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Technology Use and Work-Life Balance

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Abstract This study examines the impact of Internet and mobile technology use on work-life balance. Its findings suggest that using Internet and mobile technologies influences the dimensions (flexibility and permeability), types (integration, autonomy, interference, and segmentation), and consequences (job satisfaction, job stress, and overwork) of work-life balance. Technology use shapes an individual's perception of flexibility and permeability regarding the balance between work and life spheres. Technology use determines an individual's type of work-life balance. Technology use affects the individual's resulting experience as a consequence of work-life infiltration.

Keywords Work-life balance · Work-life boundary · Flexibility · Permeability · ICT

Introduction

Work and life tend to increasingly intertwine rather than exist as separate spheres in this age of technology-driven connectedness. Information and Communication Technologies (ICTs) have challenged the strong ideology of the work-life segregation prevalent in industrial modernism (Nippert-Eng 1995; Townsend and Batchelor 2005). The consequence of work-life infiltration enabled by ICTs looks arguably dichotomous. While some people, because of technological convenience, are willing to do more work during their personal time and are not reluctant to manage private affairs from the workplace, others want a strict separation between their private and public lives and perceive such infiltration as detrimental to their personal life (for example, job stress, job dissatisfaction, and more workloads perceived). Accordingly, work-life balance is an individual's relative perception of the relationship between work and private life.

To understand the relativity of work-life balance, this study considers two dimensions: *flexibility* (the malleability of the boundary between two or more role domains, which is the ability of a role domain to expand or contract to accommodate the

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demands of another role domain) and *permeability* (the extent to which a boundary allows the psychological or behavioral aspects of one domain to enter another) (Ashforth, Kreiner, and Fugate 2000; Bulger, Matthews, and Hoffman 2007). Differing levels in flexibility and permeability generate four types of work-life balance: *integration* (transfer of affects, values, skills, and overt behaviors between different domains) of crossing work-life boundaries, *autonomy* (relaxation of one domain to meet the demands of the other domain) with high flexibility of one sphere but low permeability from the other sphere, *interference* (interruption from one domain into the other) with low flexibility but high permeability, and *segmentation* (compartmentalization of competing role demands by operating each domain independently) of spheres by rigorous boundaries. Table 1 sketches the conceptual framework of work-life balance specified by its dimensions and types.

Based on the conceptual configuration of work-life balance and the current discussions on the consequences of technology-enabled (in particular, the Internet and mobile technology) work-life balance, this study raises three research questions: 1) *What effect does technology use have on flexibility and permeability of balance between work and life spheres*?; 2) *What effect does technology use have on an individual's determination of work-life balance type*?; and 3) *What effect does technology use have on the consequences (in terms of job stress, job satisfaction, and perceived workload) of work-life balance*? By analyzing the secondary data from Networked Workers Survey conducted by the Pew Internet and American Life Project, the study empirically examines the effects of technology use on the dimensions, types, and consequences of work-life balance. This paper is structured as follows. The next section reviews a rich body of prior literature, and then draws testable hypotheses from the literature review. The subsequent section describes data, measurements, and methods. After reporting the results of the regression-based analysis, the paper discusses further practical implications and research limitations. The final section addresses concluding remarks.

Conceptual and Empirical Background

Conceptualizing Work, Life, and Work-Life Balance

Previous studies have used varying dichotomous terms (e.g., work-life, work-family, work-home, and work-leisure) to indicate the work-nonwork balance. This study sheds

Table 1 The Typology of the Work-Life Balance

		Permeability	
		High	Low
Flexibility	High	INTEGRATION (Boundary-Crossing)	AUTONOMY
	Low	INTERFERENCE LIW (Life Interference with Work) WIL (Work Interference with Life)	SEGMENTATION (Boundary-Keeping)

Source: Adapted from Ashforth et al. (2000), Bulger et al. (2007), and Clark (2000)

light on the "work-life" relationship among these dyads, since one hundred percent of nonwork can be operationally defined as "life" and the dyads other than work-life are not exhaustive (family, home, or leisure explains nonwork only partially). In this study "life" is used as an umbrella term to encompass all possible nonwork situations such as family, home, and leisure. Literature supports this operational conceptual contrast. "Work" in human resources and business management is mainly paid according to an obligated contractual time and also includes occasional unpaid ancillary activity (Hyman and Summers 2004; Lewis 2003). "Life", beyond being narrowly construed as family life, includes free and non-obligated leisure time, irrespective of family commitments (Dex and Smith 2002; Iso-Ahola 1997; Lewis 2003; Thompson, Grant, and Dharmalingam 2002).

The second issue in conceptualization is the use of the term "balance" instead of "imbalance" (or "conflict"). This study mostly does not use the term "balance" in order to contrast with "imbalance." As described in Table 2, there is no one-size-fits-all definition of "work-life balance" (hereafter WLB). Overall, existing literature uses WLB in two ways: 1) the status of being balanced (connoting a positive meaning and an ideal state in itself), and 2) the degree of being balanced (as a neutral and measurable term, a subjective perception, and a variable). While the ordinary usage of the term is close to the former, the definition for this empirical analysis needs to follow the latter. In this sense, the paper does not use imbalance or conflict because WLB itself in an analytic perspective is the relative concept based on individual perception.

Conceptualizing Work-Life Boundary

Theories of the work-life border or boundary articulate the separation or integration between the two spheres. The terms "border" and "boundary" are used interchangeably to delimit between work and life, but recent research has mostly used the term "boundary" (Chesley 2005; Desrochers, Hilton, and Larwood 2005; Rothbard, Phillips, and Dumas 2005). Boundaries developed by working people distinguish between work life and personal life domains, and vary in strength depending on the individual. The strength of the boundary is characterized by permeability and flexibility.

