furthermore, three forms of work-family conflict have been found that comprise time-based conflict, strain-based conflict and behaviour-based conflict. A survey was conducted and questionnaire responses were gathered from six science and technology universities in central Taiwan. The results showed that work-family demands are highly related to work-family conflict.

### INTRODUCTION

Rising numbers of dual career couples and working mothers with young children have motivated considerable research to be undertaken on work-family conflict. Therefore, the work-family relationship has been an important topic in vocational psychology research in various occupations; nevertheless, research regarding the relationship between the work and family conflicts of teachers at colleges is relatively scarce [1]. However, the era of making the academic setting more flexible in order to meet the family needs of both male and female faculty is coming [2]!

Chou reported that teachers' duties had a statistically positive influence on job stress in Taiwan [3]. Besides job stress, excessively quick negative population growth may also cause serious social problems as the population ages and an excessively high dependent population ratio develops [4]. The purposes of this study are to study the increasing demands of academic work and the workload of family responsibility, as well as the relationship between work-family conflict and the work-family demands of teachers in higher education.

The main purposes of this article are to investigate if work demands affect work-family conflict in professors; to explore if family demands predict work-family conflict in professors; and to identify any gender differences on work demands, family demands and work-family conflict.

### RATIONALE

#### Work-Family Conflict

Many people agree that work-family conflict is a source of stress and work-family conflict has been defined as *a form of inter-role conflict in which the role pressures from the work and family domains are mutually incompatible in some respect* [5].

Even though researchers have measured work-family conflict in many ways, most researchers measured work-family conflict unidirectionally [5]. More recently, researchers have begun to recognise the duality of work-family conflict by considering both directions: work interference with family and family interference with work [6].

This study included all six unique dimensions of work-family conflict, ie three forms and two directions of work-family conflict. The three forms of work-family conflict are namely:

- Time-based conflict;
- Strain-based conflict;
- Behaviour-based conflict.

Time-based conflict may occur when one devotes time to one role, making it difficult to participate in another role. Strain-based conflict suggests that the strain experienced in one role intrudes into, and interferes with, participation in another role. Behaviour-based conflict occurs when specific behaviours required in one role are incompatible with the behavioural expectations in another role [5]. Gutek et al argued that each of these three forms of work-family conflict has the following two directions:

- Conflict due to Work Interfering with Family (WIF);
- Conflict due to Family Interfering with Work (FIW) [6].

Six dimensions of work-family conflict result when these three forms and two directions are combined, specifically:

- Time-based WIF;
- Time-based FIW;
- Strain-based WIF;
- Strain-based FIW;
- Behaviour-based WIF;
- Behaviour-based FIW.

## Work Demands

*Greedy institutions* was the term coined by a sociologist named Coser [7]. Such organisations increasingly attempt to appropriate the products of academic work and offer them in the marketplace. Whether working in a single college or university, or higher education as a whole, professors were pressured by this increasing responsibility. Thus, academic work demands included those detailed below.

### *Time-Based WIF*

Academic stressors identified in the literature include heavy workloads [8]. Gmelch, Lovrich and Wilke concluded that the majority of the stressors related directly to limited resources or time [9].

### *Strain-Based WIF*

Richard and Drieshok found that strain increased for females as they moved up in the ranks [10]. Zappert and Weinstein found that women worried more about work responsibilities at home than men did [11]. In a study by Gmelch, Lovrich and Wilke, university teachers reported that of the three major academic functions, teaching was reported as being more stressful than either research or service. High self-expectations, finding financial support for research, low pay and striving for publication were among the most troublesome reported stressors [9]. Scholars have reported higher stress scores in research-related activities than in teaching, or professional or service activities, although other investigators, including the present ones, found no difference between men and women [12-15].

### *Behaviour-Based WIF*

Hwan's research of work-family conflict at universities showed that work-family involvement and work-family conflict had a negative correlation in Taiwan [16]. The significance of this study showed that the more involved university teachers were in work and family, the less work-family conflict occurred.

## Family Demands

An expanding body of research traces the slow advancement of women into tenure positions at academic institutions and its impact on family commitments [17][18]. Although women received 50% of all scientific PhDs in the USA, only 30%, at best, of tenure-track professorships were filled by women [17]. Fatherhood, by contrast, tended to enhance the academic prospects of men [19]. Thus, family demands on academics included those elaborated on below.

