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Sug-In Chang*

Work Role Stressors and Turnover Intentions: A Study of IT Personnel in South Korea**

This paper focuses on the relationship between work role stressors and job satisfaction, organizational commitment, and turnover intention among IT personnel. To collect data, we received the cooperation of the IT SME/Venture Business Association in Korea. IT firms provided the names and addresses of IT personnel working in the Seoul and Gyeonggi region. Results indicated that work role stressors had a positive, indirect effect on turnover intention through low job satisfaction and organizational commitment. The relationship between WFC and organizational commitment was significant. Findings suggested that role ambiguity has negative impact on organizational commitment. The mediating effect of job satisfaction and organizational commitment on turnover intention was not supported.

Arbeitsrollenbedingte Stressoren und Absichten zum Arbeitsplatzwechsel: Eine Untersuchung des IT-Personals in Süd-Korea

Die vorliegende Arbeit konzentriert sich auf die Beziehung zwischen arbeitsrollenbedingte Stressoren und Job-Zufriedenheit, Organisations-Commitment und den Absichten zum Arbeitsplatzwechsel in IT-Organisationen. Um Daten zu sammeln, kooperierten wir mit IT SME & Venture Business Association in Korea. IT Unternehmen stellten Namen und Anschriften von IT-Beschäftigten zur Verfügung, die im Gebiet von Seoul und Gyeonggi arbeiten.

Die Ergebnisse weisen darauf hin, dass arbeitsrollenbedingte Stressoren eine positive und indirekte Wirkung auf Absichten des Arbeitsplatzwechsels haben. Der Work-Family Conflict (WFC) war positiv mit den Absichten des Arbeitsplatzwechsels verbunden. Die Beziehung zwischen WFC und Organisations-Commitment war signifikant. Die Ergebnisse zeigten, dass Rollen-Ambiguität einen negativen Einfluss auf Organisations-Commitment hat. Die vermittelnde Wirkung von Job-Zufriedenheit und Organisations-Commitment auf der Absichten des Arbeitsplatzwechsel wurde nicht unterstützt..

Key words: **Work-family Conflict (WFC), Role Stress, Role Ambiguity,
IT Personnel, Turnover Intention**

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1. Introduction

The impact of information technology (IT) on society is great. The rapid advance of new IT is a major cause of qualitative transformations in the modern production system. To deal with the enormous growth in IT industry, organizations must compete to hire and retain the best and brightest employees. IT personnel belong to the essential group of human resources in the process of diffusion and adoption of computers and related equipment. They drive the progress in IT sectors and accelerate the actual realization of yield among IT industries. The environment of IT work is characterized by practices that often contain overtime, after dark meetings, late-night works, on-call duty, and a continual state of rush or crisis (Armstrong et al. 2007). Nonetheless, IT personnel want the organization to provide them with training and new technical skills to help them keep current. The character of this stereotype is consistent with research of Dowling (1972) and Latham (2000) showing that high performers are motivated by specific challenging goals and feedback. The research of McNee et al. (1998) revealed that IT personnel turnover has increased from 15% to 20% annually. IT companies endeavor to maintain their employees by increasing salaries, fringe benefits, and in general, creating an attractive environment for IT professionals.

The study of IT personnel as a separate occupational group has been motivated by the need to further understand IT workers (Orlikowski/Baroudi 1989). An extensive review of the literature on IT personnel revealed that the vast majority of work role stressors and turnover issues have been undertaken primarily in western societies. Nevertheless, very little research has been done on this issue in general, and none at all on this specific topic in South Korea. We expect that the effects of work-family conflict and role stressors on turnover intention would be especially pronounced among IT personnel in Korea. The IT industry in Korea was selected as a research site for various reasons. First, the IT industry in Korea has become essential for creating added value in knowledge-based sectors and facilitating IT production and distribution throughout the region. Second, in a rapidly developing economy like Korea's, there is a need to understand the attitude of employees in general, and particularly in IT sectors. There are approximately 1,389,000 employees in the IT sector in Korea (2005). These account for 10.6 percent of the whole working population in Korea (see IT statistics Information Center of Korea 2005). Therefore, it is imperative to understand the attitude of IT personnel in Korea. Third, from a theoretical perspective, it is important to fill the void in the literature concerning turnover, work-family conflict, role stressors, and job satisfaction among IT personnel in a non-western context, in particular Korea. Fourth, the business-driven policy of Korea since 1970s has led the working situation to go from bad to worse, especially, long working hours and high stress working conditions that affect IT personnel.

The purpose of this study, therefore, is to investigate the extent to which work-family conflict (WFC) and role stressors have an impact on job satisfaction, organizational commitment, and turnover intention among IT personnel in Korea. Additionally, we explore the mediating roles of job satisfaction and organizational commitment in the relationship between WFC and intention to leave an organization. This study is organized as follows: the first section discusses the theoretical overview. The second

section contextualizes the literature review and the development of the research hypotheses. The research methodology is presented next and the study results appear in the subsequent section. The final section discusses the study's results, implications and limitations.