Table 2 Working Definitions of the Work-Life Balance

Bratton and Gold 2003	• "The relationship between the institutional and cultural times and spaces of work and non-work" • "The need to balance work and leisure/family activities"
Clutterbuck 2003	• "Being aware of different demands on time and energy having the ability to make choices in the allocation of time and energy knowing what values to apply to choices making choices"
Clark 2000	• "Satisfaction and good functioning at work and at home with a minimum of role conflict"
Guest 2001	• "Those who regularly work more than 48 h a week will have an imbalance between work and the rest of their life"
Visser and Williams 2006	• "The equilibrium between responsibilities at work and responsibilities outside paid work"
Wood 2006	• "Adjustments that can be made to working patterns to enable people to combine work with the other facets of their life"

A boundary is *permeable* if elements from one domain are readily found in the other domain. Permeability describes the degree to which an individual can be physically involved in a role but psychologically concerned with another one, characterized by interruptions or intrusions from one domain into the other, over which a worker may have little control (Hall and Richter 1988; Pleck 1977). For example, a manager who answers private phone calls or allows personal visits in the workplace has a permeable work role boundary. According to Leung (2011), permeability at work reflects "the customary situation at work that reveals how often family matters cross the boundary into the office, and vice versa" (p. 253). Especially, ICTs provide additional ways to access individuals anytime and anywhere so that using ICTs increases the permeability of work-life boundaries (Haddon and Silverstone 2000; Valcour and Hunter 2005).

On the other hand, a boundary is *flexible* if a person could relax the boundary to meet the demands of the other domain. Flexibility refers to the degree to which spatial and temporal markers can be changed (Hall and Richter 1988). Battard and Mangematin (2011: 233) gave an example of flexibility: a researcher who finishes an article overnight in her home has flexible work role boundary. In general, flexibility at work means "a corporate culture that reflects the lack of rigidity of company policy in allowing, for example, family matters to be taken care of at work" (Leung, 2011: 253). Hill, Ferris, and Martinson (2003) found that a technologically mobile virtual office gives people more flexibility than traditional office workers have to meet both work and family needs. The use of ICTs has the potential to support work arrangements that enhance flexibility, thereby reducing conflicts between work and life (Hill, Hawkins, Ferris, and Weitzman 2001; Valcour and Hunter 2005).

Strong boundaries are constructed to maintain work and family as separate domains, whereas weak boundaries facilitate the interaction between domains. While individual workers who maintain weak boundary are called "boundary-crossers" between the two domains, "boundary-keepers" denote those who hold a firm boundary and thus, maintain separate domains of work and life (Clark 2000, 2001).

As portrayed in Table 1, the consideration of both the flexibility/permeability dimensions and the two physical domains configures the typology of boundary crossing and keeping: integration (high flexibility and high permeability), autonomy (high flexibility and low permeability), interference (low flexibility and high permeability), and segregation (low flexibility and low permeability). Individuals with the interference type can be more susceptible to negative consequences (e.g., less satisfaction, more stress, and heavier workload) of boundary blurring (Bulger et al. 2007). Life may interfere with work (LIW), and work may interfere with life (WIL).

Consequences of Work-Life Boundary Blurring

An individual's attempt to balance his or her multiple roles across work-life boundaries provokes both positive and negative consequences, but the WLB debate primarily tackles the downside of WLB; for example, the more general assumption of WLB is that blurring of boundaries creates more, rather than less, work for the individual who then incurs private costs (Brett and Stroh 2003; Clark 2001; Eikhof, Warhurst, and Haunschild 2007; Pocock and Clarke 2005; Walsh 1999). Unpleasant consequences reported include overwork and workaholism (Eikhof et al. 2007; Olson and Primps 1984), a decrease in psychological well-being (Evans and Steptoe 2002), mental and physical stress (Sauter, Murphy, and Hurrell 1990; Westman 2001), conflicts between multiple roles (Bulger

et al. 2007; Byron 2005; Ferri and Smith 1996; Lewis and Lewis 1996; Parasuraman and Greenhaus 2002), problems in marital and family relationship (Crouter, Bumpus, Head, and McHale 2001; MacEwen and Barling 1994), and negative influences on teamwork (Hill, Miller, Weiner, and Colihan 1998). Work-family conflict inversely affects job satisfaction (Adams et al. 1996; Allen et al. 2000; Frone 2003; Frone, Russell, and Cooper 1992), life satisfaction (Adams et al. 1996; Kossek and Ozeki 1998), and job performance (Witt and Carlson 2006; Hammer, Bauer, and Grandey 2003).

On the contrary, work can be enjoyable and appealing when the boundaries between work and leisure are blurred (Sullivan and Lewis 2001). For example, the work-life integration bears a positive impact on individuals who hold multiple roles in both spheres (Grzywacz and Marks 2000; Kirchmeyer 1995). The boundary blurring in telework showed greater productivity, higher morale, increased flexibility, and greater job satisfaction (Hill et al. 1998; Tremblay 2002). Steward (2000) observed that balancing work and multiple nonwork activities enables boundary-crossing mobile workers to have better mental and physical health than their boundary-keeping peers. Positive outcomes of WLB (i.e., facilitation, spillover, enrichment, and synergy) accrue from harmonizing both work and family roles (Beutell and Wittig-Berman 2008; Gambles, Lewis, and Rapoport 2006; Greenhaus and Powell 2006; Grzywacz and Marks 2000; Hill 2005).

Technology Use as a Factor Influencing Work-Life Balance

Many studies have proved technology use to be a crucial factor that influences WLB (Edward 1979; Hall and Richter 1988; Hartman, Stoner, and Arora 1991; Hill et al. 1998; Jenson 1994; Jones 1997; Nicholas and Guzman 2009; Nippert-Eng 1995; Olson and Primps 1984; Wajcman, Bittman, and Brown 2008; Wallace 2004). In these days, technology influencing WLB chiefly means ICTs among others. ICTs can dilute the distinction between work and life because especially mobile/virtual technologies allow, enable, and enhance trans-temporal/trans-spatial communications and crossing of the boundary (Arnold 2003; Felstead, Jewson, and Walters 2005; Golden and Geisler 2007; Kaufman-Scarborough 2006; Townsend and Batchelor 2005).