### *Time-Based FIW*

Hargen et al note that motherhood has a negative effect on the publication rate of women academics while others found that having children had no significant consequences on the productivity of women [20][21]. Insofar as they were aware that fertility decreased around the age of 35, the post-tenure baby phenomenon may be, in part, due to the lack of benefits available to assist women professors in their childbearing and childrearing efforts [22][23]. Finkel and Olswang reported that women assistant professors perceived the *time required by children* as a serious detriment to tenure, especially if the children were under six years of age [19].

Of those who became fathers early, 77% eventually earned tenure – a greater percentage than for those men who had not become fathers. Of those women who took up academic jobs without having children first, it was found that only one-third ever ended up having children. Indeed, female faculty members were much less likely to have children than were women in general. Of full-time female professors from 38 to 41 years old, only 42% had children in their households in 2000, compared with 72% of women the same age with at least a bachelor's degree. Quantitative studies also reported that female academics, like other professional women, were more likely to remain single and childless or have fewer children when compared to their male colleagues and other women of the same age in the general population [21][24].

### *Strain-Based FIW*

Grant et al reported that women experienced greater tension than men when combining scientific careers in academe and family life [25]. Furthermore, it was found that female professors continued to bear most of the responsibility for child care and household maintenance [9]. Finkel and Olswang explained that women felt pressured to come back immediately after childbirth to prove that they were serious professionals [19]. Zappert and Weinstein found that women worried more about home responsibilities at work than did men [11].

### *Behaviour-Based FIW*

The male partner's job is likely to determine the family's place of residence because women professors are more likely than their male counterparts to be mobile for the purpose of advancing their partner's career, even if it means leaving a tenured position [26].

## METHOD

Participants comprised 112 academic staff (66 males and 45 females) from six science and technology universities in the mid-area of Taiwan. The participants had the following characteristics: 87.15% of the participants were married while 12.85% were single; and 81.25% of the participants had children while 18.75% had no child. Although the sample of this study was not randomly selected nationally, the surveyed staff came from various professional backgrounds.

This study adopted three questionnaires. Each scale included five-items presented in a 5-point Likert-type scale ranging from *strongly disagree* (1) to *strongly agree* (5). Two experts in the field of work-family conflict commented on the items for content validity and three doctoral students were selected to clarify the wording of each item.

First, the researchers used work-family conflict scale to assess and advance understanding of the complex phenomenon of work-family conflict [27]. The reliability (Cronbach's alpha) coefficients for these scales were 0.93, 0.92, 0.92, 0.92, 0.92 and 0.92, respectively. The overall alpha was 0.93, suggesting that these scales had a high level of reliability in assessing the teachers' preferences regarding work-family conflict.

Second, in line with the empirical research and classifications of Greenhaus, work demand questionnaire included:

- Time-based WIF: the hours worked per week, workload and the limited time available;

- Strain-based WIF: rank, work responsibilities, teaching, research, service, financial support for research, low pay and striving for publication;
- Behaviour-based WIF: work-family involvement and the implication of behaviour at work [5].

The reliability (Cronbach's alpha) coefficients for these scales were 0.74, 0.75 and 0.79, respectively. The overall alpha was 0.78, suggesting that these scales had a high level of reliability in predicting the contribution of teachers' work demands to work-family conflict.

Third, the family demand questionnaire was also based of the classifications of Greenhaus and included the following:

- Time-based FIW: marriage status, number of children and age;
- Strain-based FIW: the time after bearing, and the responsibility for child care and household maintenance;
- Behaviour-based FIW: the implication of the subjects' behaviour at home [5].

The reliability (Cronbach's alpha) coefficients for these scales were 0.86, 0.81 and 0.85, respectively. The overall alpha was 0.84, suggesting that these scales had a high level of reliability in predicting the contribution of teachers' family demands to work-family conflict.