2. Theoretical overview

Since the pioneering research of Kahn et al. (1964) on organization role theory, many studies have inquired into the relationship between work role stressors and a variety of consequences such as job satisfaction, organizational commitment and employee turnover. Work role stressors have been found to increase levels of WFC (Foley et al. 2005). WFC can be a source of occupational stress among IT personnel. In previous role stress research, WFC has been neglected because work and family are often viewed as separate life domains. However, in the recent studies, for example, Cooper et al. (2001) and Frone et al. (1992) pointed out that the interface of work and family produces stresses and strains for employees. Greenhaus and Beutell (1985) identify three major forms of WFC: time-based, strain-based and behavior-based WFC. That implies that persons have fixed amounts of time and energy to spend (Ruderman et al. 2002). WFC represents one specific form of role conflict that appears in virtually every listing of key stressors in reviews of the literature. Frone (2003) used a broader concept in regard to work-family balance. This concept contains both the negative side of conflict and the positive side of work-family facilitation in which one role heightens the other. He distinguished between work-family conflict (WFC) and family-work conflict (FWC). WFC is defined as the interference of work with family life and FWC is defined as the interference of family with work (Netemeyer et al. 1996). That is WFC can instigate in either field such that family can interfere with work duties or work can interfere with family needs (Foley et al. 2005).

In the work setting, a role is the set of tasks and behaviors that others expect a person to perform while doing a job (Vecchio 2006). An individual's expected role differs from his or her perceived role and enacted role. A perceived role is the cluster of activities that an individual believes he or she is expected to perform while an enacted role is person's actual conduct in his or her position. The enacted role can reflect more the individual's perceived role than the expected role (Vecchio 2006). Work role stressors such as role conflict and role ambiguity are a job-related source of organizational stress. Role conflict occurs when a focal person responds with behaviors that serve as inputs to the role senders' process. Rizzo et al. (1970) stated that role conflict occurs when the salesperson perceives that some of the job requirements are incompatible, resulting in greater anxiety, tension, and, ultimately, low job satisfaction. Role ambiguity is experienced when the messages that evaluators send are not clear, or they give incomplete information (Vecchio 2006). Negative workplace stress such as downsizing and technological evolution may adversely affect an employee's mental and physical health. When a psychological strain and conflict is experienced by one person, it can affect the level of strain of another person in the same social environment (Hammer et al. 2003).

Organizational commitment refers to employee's emotional attachment to the company. Meyer and Allen (1990) suggested that organizational commitment com-

prises three dimensions: affective, continuance and normative dimensions of organizational commitment. Employees with a strong affective commitment (personnel attachment and identification to the organization) continue employment because they want to do so. Continuance commitment exists when employees face high switching costs because of a perceived lack of suitable alternative employers. Employees with a high level of normative commitment feel that staying with an organization is the moral or right thing to do. Research of Thompson et al. (1999) revealed that employees who perceived more supportive work-family cultures were more likely to use work-family benefits, and reported higher organizational commitment than were those who perceived less supportive work-family culture. Job satisfaction is important in organizational behavior. It is the individual's attitude or orientations towards work. Personnel attitudes and environment are the major factors affecting job satisfaction. Porter and Lawler (1968) divide the factors affecting job satisfaction into the intrinsic satisfactory factors related to work itself and the extrinsic satisfactory factors not directly related to work itself. Turnover is regarded as an individual's estimated probability that they will stay in an employing organization (Cotton/Tuttle 1986). Moore/Burke (2002) stressed that job and organizational factors have impact on the turnover culture found in the IT workforce. Intent to leave or stay is strongly and consistently related to voluntary turnover (Mathieu/Zajac 1990; Hendrix et al. 1999; Griffeth et al. 2000). Empirical studies have reported that turnover intention can reduce the overall effectiveness of an organization (Smith/Brough 2003). Therefore, many industrial and organizational psychologists, management scientists and sociologists have been interested in the turnover intention.

3. Hypothesis setting

3.1 *Work-family conflict, job satisfaction and organizational commitment*

Researchers found that WFC is associated with a lower level of job satisfaction and a higher intention to leave the organization (Burke 1988; Frone et al. 1992). Chiu (1998) found a significant correlation of -0.24 between WFC and job satisfaction in Hong Kong. Result of Aryee's research (1992) has been revealed significant correlation between WFC and job satisfaction for at least some subgroups in a Singapore sample. Chan et al. (2000) who collected data on 2,589 professionals in Singapore suggested that WFC was related to job dissatisfaction and strain when controlling for a number of work-related, personality and demographic variables. On the other hand, Aryee et al. (1999) indicated an insignificant correlation of -0.02 between FWC and job satisfaction. Additionally, WFC is an important predictor of turnover intention for IT personnel. Employees who perceived more supportive work-family cultures had low WFC and turnover intentions (Thompson et al. 1999). Igarria and his associates developed influential models of turnover that included such factors as WFC, organizational commitment and job satisfaction (e.g., Igarria/Greenhaus 1992; Igarria/Guimaraes 1999). Effects of WFC on turnover intention have been found to be significantly greater than the effects of role ambiguity (Netemeyer et al. 2004). Drawing on the theoretical literature and available empirical evidence, we propose the following hypothesis:

H 1: WFC would be negatively related to organizational commitment.

H 2: WFC would be negatively related to job satisfaction.

H 3: WFC would be positively related to turnover intention.