ICTs that influence WLB encompass a variety of technologies. The latest incarnations of ICTs refer to mobile technologies, which support work outside the confines of the office at almost any time of the day or night (Towers, Duxbury, Higgins, and Thomas 2006). Jarvenpaa and Lang (2005: 5) broadly defined mobile technologies as "handheld IT artifacts that encompass hardware (devices), software (interface and applications) and communication (network services)." In line with this definition, existing studies on the effect of ICTs on WLB consider mobile phones (phone call and short message services) and ubiquitous (also often called as "remote" or "tele") work setting through web-based communications (email, webinar, etc.) as important types of ICTs use that influence WLB. Mobile technologies are of special interest to researchers seeking to understand WLB because these technologies make a fundamental shift in constructing the boundaries between work and life (Duxbury and Smart 2011; Golden and Geisler 2007; Shumate and Fulk 2004).

Much research has stacked rich evidence pertinent to how ICTs influence flexibility and permeability. ICTs can provide individuals with access to work or nonwork life anytime and anywhere, inevitably increasing the permeability of work-life boundaries (Haddon and Silverstone 2000; Valcour and Hunter 2005). Workers complete their work anywhere and anytime regardless of location through the widening use of ICTs to aid

flexible working practices (Grant, Wallace, & Spurgeon, 2013; Morgan 2004; Nilles 2007). Mobile connectedness through ICTs tend to give people more flexibility than traditional office workers have to meet both work and family needs (Hill et al. 2003).

Work and life converge through a single device transforming geographical distances. The study of Golden and Geisler (2007) focused on the use of personal digital assistant (PDA) in order to manage the work-life boundary through both integration and segmentation of work and life. An earlier research by Rakow and Navarro (1993) found that mobile phones liberate for professional workers, giving them increased flexibility. Mobile phones provide employers with the possibility of being connected to their employees at all hours (Wajcman et al. 2008). The study of Middleton et al. (2005) on the Blackberry noted that users have embraced the anytime, anywhere connectivity enabled by mobile devices, valuing the ability to better control the heavy demands of their jobs. Cousins and Varshney (2009) found that ubiquitous computing environments and networks can support work-life integration and segmentation. Overall, the more people perceive their lives are connected to/through ICTs, the more they tend to feel their work and family roles are permeable and flexible (Leung, 2011).

ICTs exert complicated effects as consequences. Some boundary-crossing ICTs users invite their nonwork lives into their workplace, while others struggle when work encroaches upon their nonwork lives via technologies that make work-days and off-days (or work-hours and after-work leisure) strikingly similar. Currie and Eveline (2011) utilized the terms "work extensification" and "work intensification" to explore whether ICTs are a blessing or a curse in their work lives. Similarly, some studies employed the term "work extending technology" (Towers et al. 2006; Duxbury and Smart 2011). Working anytime, anywhere can imply working all the time, everywhere reducing the personal time that people require for rest and renewal (Cousins and Varshney 2009). Negative impacts also include adverse effects on communication, office and personal relationships, work productivity, personal life benefits, and job stress. There are various pieces of empirical evidence. The analysis of Duxbury and Smart (2011) on the Canadian large-sample survey found that while the majority of the professional employees felt that mobile technology had increased their workloads (70%) and the amount of stress they are under (50%), they did not feel that they it had affected their ability to balance work and family (49%). Some studies revealed that teleworking can provide a means to reduce stress, but it can also lead to overwork (Grant, Wallace, Spurgeon, 2013; Hartig, Kylin, and Johansson 2007).

In addition to the use of ICTs, demographic conditions and work characteristics (as control variables in this study) may influence WLB. Much research found a gender difference in perceived WLB (Bond 2004; Doherty 2004; Feyerherm and Vick 2005; Houston 2005; Grady and McCarthy 2008; Nicholas and Guzman 2009; Valcour 2007; Wood 2006). While getting older generally decreases the likelihood of adopting new technologies and therefore older generations would be less sensitive to ICT-driven work-life infiltration, Millennials (in other words, Net Generation, DotNets, Digital Natives, Generation Y, Generation Next, or Echo Boomers), the cohort born in the mid-1970s to late-1980s (Howe and Strauss 2000), are reported to place a great value on WLB (Feyerherm and Vick 2005; Nicholas and Guzman 2009; Smola and Sutton 2002; Sturges and Guest 2004). Marital and parental status is crucial to explaining variation in WLB because being married and/or a parent requires more responsibility to family-related activities (Bond 2004; Bulger et al. 2007; Valcour 2007). Work characteristics can determine WLB as well. Working hours are proportionate to the level of work-life

conflict and negatively related to satisfaction with WLB (Bailyn 1993; Bond 2004; Clark 2001; Forret & Janasz 2005; Lewis 2001; Saltzstein, Ting, and Saltzstein 2001; Thompson, Beauvais, and Lyness 1999; Valcour 2007). The size and type of a workplace may make the difference in WLB (Townsend and Batchelor 2005). Occupation type may serve as a determinant for satisfaction with WLB (Baptiste 2008; Bond 2004).

Building Hypotheses

The hitherto discussion provided the conceptual and empirical background of WLB, WLB dimensions, WLB consequences, and WLB determinants. This literature-based in-depth discussion enables to set the following hypotheses aligning with the three research questions raised in the introduction.