Data were collected by a survey of faculty members at science and technological universities in central Taiwan. A total of 150 questionnaires were distributed in several departments of six science and technology universities, with 112 usable questionnaires used in the analysis, representing a valid response rate of 74.67%. The questionnaires were put in an open envelope that also contained a letter from the researchers assuring the anonymity of respondents. The order of the presentation of the three main instruments was counterbalanced with the demographic questions presented last.

## RESULTS

A statistical analysis indicates a number of interesting results, which are as follows:

- Factor analysis: to validate the three questionnaires, an exploratory factor analysis with a varimax rotation was performed to clarify the structure of the preferences of teachers at science and technology universities in central Taiwan. As a result, only one item in the work demand list was omitted; thus, a total of 13 items were retained in the final version;
- A regression of the work and family demands of teachers at science and technology universities in central Taiwan regarding work-family conflict showed a high level of predictability as shown in Table 1;
- A comparison of gender differences: the results of a *t*-test indicated that there was no significant difference between male and female teachers' responses except for family demands. Thus, female teachers family demands were higher than for their male colleagues as listed in Table 2;
- A comparison of whether married or single: the results of a *t*-test indicated that there was no significant difference between single and married teachers' responses except for family demands. Thus, married teachers' family demands were found to be higher than for single teachers as shown in Table 3;

- A comparison of whether or not the teacher had children: the results of a *t*-test indicated that there was no significant difference between having a child or not except for family demands. Thus, professors who had a child had higher family demands than for those with no child as detailed in Table 4.

Table 1: Regression of work and family demands on work-family conflict.

Scale	$\beta$	$\Delta R^2$	$R^2$	F
Work demands	0.599	0.353	0.359	61.64***
Family demands	0.425	0.173	0.180	24.22***

\*\*\* $p < 0.001$

Table 2: Gender comparisons on the three scales.

Scale	Gender	Mean	SD	<i>t</i> -value
Work-family conflict	Male	49.17	12.87	-0.647
	Female	50.62	9.54	(ns)
Work demands	Male	35.26	5.70	-0.863
	Female	36.09	4.42	(ns)
Family demands	Male	28.50	7.77	-2.058*
	Female	31.71	8.49	

\* $p < 0.05$  (married = 95, single = 14)

n.s.: not significant

Table 3: Marriage status comparisons on the three scales.

Scale	Marriage	Mean	SD	<i>t</i> -value
Work-family conflict	Married	49.34	11.73	-0.746
	Single	51.86	11.81	(ns)
Work demands	Married	35.29	5.19	-1.223
	Single	37.29	5.76	(ns)
Family demands	Married	31.21	7.09	5.980*
	Single	18.93	7.77	

\* $p < 0.05$  (married = 95, single = 14)

ns: not significant

Table 4: Children status comparisons on the three scales.

Scale	Child	Mean	SD	<i>t</i> -value
Work-family conflict	Yes	49.19	11.82	-0.970
	No	51.90	10.44	(ns)
Work demands	Yes	35.15	5.18	-1.578
	No	37.14	5.32	(ns)
Family demands	Yes	31.46	7.02	4.436*
	No	22.33	8.81	

\* $p < 0.05$  (having one child or more = 91, no child = 21)

ns: not significant

## DISCUSSIONS

Work-family conflict has been well-discussed in organisations [28]. However, university policies fail to facilitate the combined roles of work and family life [23]. According to the results of the factor analysis, work and family demands had a highly satisfactory validity and reliability to predict work-family conflict. The results showed that work and family demands can strongly predict work-family conflict.

This study also explored whether gender, marriage status and having children would yield significant differences on family demands. This result, to a certain degree, was related to Armenti's findings that female faculty may delay partnering or

marriage, delay childrearing or limit the number of children reared [23].

#### LIMITATIONS AND OPPORTUNITIES FOR FUTURE STUDY

The sample of this study included only teachers at science and technology universities in central Taiwan. The results derived from this study describe some general preferences. To facilitate family-friendly policies on campus, further investigations and in-depth interview will be helpful.

There are key issues that deserve more extensive consideration if institutions are committed to a diverse workforce; for example, they need to do more to accommodate families, such as extending the tenure clock and reducing the teaching load for new parents. Furthermore, colleges must work to remove the stigma of taking advantage of family-friendly policies – the feeling that women who do so are less committed to their careers [29].

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