3.2 Role stressors, job satisfaction and organizational commitment

Work stressors have negative effects on functional work outcomes including job performance. They positively affect dysfunctional job outcomes including turnover intention (Rhoad et al. 1994). Work role stressors can be determined by the IT personnel's perceived level of role conflict and role ambiguity in their work. In many cases job satisfaction and employee preferences help drive employee attitudes and behavior. The positive attitude and behavior is expected when the preferences of IT personnel's go well with the characteristics of their jobs (LeRouge et al. 2006). LeRouge et al. (2006) surveyed the relationships between the match in IT professionals' preferred and perceived role stress fit with job satisfaction and organizational commitment. Their study found that role stress fit is positively related to job satisfaction and organizational commitment. IT professionals with low levels of stress cope and adapt well to role stressors. Moore (1998) found that approximately 20 percent of the IT work force experienced role stress with reduced job satisfaction, reduced organizational commitment, and greater turnover intention. High levels of role conflict and role ambiguity leads to numerous dramatic effects such as turnover and absenteeism (Fisher/Gitelson 1983). Based on the above information, the following hypotheses are proposed:

H4: Role conflict would be negatively related to organizational commitment.

H5: Role conflict would be negatively related to job satisfaction.

H6: Role ambiguity would be negatively related to organizational commitment.

H7: Role ambiguity would be negatively related to job satisfaction.

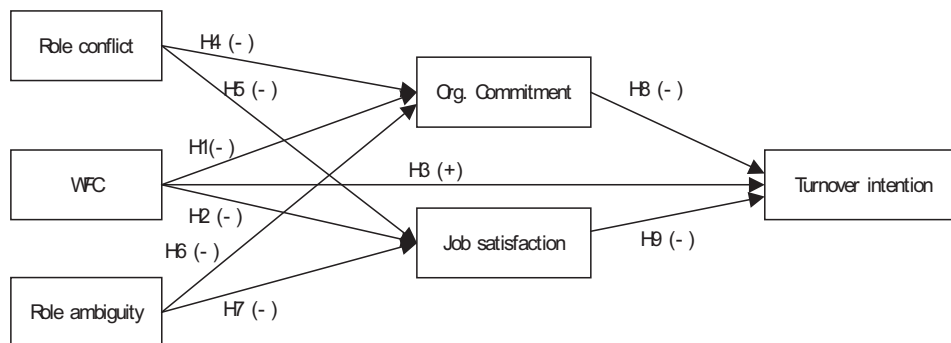
3.3 Turnover intention, job satisfaction and organizational commitment

Turnover intention was strongly influenced by job satisfaction and organizational commitment (Carayon et al. 2006). Most empirical studies have demonstrated that job satisfaction has positive effect on employees' work performance and organizational commitment, and a negative effect on employee absenteeism and turnover (McClellan/Andrew 2000; Tett/Meyer 1993). Levy (2003) quoted Hom and Griffeth's (1991) modified model of turnover as an example of a research model. He used job satisfaction as a key element in the decision-making process of staying with or leaving a job. More recently, Bordia et al. (2004) analyzed data from the staff of a psychiatric hospital, and found that job satisfaction was negatively related to turnover intentions. Employees have lower turnover intention when they accept a sense of satisfaction from their job (Raabe/Beehr 2003; Ramaswami/Singh 2003). Organizational commitment had a strong, negative effect on turnover intention, but inconsistent with prior research, job satisfaction had stronger effect than organizational commitment on turnover intention (Igbaria/Greenhaus 1992). Commitment has a direct, inverse relationship with turnover intention (Mathieu/Zajac 1990; Griffeth et al. 2000). Organizational commitment is modeled as a mediator between satisfaction and turnover intention (Mathieu/Zajac 1990). Job satisfaction can be showed as a mediator between work role stressors and turnover intentions. Empirical evidence has supported as a

mediating effect (O'Driscoll/Beehr 1994). Consistent with the weight of the evidence, the following hypotheses are proposed:

- H 8: Organizational commitment would be negatively related to turnover intentions.
 H 9: Job satisfaction would be negatively related to turnover intentions. Especially, the effects of work-family conflict on turnover intention are mediated by job satisfaction and organizational commitment.

Figure 1: Hypothesized model



4. Data analyses

4.1 Sample

A survey instrument was used to collect data required to test the research hypotheses. To collect data, we received the cooperation of the IT SME/Venture Business Association in Korea. IT firms provided the names and addresses of IT personnel working in the Seoul and Gyeonggi regions. Random samples of 490 questionnaires were distributed at 10 IT companies provided by this Association. The data was collected in July 2006. Twenty two surveys were excluded due to missing data. A total of 304 usable surveys were finally received, representing a response rate of 62 percent. Dixon and Schertzer (2005) stated that response rates of 60 % or above are normally obtained when the study is sponsored by a firm and when reminders are used. IT personnel consisted of those who (1) hold an IT position, (2) are from a primarily IT-based or IT-driven company, and (3) spend most of their work week at distant client sites (including overnight), (4) work at the client site for the sole purpose of IT support.

The questionnaires distributed and collected the HR departments in each company. The survey was originally developed in English and then translated into Korean. The accuracy of the translation was enhanced by following the back translation procedure. The translated version was compared with the original English version. The survey was then pre-tested with Korean businessmen and students to ensure equivalence. The Korean version of the survey was sent to the target respondents. Each respondent was guaranteed their anonymity, and given a covering letter explaining the purpose of the survey and a postage-paid return envelope. Based on interviews with IT personnel and managers, the constructs were showed to be functionally equivalent

(similar function in the target population) and conceptually equivalent (represented by the same attitude and behaviors) (Kumar 2000; Singh 1995).