Proposition 1 *The use of the Internet and mobile technologies determines WLB dimensions.*

Hypothesis 1a *The use of the Internet and mobile technologies positively influences flexibility.*

Hypothesis 1b *The use of the Internet and mobile technologies positively influences permeability.*

Proposition 2 *The use of the Internet and mobile technologies determines the type of WLB.*

Hypothesis 2a *The use of the Internet and mobile technologies raises the likelihood of being an integration type of WLB.*

Hypothesis 2b *The use of the Internet and mobile technologies raises the likelihood of being an autonomy type of WLB.*

Hypothesis 2c *The use of the Internet and mobile technologies raises the likelihood of being an interference type of WLB.*

Hypothesis 2d *The use of the Internet and mobile technologies decreases the likelihood of being a segmentation type of WLB.*

Proposition 3 *The use of the Internet and mobile technologies influences WLB consequences.*

Hypothesis 3a *The use of the Internet and mobile technologies increases/decreases the level of job satisfaction.*

Hypothesis 3b *The use of the Internet and mobile technologies increases/decreases the level of job stress.*

Hypothesis 3c *The use of the Internet and mobile technologies increases/decreases the level of workload.*

A common component of these hypotheses is the technology in large. This study does not focus on specific usage or capability of ICTs. The use of the Internet and/or mobile technologies encompasses a variety of capabilities that people use much, but the study employs the measures (flexibility and permeability) related to popular capabilities (such as emailing, instant messaging, and communications via social networking services) among other capabilities of the Internet and mobile technologies. The hypotheses postulate that using Internet and mobile technologies determine the dimensions, types, and consequences of WLB. Since using the Internet and mobile technologies may positively influence flexibility (Hypothesis 1a) and permeability (Hypothesis 1b), such use may raise the likelihood to be the WLB type of integration (Hypothesis 2a), autonomy (Hypothesis 2b), or interference (Hypothesis 2c), but not the segmentation because that type refers to low flexibility and low permeability (Hypothesis 2d). Finally, as much literature supports, using Internet and mobile technologies may exert complicated effects on job satisfaction (Hypothesis 3a), job stress (Hypothesis 3b), and perceived workload (Hypothesis 3c). Figure 1 illustrates the research framework of this paper.

Method

This study employs the Networked Workers Survey that the Pew Internet and American Life Project conducted by telephone interviews in 2008. For the research purpose of investigating ICT users' WLB, employed people who use the Internet (N=850) are selected out of the original random-sampled dataset (N=2,134). Table 3 describes the univariate statistics of variables.

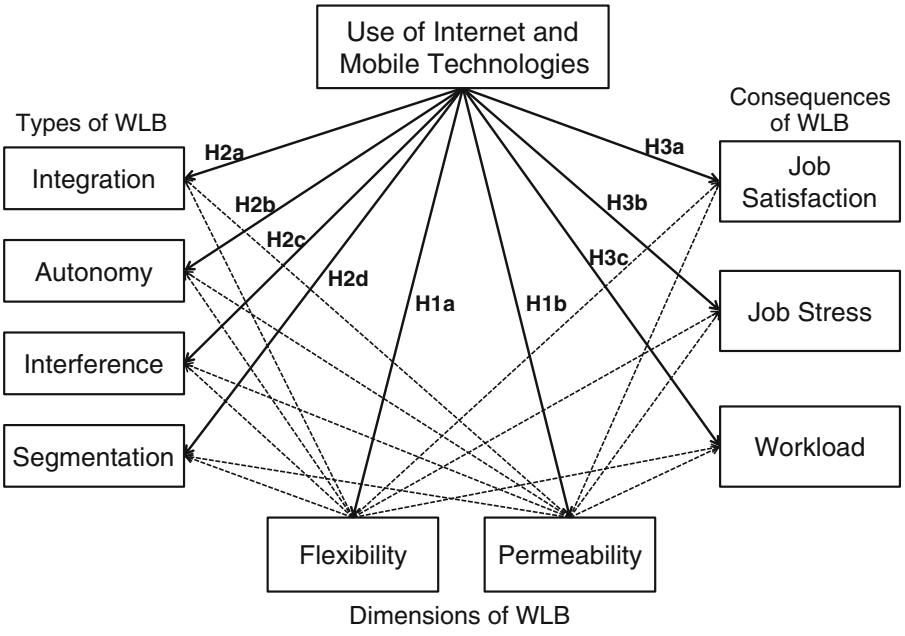

Fig. 1 The Research Framework

Table 3 The Descriptive Statistics (N=850)

Variables	Mean	S.D	Min	Max
Demographic characteristics				
Age	43.97	12.49	18	88
Generation Millennials (Age 18–24): 8%, Generation Y (25–34): 17%, Generation X (35–44): 25%, Trailing Boomers (45–54): 31%, Leading Boomers (55–64): 16%, and Matures (65+): 4%	–	–	–	–
Education (school attainment) in years	14.91	2.24	8	18
Caucasian	0.82	0.38	0	1
Female	0.50	0.50	0	1
Parent or guardian	0.39	0.49	0	1
Married or living with a partner	0.71	0.46	0	1
Work-related variables				
Fulltime employed	0.81	0.40	0	1
Wage < $10,000: 8%, < $20,000: 10%, < $30,000: 13%, < $40,000: 15%, < $50,000: 11%, < $75,000: 19%, < $100,000: 11%, and $100,000 +: 13%	5.05	2.13	1	8
Work hours a week	41.08	12.76	1	61
Experience in a current position in years	7.97	9.09	0	51
Type of organizations Large corporation: 28%, Medium-size company: 14%, Small business: 30%, Government: 9%, Educational institution: 11%, and Non-profit: 9%	–	–	–	–
Type of works Professional: 31%, Clerical/Office/Sales: 23%, Service work: 16%, Skilled trades: 11%, Managerial/Executive/Official: 12%, Semi-skilled: 6%, and Business owner: 1%	–	–	–	–
Technology use variables				
Internet use at home	3.02	1.34	0	5
Internet use at work	3.05	1.95	0	5
Mobile phone use for personal purpose	0.63	0.48	0	1
Mobile phone use for work	0.16	0.37	0	1
Work-life balance type				
Integration: 13%, Autonomy: 15%,				
Interference: 40%, and Segmentation: 32%				
Work-life balance dimensions				
Flexible work at life	2.60	1.86	1	6
Flexible life at work	1.67	0.83	1	5
Permeable work into life	2.13	1.19	1	4
Permeable life into work	1.71	0.95	1	4
Consequences of work-life balance				
Job satisfaction	3.23	0.63	1	4
Job stress	2.05	1.13	1	4
More works	2.06	1.17	1	4

Source: http://www.PewInternet.org/Shared-Content/Data-Sets/2008/April-2008–Workers.aspx

Measurements

This study has three sets of dependent variables: dimensions (flexibility and permeability), types, and consequences of WLB. Explanatory variables include technology use as a focal determinant, and demographic markers and work-related characteristics as controls. Technology use, WLB dimensions, and consequences of WLB are scaled in ordinal scores. Table 4 describes the original questions where those variables are sourced from.