Approximately 50% of the IT personnel had at least 10 years working experience, with the average working experience being 13 years. The sample consisted of 114 females (37.5%) and 190 males (62.5%). The age of the respondents ranged from 22 to 63 years, with a mean of 39.48 years (S.D. = 10.26). IT experience ranged from a few months to 40 years, with a mean of 14.07 years (S.D. = 10.38). The number of years worked in IT ranged from less than a year to 31 years, with a mean of 39.48 years (S.D. = 10.26). Twenty nine percent of the respondents had completed vocational school, 51.3% had completed technical or high school, and 20.1% held college degrees and undergraduate degree. Reflecting the high levels of training needed to enter IT professions, many more workers in IT jobs have at least bachelors degrees or higher.

4.2 Methodology and measurement of variables

The survey was designed to collect data from IT personnel to test the hypothesized models. Quantitative research methods were used in this study. This research examined the relationship between independent and dependent variables such as turnover intention. Data were analyzed using SPSS 12.0 and AMOS 5.0. The package AMOS 5.0 was used to fit and test several structural models (Arbuckle/Wothke 1999). Respondents used five-point Likert-type scales (1= 'strongly disagree', 5= 'strongly agree') to respond to the items in the following measures, except for the control variables. The internal consistency reliability of the measures used in this study was estimated by Cronbach's alpha.

Work-Family conflict: WFC can be defined as a form of inter-role conflict in which the role pressures from the work and family domains are mutually incompatible. WFC is a key source of job stress among IT personnel because they have to juggle family and job duties as they work at distant client sites during the week. WFC was measured with a five-item scale developed by Adams et al. (1996). Items measure the extent to which work interferes with family life. An example item is 'due to work-related duties, I have to make changes to my plans for family activities'. In this study, the average coefficient alpha for the scales was reliable at $\alpha = .867$.

Role conflict: Role conflict is experienced when the norms that are consistent with one role that we play prohibit us from behaving in accordance with the norms consistent with another role. The group of role senders that directly affect the focal person is a role set such as the employee's manager, other team members, close friends, immediate family members, and important clients or customers. Role conflict was measured with a three-item scale developed by Rizzo et al. (1970). An example item is 'I receive incompatible requests from two or more people'. As reported by Foley, Hang-Yue and Lui (2005), the average coefficient alpha values for the scales was reliable at $\alpha = .722$ in this study.

Role ambiguity: Role ambiguity occurs when the messages that managers send are not clear, or they give incomplete information. High level of role ambiguity leads to numerous dramatic effects such as stress reactions, aggression, hostility, and turnover and absenteeism. Respondent role ambiguity was assessed with a three-item scale developed by Rizzo et al. (1970). An example item is 'I feel certain about how much au-

thority I have'. This scale has been widely used in previous studies. For example, the coefficient alpha values for this scale were 0.90 (Foley et al. 2005). Coefficient alpha for the scales was $\alpha = .801$ in this study.

Job satisfaction: Our definition of job satisfaction comprehends all the characteristics of the job and work environment that IT personnel find rewarding, fulfilling, and satisfying. There can include factors such as pay, security, variety, feedback, autonomy, identity, and co-worker interactions. Job satisfaction was measured using a modified version of the 15-item scales developed by Wood et al. (1986). Of them all, three items were used in this research. An example item is 'I am satisfied with the freedom I have to do what I want on my job'. The coefficient alpha value for these scales was .87 in previous research (Pettijohn et al. 2007). The average coefficient alpha for the scales was reliable at $\alpha = .723$ in this study.

Organizational commitment: Organizational commitment refers to congruence between the goals of the individual and the organization whereby the individual identifies with and extends effort on behalf of the general goals of the organization. It was measured using a modified version of the 15-item scales developed by Mowday et al. (1982). Among them all, five items were used in this research. An example item is 'I find that my values and the organization's are very similar'. As studied by Pettijohn et al. (2007), the coefficient alpha value for this scale was .79. Coefficient alpha for the scales was reliable at $\alpha = .848$ in this study.

Turnover intention: In the present study, we utilize turnover intentions as the dependent variable. Turnover is regarded as an individual's estimated probability that they will stay with an employing organization. Respondent turnover intention was assessed with a four-item scale developed by Bluedorn (1982). An example item is 'I am thinking about quitting my line of work'. Coefficient alpha for the scales was $\alpha = .727$ in this study.

Control variable: Four control variables such as gender, education, tenure, and age were included in this study, as they were found to affect the dependent variables in previous studies (Primeaux et al. 2003). Gender was a dummy variable coded 1 if the respondent was male and coded 2 if the respondent was female. Education was measured as a dummy variable coded 1~4 for middle school~graduate school. Age of the respondents was categorized into four age groups: 20-29, 30-39, 40-49, and over 50.

4.3 Results

Reliability analysis and validity analysis

An internal consistency approach using Cronbach's alpha was used to determine the reliability of all scales. Cronbach's alpha is calculated for each of the multi-item scales. The results of Cronbach's alpha scores were compared to the published estimates for pre-existing scales for instruments used in the study. Some suggest that reliabilities of 0.60 (Van de Ven/Ferris 1980) to 0.70 (Nunnally 1978) or higher are sufficient for basic research. Exploratory factor analysis (EFA) is used to evaluate potential violations of the assumptions underlying coefficient alpha as well as to evaluate the internal structure of the instruments. The reliability scores for measurement model (Organizational commitment, 0.584; job satisfaction, 0.594; turnover intention, 0.722; role con-

flict, 0.671; work-family conflict, 0.801; role ambiguity, 0.754) in Table 1 were found to be consistent with the published estimates for pre-existing scales. The results of the factor analyzed using varimax rotation indicated that, overall, the questionnaires are well segregated and that the scaled-items measure the intended constructs. Additionally, we conducted confirmatory factor analyses on the work stressors variables, job satisfaction variables, organizational commitment variables and turnover intention variables to verify our hypothesized factor structure and to ensure convergent and discriminate validity. The factor loading for each of the items in this study are listed in Table 1.

Table 1: Proposed dimensions and extracted dimensions of measures

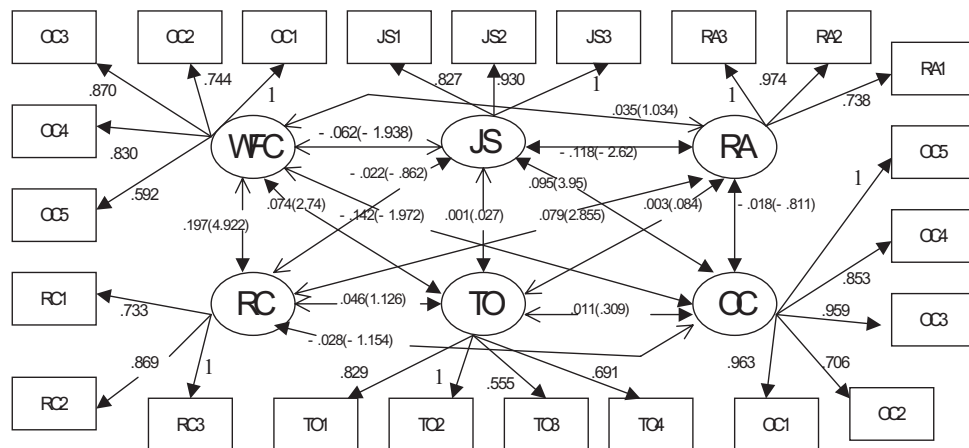
Item	Factor Loading	Cronbach's Alpha	Reliability
Work-Family conflict, by Adams et al. (1996)			
1. Due to work-related duties, I have to make changes to my plans for family activities.	0.894	0.867	0.801
2. The demands of my work interfere with my home and family life.	0.801		
3. My job produces strain that makes it difficult to fulfill family duties.	0.819		
4. The amount of time my job takes up makes it difficult to fulfill family responsibilities.	0.512		
5. Things I want to do at home do not get done because of the demands my job puts on me.	0.665		
Role conflict, by Rizzo et al. (1970)			
1. I receive incompatible requests from two or more people.	0.779	0.722.	0.671
2. I do things that are apt to be accepted by one person and not accepted by another.	0.690		
3. I get an assignment without adequate resources and materials to execute it.	0.585		
Role ambiguity, by Rizzo et al. (1970)			
1. I feel certain about how much authority I have.	0.629	0.801	0.754
2. I know that I have divided my time properly.	0.795		
3. I receive an assignment without the manpower to complete it.	0.858		
Job satisfaction, by Wood et al. (1986)			
1. I am satisfied with the freedom I have to do what I want on my job.	0.693	0.723	0.594
2. I am satisfied with the compensation I receive for my job.	0.627		
3. My superiors provide enough information about my job performance.	0.729		
Organizational commitment by Mowday et al. (1982)			
1. I find that my values and the organization's are very similar.	0.678	0.848	0.584
2. I feel very little loyalty to this organization.*	0.727		
3. This organization inspires the best in me in job performance.*	0.642		
4. I would leave this organization with very little change.	0.727		
5. Deciding to work for this organization was a mistake.*	0.678		
Turnover intention, by Bluedorn (1982)			
1. I am thinking about quitting my line of work.	0.586	0.727	0.722
2. I often think about quitting my present line of work.	0.924		
3. I am constantly searching for a better alternative	0.520		
4. I am actively seeking an alternative work role.	0.720		

Note: All path coefficients were significant at $p < .001$. *Reverse-scored questions. Some items are abbreviated versions of questions.

A chi-square test assesses the match between the predicted and obtained covariance matrices. The chi-square statistic of the CFA was 192.776 with 196 degrees of free-

dom. Bordia et al. (2004), and Kim (2004) indicated that the X^2 value is recommended that a chi-square value that is less than three times the degrees of freedom ($X^2/df < 3$) indicates a good fit of the model ($X^2/df = 192.776/196 = 0.984 < 3$). The goodness-of-fit Index (GFI) was 0.948. The other indices revealed a reasonably good fit. Particularly, the RMSEA (root mean square error of approximation) was 0.012, indicating a satisfactory fit (Brown/Cudeck 1989). The Comparative Fit Index (CFI; Bentler 1990), the Tucker Lewis Index (TLI; Bentler/Bonett 1980) and incremental fit index (IFI) were 0.908, 0.982 and 0.978 respectively, reflecting an acceptable fit (Bentler 1990). Anderson and Gerbing (1988) stated that the relatively high values of these supporting indices provide an adequate measurement model fit. The figure 2 shows the result of confirmatory factor analysis for checking convergent validity and discriminate validity.