Table 4 Measurements

Ordinal variables	Wordings of Questionnaire and Measures
Technology use	
Internet use at home	Q. How often do you use the Internet at home? [0] Never: 5.9%, [1] Less often: 10.4%, [2] Every few days: 21.7%, [3] About once a day: 22.6%, [4] Several times a day: 26.2%, [5] Constantly: 13.1%
Internet use at work	Q. How often do you use the Internet at work? [0] Never: 27.1%, [1] Less often: 5.1%, [2] Every few days: 5.2%, [3] About once a day: 9.9%, [4] Several times a day: 25.0%, [5] Constantly: 27.8%
Cell phone use for person	Q. How many of the phone calls (cell phone) you make and receive on your phone are personal? [1] "All are personal" or "Most are personal," [0] Other responses
Cell phone use for work	Q. How many of the phone calls (cell phone) you make and receive on your phone are for work? [1] "All are for work" or "Most are for work," [0] Other responses
Work-life balance dimensions	
Flexible work at life	Q. How often do you work from home? (Based on a respondent's willingness and usage of technologies such as Internet, email, cell phones, instant messaging) [1] Never, [2] Less often, [3] A few times a month, [4] A few times a week, [5] Almost every day, [6] Everyday
Flexible life at work	Q. While you are at work, how often do you check your personal email, send instant messages to friends or family, send text message to friends or family, and communicate friends or family using social networking sites? Aggregate of the four different personally flexible activities when a respondent answered at least "every few days" for each activity [1] Never, [2] One activity, [3] Two activities, [4] Three activities, [5] Four activities
Permeable work into life	Q. How much have technologies such as Internet, email, cell phones, instant messaging made it harder for a respondent to forget about work at home and on weekends? [1] Not at all, [2] Only a little, [3] Some, [4] A lot
Permeable life into work	Q. How much have technologies such as Internet, email, cell phones, instant messaging made it harder for a respondent to focus at work? [1] Not at all, [2] Only a little, [3] Some, [4] A lot
Consequences	
Job satisfaction	Q. Thinking about your job, would you say you are ____ with your job? [1] Completely dissatisfied, [2] Mostly dissatisfied, [3] Mostly satisfied, [4] Completely satisfied
Job stress	Q. How much have technologies increased stress in your job? [1] Not at all, [2] Only a little, [3] Some, [4] A lot
More works	Q. How much have technologies increased demands that you work more hours? [1] Not at all, [2] Only a little, [3] Some, [4] A lot

Source: http://www.pewinternet.org/Shared-Content/Data-Sets/2008/April-2008–Workers.aspx

Frequency of Internet use is based on usage at home and at work, valued from never (0) to constantly (5). Respondents use the Internet about once a day on average. The mean value of the mobile phone use variable represents the proportion of those who use their mobile phone for personal purposes or work. Whereas sixty-three percent of the sample uses a mobile phone mostly for personal purposes, only sixteen percent use it mostly for work.

Work flexibility in life is the frequency of working from home using technologies (the Internet, email, mobile phones, and instant messaging). Life flexibility at work is a measure of the frequency of checking personal email, sending instant messages to friends or family, and communicating with them on social networking sites. Half of respondents have not conducted such personal activities at work. An individual's perception that technologies make it harder to forget about work in life serves as a measure of permeable work-into-life domain. Another perception is that technologies make it harder to focus at work, which is a measure for permeability of life-into-work domain. Work permeability into life is stronger than life permeability into work. With the reference to the definition of four WLB types, categorical (binary) variables for the types are constructed. Both flexibility and permeability are divided into high vs. low levels in their mean values.

The study considers three consequences of WLB: satisfaction with job or life, stress from job, and increase in workload. Satisfaction with job is centered on the response of "mostly satisfied." Overall, respondents did not perceive that their ICT use noticeably influenced job stress or heavy workloads (responses centered on "Not at all" and "Only a little").

Seven variables represent the demographic composition as controls. Along with age, race, sex, and education, this study includes both whether a respondent is a parent or guardian of a child under age 18, and whether he or she is married or lives with a partner. These demographic controls may account for attitude toward WLB to some extent. In addition, a set of work-related variables are employed to capture the relationship between work characteristics and WLB.

Model Specifications

This study specifies multiple models of logistic regression (ordinal and binary). The model specifications are as follows.

Model 1. WLB dimension $=\alpha_1 X_{1i}+\alpha_2 X_{2i}+\alpha_3 X_{3i}+\alpha_4 X_{4i}+\varepsilon_i$ for an individual i
Model 2. WLB type $=\beta_1 X_{1i}+\beta_2 X_{2i}+\beta_3 X_{3i}+\nu_i$
Model 3. WLB consequence $=\gamma_1 X_{1i}+\gamma_2 X_{2i}+\gamma_3 X_{3i}+\gamma_4 X_{4i}+\omega_i$

Where

X_1	the set of technology use variables
X_2	the set of work-related variables
X_3	the set of demographic characteristics
X_4	the set of WLB dimensions
ε, ν, and ω	error term

The three models above regress each dependent variable on a common set of regressors such as technology use variables, work-related variables, and demographics. The first model specification of ordinal logistic regression is to examine which

explanatory variables significantly predict the four domain-specific dimensions of WLB. When each dimension is regressed, the other three dimensions are used as independent variables. The second model is a binary logistic regression model that regresses the WLB type as a categorical variable. The third one of ordinal logistic estimation is to predict the impact of technology use on the WLB consequences.