Figure 2: Confirmatory factor analysis



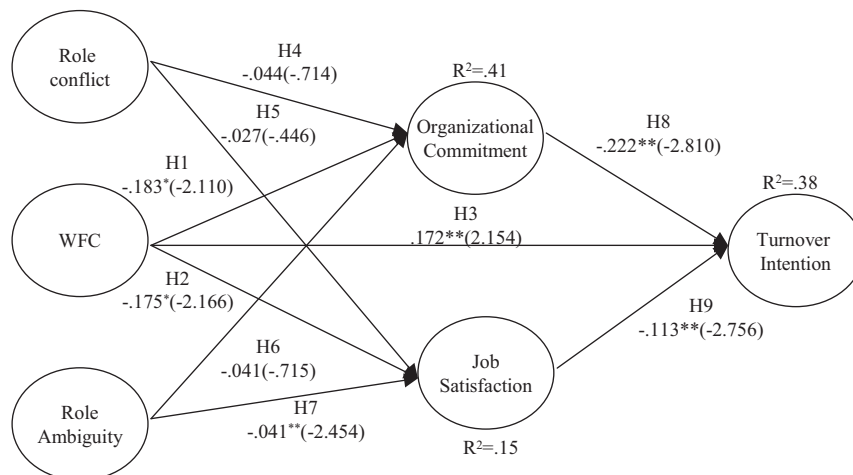
Note: WFC= work-family conflict, RC=role conflict, RA=role ambiguity, JS=job satisfaction, TO=turnover intention
 OC=organizational commitment,
 Model fit: chi-square =192.776, Df=196, ($p=0.552$), $X^2/Df=0.984$, GFI=0.948, AGFI=0.927, CFI=.908, TLI=.982,
 IFI=.978, NFI=0.932, RMR=0.030, RMSEA=0.012.

Structural equation model results

The purpose of this study is to empirically test whether WFC, role conflict, role ambiguity, job satisfaction, organizational commitment affects an employee's intention to leave the IT organization in Korea. To test the hypothesized models, we used the structural equations modeling technique. The model produces a significant chi-square value ($X^2=2.462$, $df=2$, $p=0.292$; Q value=1.231). A non-significant X^2 value indicated that the specified model structure was not different from the underlying data structure (Byrne 2001). The GFI, AGFI, NFI, RMR and TLI of the model were 0.997, 0.972, 0.967, 0.011 and 0.942 respectively, suggesting a close fit of the model to the data (Bentler 1990). The RMSEA was 0.028, suggesting reasonable fit (Brown/Cudeck 1989). The fit statistics for this model suggested an adequate fit to the data. The pro-

portion of variance explained (R^2) of the three functions with organizational commitment, job satisfaction, and turnover intention as the dependent variable is 0.41, 0.15 and 0.38, respectively. The estimated $R^2=.38$ suggested that job satisfaction and organizational commitment accounted for 38 per cent of the variance in turnover intention. Figure 3 was summarized the research hypotheses, structural path coefficients, and t-values. Hypothesis 1 and 2 predicted that the WFC would be negatively related to organizational commitment (H1) and job satisfaction (H2). As predicted stated in H1 and H2, results indicate that WFC was significantly and negatively related to both organizational commitment ($\beta=-0.183$, $p<.05$) and job satisfaction ($\beta=-0.175$, $p<.05$), offering support for H1 (e.g., Ahuja et al. 2007). H1 and H2 were supported.

Figure 3: Result for proposed model



Note: ** $p<.01$, * $p<.05$

Model fit: chi-square = 2.462, Df=2, ($p=0.292$), $X^2/Df=1.231$, GFI=0.997, AGFI=0.972, CFI=0.992, TLI=0.942, IFI=0.994, NFI=0.967, RMR=0.011, RMSEA=0.028

Hypothesis 4 predicted that role conflict is negatively related organizational commitment. Result of this study is consistent with previous findings (e.g., Fisher/Gitelson 1983) about the negative effects of role conflict on organizational commitment. However, it was insignificant ($\beta=0.044$, $t=-0.714$). Hypothesis 6 predicted that the role ambiguity would be negatively related to organizational commitment. Results indicated that role ambiguity has negative impact on organizational commitment. H6 of path coefficient appeared as -0.041. H6 was rejected. Result of this study is not consistent with previous findings (e.g., Moore 2000; Hartenian et al. 1994; Fisher/Gitelson 1983). Hypothesis 8 proposed interaction effects between organizational commitment and turnover intention. Previous researches founded that organizational commitment has a direct, inverse relationship with turnover intention (e.g., Mathieu/Zajac 1990; Tett/Meyer 1993; Carayon et al. 2006). High levels of commitment reduce the intention to leave the job. H8 of path coefficient appeared -0.222 ($p<.01$). The finding of this study was significant in the relationship between organizational commitment and

turnover intention. As predicted stated in H9, researchers have indicated that job satisfaction is a critical organizational variable due to its known effect on turnover intention, and has negative impact on turnover intention (Spector 1997). Result of this study was associated with previous findings about the negative effects of turnover intention. It was significantly related to turnover intention ($\beta = -0.113$, $p < .01$).