Results

Determinants of Work-Life Balance Dimensions

Hypothesis 1a *The use of the Internet and mobile technologies positively influences flexibility.*

Hypothesis 1b *The use of the Internet and mobile technologies positively influences permeability.*

This sub-section tests the significance of technology use as a determinant for flexibility and permeability in both work and life domains (see Table 5). The coefficients of technology use are consistent to the conventional belief. People who mostly use a mobile phone for personal purposes tend to be less flexible with their work-at-life. Those who mostly use a mobile phone for work are willing to allow work to intrude into their lives. Internet use intensity is a significant predictor for flexibility and permeability as WLB dimensions. Its effects are expectedly positive. No matter where a respondent uses the Internet, frequent use of the Internet increases flexibility across both work and life spheres and permeability of work-into-life.

WLB dimensions mutually affect one another. Permeability of work-into-life is positively related to flexibility of work-at-life, and permeability of life-into-work is also positively related to flexibility of life-at-work. Permeability of life-into-work has a negative impact on flexibility of work-at-life, and flexibility of work-at-life also has a negative impact on permeability of life-into-work. Different types of permeability from the two spheres have reciprocal causality. Those who allow for work-at-life are likely to allow for life-at-work, and vice versa.

The effect of control variables on WLB dimensions is also worthy of attention. Interestingly, the estimations only partially correspond to the existing argument that being female, a parent and/or married negatively influences flexibility and permeability (Baptiste 2008; Doherty 2004; Eikhof et al. 2007; Nicholas and Guzman 2009; Valcour 2007; Wood 2006). In the first model, females are more flexible in their work-at-life domains. Women are more flexible in their temporal and spatial allocation of their work than are men. On the other hand, being married significantly decreases flexibility of life-at-work, thereby implying that people who have a spouse tend to focus on their job during working hours more intensively than do unmarried individuals.

The estimation for the impact of age on flexibility and permeability reveals the salient contrast of younger vs. senior cohorts. Accordingly, as Baby Boomers and matures are called the workaholic generations (Lowe, Levitt, and Wilson 2008; Wallace 2006), those senior generations are more flexible for work-at-life than their younger counterparts. The estimation is significant that older people are more likely to take

Table 5 Ordered Logistic Regressions of WLB Dimensions

N=850	Flexible work at life	Flexible life at work	Permeable work at life	Permeable life at work
Technology use				
Internet use at home	0.215* (0.074)	0.346* (0.072)	0.240* (0.064)	−0.101 (0.129)
Internet use at work	0.202* (0.066)	0.348* (0.063)	0.080* (0.038)	0.092 (0.086)
Mobile phone use for life	−1.182* (0.242)	−0.224 (0.241)	−0.091 (0.238)	−0.109 (0.056)
Mobile phone use for work	−0.031 (0.271)	−0.355 (0.301)	0.492* (0.196)	−0.060 (0.054)
WLB dimension				
Flexible work at life	–	−0.009 (0.058)	0.308* (0.061)	−0.069* (0.036)
Flexible life at work	0.021 (0.113)	–	0.045 (0.119)	0.044 (0.031)
Permeable work at life	0.439* (0.090)	0.029 (0.093)	–	0.577* (0.222)
Permeable life at work	−0.238* (0.102)	0.178 (0.107)	0.627* (0.093)	–
Work-related				
Fulltime work	−0.201 (0.327)	0.169 (0.326)	−0.295 (0.277)	−0.285 (0.167)
Wage	0.023 (0.066)	−0.042 (0.067)	0.096 (0.060)	0.024 (0.032)
Work hours per week	0.008 (0.010)	−0.007 (0.010)	0.014 (0.010)	0.011 (0.012)
Work experience in years	0.001 (0.011)	0.003 (0.010)	0.017 (0.011)	0.002 (0.003)
Organization type dummies				
Large corporation	−0.582 (0.356)	−0.291 (0.342)	0.464 (0.401)	0.020 (0.050)
Medium-size company	−0.536 (0.396)	0.204 (0.365)	0.280 (0.432)	−0.032 (0.048)
Small business	0.486 (0.360)	0.412 (0.325)	0.113 (0.396)	−0.185 (0.152)
Government	−0.676 (0.410)	−0.153 (0.434)	0.552 (0.447)	0.126 (0.145)
Educational institution	0.706 (0.409)	−0.004 (0.421)	0.203 (0.426)	0.052 (0.057)
Nonprofit	omitted	omitted	omitted	omitted
Work type dummies				
Professional	−0.615 (3.282)	−0.276 (0.560)	0.493 (2.115)	0.544 (0.660)
Clerical/office/sales	−0.569 (3.279)	0.185 (0.529)	0.909 (2.106)	0.358 (0.453)
Service work	−0.781 (3.284)	0.253 (0.582)	0.555 (2.110)	0.306 (0.341)
Skilled trades	−0.864 (3.289)	0.415 (0.593)	0.176 (2.122)	0.344 (0.345)
Managerial/executive	−0.717 (3.284)	−0.191 (0.564)	0.693 (2.116)	0.503 (0.445)
Semi-skilled	−1.187 (3.296)	0.304 (0.725)	0.727 (2.124)	0.201 (0.241)
Business owner	omitted	omitted	omitted	omitted
Demographics				
Age	0.021* (0.009)	−0.019* (0.010)	−0.012 (0.009)	0.001 (0.001)
Education in years	0.090* (0.044)	0.123 (0.056)	−0.077* (0.034)	0.027 (0.005)
Caucasian	−0.412 (0.235)	−0.166 (0.267)	−0.011 (0.228)	0.006 (0.064)
Female	0.183* (0.099)	−0.396 (0.221)	−0.120 (0.200)	−0.224 (0.353)
Parent	0.357 (0.198)	−0.038 (0.206)	0.103 (0.192)	−0.052 (0.051)
Married	0.204 (0.223)	−0.296* (0.148)	−0.251 (0.214)	0.002 (0.061)
Constants				
Cut 1	3.171 (3.417)	2.504 (1.115)	2.623 (2.289)	2.574 (2.032)
Cut 2	3.748 (3.420)	4.678 (1.133)	3.471 (2.287)	3.975 (3.023)
Cut 3	4.394 (3.421)	6.051 (1.174)	4.719 (2.292)	4.638 (3.018)