Especially, hypothesis 9 predicted that job satisfaction and organizational commitment would fully mediate the effects of work-family conflict on turnover intention. Mediation would be upheld if a series of three tests of significance based upon a series of three regression models all passed. Three mediation conditions provided by Baron and Kenny's (1986) is first, that the independent variable must be significantly related to the mediator, second, that the mediator variable must be significantly related to the dependent variable, third, the total effect of the independent variable must be significant, while on the other hand the direct effect is insignificant. If these conditions hold in the predicted direction, then the effect of the independent variable in the third equation must be less than in the second. Mediation Effects connote the impact of work-family conflict on turnover intentions as carried through job satisfaction and organizational commitment (for example, the product of the $WFC \rightarrow$ job satisfaction \rightarrow turnover intentions path coefficients). In order to test the mediation effect of job satisfaction and organizational commitment on turnover intention, we must consider interaction between WFC and turnover intention. Hypothesis 3 predicted that the relationships between WFC and turnover intention would be mediated by job satisfaction and organizational commitment. H3 of path coefficient appeared as 0.172 ($p < .01$). The significant total effects of WFC on turnover intention were completely indirect based

Table 2: Standardized estimates and critical ratio of the measurement model

Hypothesis	Model Path	Coefficient (t-value)	Result
H5: Role conflict would be negatively related to job satisfaction.	Role conflict \rightarrow Job satisfaction	-.027 (-0.446)	rejected
H4: Role conflict would be negatively related to organizational commitment.	Role conflict \rightarrow Org. commitment	-.044 (-0.714)	rejected
H 1: WFC would be negatively related to organizational commitment.	WFC \rightarrow Org. commitment	-.183 (-2.110)	supported
H6: Role ambiguity would be negatively related to organizational commitment.	Role ambiguity \rightarrow Org. commitment	-.041 (-0.715)	rejected
H7: Role ambiguity would be negatively related to job satisfaction.	Role ambiguity \rightarrow Job satisfaction	-.141 (-2.454)	supported
H 2: WFC would be negatively related to job satisfaction.	WFC \rightarrow Job satisfaction	-.175 (-2.166)	supported
H 3: WFC would be positively related to turnover intention.	WFC \rightarrow Turnover intention	.172 (2.154)	supported
H 9: Job satisfaction would be negatively related to turnover intentions among IT personnel.	Job satisfaction \rightarrow Turnover intention	-.113 (-2.756)	supported
H 8: Organizational commitment would be negatively related to turnover intentions among IT personnel.	Org. commitment \rightarrow Turnover intention	-.222 (-2.810)	supported

Model fit: chi-square = 2.461, Df=2, ($p=0.292$), $X^2/Df=1.231$, GFI=0.997, AGFI=0.972, CFI=0.992, TLI=0.942, IFI= 0.994, NFI=0.967, RMR=0.011, RMSEA=0.028

on our model, as it were transmitted through the mechanism of job satisfaction and organizational commitment. The relationship between organizational commitment, job satisfaction, and turnover intention was significant. However, the fit of the model would not be improved by the direct path from WFC to turnover intention. The mediating effect of job satisfaction and organizational commitment was not supported because these three conditions failed.

5. Conclusion

5.1 Discussion

In the present study, we investigated the effects of WFC, role conflict and role ambiguity on the turnover intentions among IT personnel in Korea. We found that work stressors, especially, WFC were significantly related to stronger intentions to leave the organization. The impact of work role stressors on turnover intention was mediated by job satisfaction and organizational commitment. Work role stressors such as role ambiguity, role conflict, job stress, and work-family conflict had a positive, indirect effect on turnover intention through low job satisfaction and organizational commitment. Work role stressors may be the result of family responsibilities that make both emotional and physical demands. Family responsibilities have been tied to perceptions of WFC and other work-family stressors. This literature clearly has shown a connection between work-family stressors and employee strain (e.g., Allen et al. 2000). Much of the research on these issues has focused on how unbalanced work-family relationships can strain work and home life. Specifically, when IT personnel perceive higher role ambiguity and/or role conflict, they experience lower job satisfaction, performance and higher turnover intention. IT personnel with higher job stress experience lower job satisfaction and higher turnover intention. These findings are not entirely surprising because some previous studies have found abnormal results concerning job stress effects (Goolsby 1992). Consistent with the hypothesis in this study, IT personnel experience lower job satisfaction when they perceive higher WFC. WFC are negatively associated with the level of IT personnel's job satisfaction, and can significantly affect turnover intentions. This is in line with empirical results of studies that have analyzed the consequences of WFC in different contexts. Additionally, our results show that role ambiguity is more negatively and significantly related to job satisfaction than organizational commitment.

The results of this study confirm previous findings concerning the efficacy of WFC in predicting turnover while no significant relationship was found to exist between job satisfaction and turnover intention. The results show that WFC is an important predictor of job satisfaction and organizational commitment among IT personnel and through job satisfaction and organizational commitment affects turnover intentions. WFC is also salient for IT personnel, positively affecting turnover intentions and negatively affecting job satisfaction and organizational commitment. The indirect effect of WFC on organizational commitment suggests that WFC leads to sufficient energy drain to cause turnover intention but does not directly make one feel less committed to the organization. Low fairness of reward may make IT personnel's feel bitter toward the organization and may reduce commitment directly. In the end, this creates actual turnover. Consistent with previous research, our results indicate the importance

portance of job satisfaction and organizational commitment in predicting turnover intentions. However, we found no significant relationship between job satisfaction and turnover intentions. Some researchers show that empirical studies have provided inconsistent results. For example, Martin et al. (1981) found no significant relationship between job satisfaction and employee withdrawal from work. Although we have not directly explored the human capital of IT personnel, we stimulate researchers to investigate the extent to which investment in IT personnel's development increases their job satisfaction and affective commitment and reduces actual turnover. We suggest that research would benefit from a more complete picture of the relationship between turnover intention and work role stressors.