Table 5 (continued)

N=850	Flexible work at life	Flexible life at work	Permeable work at life	Permeable life at work
Cut 4	5.377 (3.424)	8.177 (1.391)	–	–
Cut 5	5.861 (3.426)	–	–	–
Log-likelihood	−726.78	−549.52	−636.66	−587.65
Wald χ^2	215.13*	115.48*	169.80*	511.02*
Pseudo R^2	0.2845	0.1594	0.2696	0.1180

* $p<0.05$, Robust standard errors in parentheses

work home than are younger people, but younger people are flexible in conducting personal affairs at work. Millennials, generally the most technology-savvy, tend to be less flexible with work outside a workplace, despite the ubiquitous availability of digital technologies which allow for work anytime and anywhere. This finding underscores the importance of attitudinal factors regarding work, as well as the degree of technology use and adoption. Generational differences in the technology-enabled WLB arise not just from a digital divide in technology use, but also from heterogeneity among individuals or cohorts regarding behavioral and psychological attributes.

School attainment in years is positively associated with flexibility of work-at-life. Better-educated people tend to be more flexible with resources and energy to work in their life domain. In the meantime, the negative sign in the model for permeability of work into life indicates that well-educated people do not allow work to infiltrate their private sphere. Hence the level of education makes a difference between flexibility (active willingness to work at home) and permeability (passive acceptability to work at home). The better-educated are more flexible as a subject in their WLB, but they are reluctant to allow work to interrupt their private lives.

Contrary to the expectation in past findings, the number of working hours turns out not to be a significant predictor. Along with working hours, other work-related variables such as organization type and nature of work are also not significant for predicting levels of flexibility and permeability.

Determinants of Work-Life Balance Types

Hypothesis 2a *The use of the Internet and mobile technologies raises the likelihood of being an integration type of WLB.*

Hypothesis 2b *The use of the Internet and mobile technologies raises the likelihood of being an autonomy type of WLB.*

Hypothesis 2c *The use of the Internet and mobile technologies raises the likelihood of being an interference type of WLB.*

Hypothesis 2d *The use of the Internet and mobile technologies decreases the likelihood of being a segmentation type of WLB.*

This sub-section investigates whether technology use determines a particular type of WLB (see Table 6). Frequent Internet use at home or at work positively influences the propensity for integration or autonomy WLB. Accordingly then, intensity of Internet

Table 6 Binary Logistic Regressions of WLB Types

N=850	Integration	Autonomy	Interference	Segmentation
Technology use				
Internet use at home	0.287* (0.119)	0.354* (0.136)	−0.043 (0.069)	−0.295* (0.075)
Internet use at work	0.312* (0.100)	0.351* (0.119)	−0.019 (0.059)	−0.270* (0.065)
Mobile phone use for life	−0.025 (0.335)	−0.702* (0.323)	0.107 (0.239)	0.485 (0.293)
Mobile phone use for work	0.159 (0.415)	−0.346 (0.401)	0.164 (0.302)	−0.124 (0.401)
Work-related				
Fulltime work	−1.045* (0.499)	0.531 (0.572)	0.104 (0.294)	0.194 (0.328)
Wage	0.158 (0.094)	0.094 (0.098)	−0.115 (0.064)	0.006 (0.071)
Work hours per week	0.006 (0.015)	−0.029 (0.017)	0.019 (0.010)	−0.012 (0.011)
Work experience in years	−0.017 (0.019)	0.035* (0.019)	0.040* (0.012)	−0.042* (0.015)
Organization type dummies				
Large corporation	−0.581 (0.560)	−0.483 (0.543)	0.701 (0.404)	−0.369 (0.399)
Medium-size company	−0.332 (0.608)	−0.086 (0.580)	0.204 (0.422)	−0.116 (0.432)
Small business	0.007 (0.509)	0.311 (0.510)	−0.082 (0.386)	−0.181 (0.376)
Government	−1.050 (0.718)	−0.401 (0.650)	0.815 (0.462)	−0.111 (0.455)
Educational institution	−0.083 (0.588)	−0.304 (0.607)	0.431 (0.432)	−0.385 (0.431)
Nonprofit				
Work type dummies				
Professional	1.641 (1.625)	−2.305* (0.993)	0.220 (1.375)	1.064 (1.186)
Clerical/office/sales	1.911 (1.526)	−2.241* (0.954)	−0.115 (1.358)	1.426 (1.093)
Service work	1.619 (1.626)	−3.034* (1.105)	−0.419 (1.378)	1.886 (1.071)
Skilled trades	1.334 (1.543)	−1.902 (1.028)	−0.473 (1.384)	1.112 (1.092)
Managerial/executive	1.055 (1.513)	−1.982* (1.004)	−0.329 (1.375)	1.364 (1.150)
Semi-skilled	1.464 (1.511)	−3.398* (1.303)	−0.311 (1.400)	1.539 (1.112)
Business owner				
Demographics				
Age	0.012 (0.015)	−0.016 (0.017)	−0.020* (0.009)	0.014 (0.010)
Education in years	0.145 (0.076)	0.188* (0.088)	−0.119 (0.054)	−0.003 (0.062)
Caucasian	−0.170 (0.391)	0.156 (0.376)	0.277* (0.235)	−0.155 (0.272)
Female	−0.738* (0.321)	0.037 (0.310)	0.098 (0.210)	0.462* (0.234)
Parent	0.333 (0.300)	−0.030 (0.300)	0.021 (0.196)	−0.214 (0.228)
Married	−0.034 (0.348)	0.014 (0.342)	−0.064 (0.208)	0.028 (0.240)
Intercept	−2.141 (1.141)	−3.489 (1.902)	0.977 (1.651)	−1.847 (0.997)
Log-likelihood	−193.50	−193.11	−371.34	−297.52
Wald χ^2	79.91*	77.90*	53.60*	64.32*
Pseudo R^2	0.2464	0.2299	0.0696	0.2024

* $p<0.05$, Robust standard errors in parentheses

use negatively influences the propensity for segmentation WLB. Frequently using the Internet increases the probability of being a boundary-crosser or an autonomous worker, but decreases the probability that he or she will exhibit interference WLB or maintain strict boundaries. The difference in coefficient signs between the autonomy model and the interference model necessitates further interpretation. For extreme boundary-crossers and extreme boundary-keepers, Internet use is positively associated with both flexibility and permeability of WLB. For those who fall somewhere in the middle on the continuum between boundary-crossing and boundary-keeping, Internet use exerts a positive effect on flexibility, but a negative effect on permeability.