5.2 Contributions

The structural model in this study supported the relationship between job satisfaction and turnover intentions. Voluntary turnover of highly skilled IT personnel is problematic from the aspect of knowledge drain, as well as from that of occupational characteristic. Results of this study found that WFC is negatively related to organizational commitment and job satisfaction. Because of the competitive advantage that can be provided by IT professionals to their organization, it is important to increase job satisfaction and organizational commitment. Organizational commitment has been shown to improve the strategic advancement of the organization and to lower turnover costs, while job satisfaction has been related to positive job involvement and performance. We have noted that the strong effects of WFC on job satisfaction may be due to job role changes and Korean traditional environment such as seniority-based employment and seniority-based reward practices in IT workplaces (Choi 2004).

This study leads to several contributions. First, its results intensify prior findings, by providing empirical evidence that organizational commitment and job satisfaction are negatively linked with turnover intentions. Second, this study will contribute to the literature by including the construct of organizational commitment and job satisfaction in our conceptual framework as a mediator in the relationship between WFC and turnover intentions. This mediating effect has not been explored in the IT context in Korea. Third, this study is the first research to identify relationships between work role stressors and turnover intentions among IT personnel in Korea, and it expands the IT personnel's research to other service industries. Fourth, turnover intentions of IT personnel were strongly related to work stressors. Some measures can be proposed to cope with the problem. Above all, work role stressors should be reduced by means of better organizational design, clear work descriptions and work guidelines. Based on a lower level of work role stressor including WFC, role conflict and role ambiguity, IT personnel will have greater job satisfaction and lower turnover intentions. In this regard, providing training on stress management for IT personnel will be helpful. Furthermore, in order to increase job satisfaction and reduce turnover among IT personnel, more intervention and support from the IT firm including IT personnel's assistance programme and family-care arrangements can be provided to lighten the problems of WFC. Fifth, WFC, role conflict and role ambiguity in this study contextualize a significant portion of the variance in predicting IT personnel's turnover intentions. Conceptual framework in this study can be a guide to future research in IT person-

nel's turnover intention. Finally, one practical implication of our study is that the practices that have been found to be effective in reducing work-family pressure in western society may not be as effective in other regions of the East. For example, there is a big difference between the horizontally reciprocal style based on individualism of the West and the vertically reciprocal style based on harmony of the East. In addition, the implications of this study suggest that both IT manager and IT employees should take into consideration not only the organizational context, but also the occupational context while exploring the process of voluntary turnover.

5.3 Limitations and future research directions

There are a number of limitations that have to be borne in mind when interpreting the results of the current study. First, a limitation concerns the choice of variables in our framework and their measurement. The relatively small sample size limits the generalization of the results. Our sample only included IT personnel in the Seoul and Gyeonggi regions in Korea, but we suggest that similar relationships can be found for IT personnel in other settings. Second, our sample was comprised of IT personnel working for organizations in Korea. This is an advantage, but, at the same time, it is also a defect. This limits any generalization of the results of this study to a larger set of occupations. However, we suggest that this study's results can serve as an indicator for IT personnel employed in the public sector or in the private sector. Third, it should be noted that this study was based on instruments and theories developed in the Anglo world, and was transported to Korea. Although we were able to successfully back translate our scales, equivalence of meaning in the scale items may have not been achieved in the rigorous back translation. This is particularly problematic with the multi-item scales where means are compared. Similarly, consistent with previous research (Peterson et al. 1995), our study was reduced the number of items in the job satisfaction, organizational commitment, role conflict, role ambiguity, turnover intentions scales. This may limit comparisons with other studies. Fourth, all data were collected from one organization, with one type of IT personnel. Therefore, the result should not be generalized to other types of organizations. Finally, we have not considered the possible impact of some organizational-level variables such as organizational structure and climate and work arrangements that may affect an individual's perception of stressors and its consequences.

Future studies, first of all, should attempt to base their analysis on a larger sample to allow for generalization of the findings. Furthermore, longitudinal studies would be helpful to allow for a better understanding of the development of the relationship between WFC, role stressors, job satisfaction and turnover intentions. Second, future work should test this model with other employees in order to extend its generalizability beyond the subject organization. Third, positive spillover effect between work and family roles have been neglected in the previous literature (Greenhaus/Powell 2003). Similarly, we have ignored the positive connection between work and family roles that may enrich individuals' work and family lives. Though we have analyzed on the negative implications of work role stressors, future studies should focused on the conditions under which conflict perceptions may generate actions that produce positive outcomes (Judge et al. 2006). In addition, the low R^2 of the job satisfaction function

($R^2=.31$), the organizational commitment function ($R^2=.15$), and turnover intention function ($R^2=.38$) argues that a work role stressors may not be a very important factor in predicting the job attitudes of non-Western IT service employees. Other related organizational practices such as learning orientation (Senge 1990; Sinkula 1994; Slater and Narver 1995) and entrepreneurship (Morris and Paul 1987) should be incorporated in future studies in crease the predictive power of the model. Finally, future studies should examine moderating effects on the relationship between work role stressors and turnover intentions.

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