The likelihood of males to be the integration type is significantly higher than that of females. Being female and employed full-time significantly reduces the probability that one will fall into the boundary-crossers group. Education level as a significant predictor raises the propensity for a respondent to fit the autonomy type. An individual's current work position is a significant predictor of the WLB type—autonomy, interference, or segmentation—he or she represents. The binary logistic models predict the negative impact of work experience on segmentation. Those with more experience are more likely to demonstrate autonomy or interference WLB, rather than integration or segmentation.

Determinants of Work-Life Balance Consequences

Hypothesis 3a *The use of the Internet and mobile technologies increases/decreases the level of job satisfaction*.

Hypothesis 3b *The use of the Internet and mobile technologies increases/decreases the level of job stress*.

Hypothesis 3c *The use of the Internet and mobile technologies increases/decreases the level of workload*.

Consequences of WLB influenced by technologies may be desirable or undesirable. Three dependent variables (job satisfaction, stress with work, and workload) are regressed on the same set of independent variables and WLB dimensions (see Table 7). Technology use variables are overall significant in predicting job stress. While using the Internet at work would aggravate work-related stress, Internet use at home would relieve stress from work. When the Internet is perceived as a tool for work, more frequent use of the Internet at a workplace significantly increases workload. The effect of Internet use on job stress, thus, is dependent on the location or physical domain in which it is used. In a similar context, using a mobile phone for personal purpose significantly reduces the level of job stress.

WLB dimensions have a significant influence on the three consequence variables. Flexibility of life-at-work causes people to be more satisfied with their jobs. An individual who is willing and able to turn her personal life into work would be more satisfied with her job. However, permeability of life-at-work has a negative impact on job satisfaction. The impact on job satisfaction differs between flexibility and permeability. Permeability in both directions (work-to-life and life-to-work) increases job

Table 7 Ordered Logistic Regressions of WLB Consequences

N=850	Job satisfaction	Job stress	More works
Technology use			
Internet use at home	−0.038 (0.080)	−0.190* (0.068)	−0.004 (0.070)
Internet use at work	−0.015 (0.066)	0.167* (0.066)	0.152* (0.064)
Mobile phone use for life	−0.356 (0.269)	−0.394* (0.189)	−0.191 (0.231)
Mobile phone use for work	−0.084 (0.313)	−0.070 (0.303)	0.215 (0.302)
WLB dimension			
Flexible work at life	0.091 (0.060)	−0.145* (0.063)	0.124* (0.059)
Flexible life at work	0.318* (0.123)	0.084 (0.113)	0.079 (0.123)
Permeable work at life	−0.165 (0.091)	0.721* (0.094)	0.584* (0.089)
Permeable life at work	−0.271* (0.111)	0.555* (0.096)	0.382* (0.094)
Work-related			
Fulltime work	−0.044 (0.343)	0.475 (0.317)	−0.267 (0.316)
Wage	0.114* (0.054)	−0.130* (0.063)	−0.018 (0.065)
Work hours per week	−0.009 (0.011)	0.013 (0.012)	0.022* (0.011)
Work experience in years	0.014 (0.011)	−0.017 (0.013)	−0.013 (0.012)
Organization type dummies			
Large corporation	0.086 (0.358)	0.166 (0.373)	0.186 (0.401)
Medium-size company	0.258 (0.372)	−0.260 (0.391)	0.010 (0.427)
Small business	0.049 (0.343)	0.298 (0.362)	−0.003 (0.392)
Government	0.458 (0.412)	0.109 (0.376)	−0.167 (0.402)
Educational institution	−0.126 (0.399)	0.401 (0.431)	0.208 (0.435)
Nonprofit			
Work type dummies			
Professional	0.022 (0.930)	−0.120 (0.550)	−2.067* (1.082)
Clerical/office/sales	−0.419 (0.907)	0.019 (0.514)	−2.995* (1.076)
Service work	−0.059 (0.932)	−0.187 (0.525)	−2.274* (1.095)
Skilled trades	−0.877 (0.990)	0.029 (0.586)	−2.444* (1.148)
Managerial/executive	−0.658 (0.940)	−0.408 (0.524)	−2.311* (1.099)
Semi-skilled	−1.001 (0.983)	0.400 (0.629)	−2.678* (1.179)
Business owner			
Demographics			
Age	0.005 (0.009)	0.032* (0.009)	0.002 (0.009)
Education in years	−0.062 (0.053)	0.131* (0.050)	0.105* (0.048)
Caucasian	0.695* (0.263)	−0.325 (0.252)	−0.720* (0.235)
Female	0.230 (0.206)	0.021 (0.194)	0.020 (0.199)
Parent	0.077 (0.194)	0.072 (0.182)	0.190 (0.195)
Married	0.097 (0.227)	−0.241 (0.212)	−0.558* (0.215)
Constants			
Cut 1	−4.691 (1.374)	4.861 (1.120)	−0.057 (1.410)
Cut 2	−2.875 (1.331)	5.904 (1.133)	0.806 (1.412)
Cut 3	0.561 (1.331)	7.333 (1.154)	2.234 (1.423)

Table 7 (continued)

N=850	Job satisfaction	Job stress	More works
Log-likelihood	−498.10	−623.07	−595.28
Wald χ^2	55.49*	201.26*	204.43*
Pseudo R^2	0.1009	0.2935	0.3256

* $p<0.05$, Robust standard errors in parentheses

stress. While flexibility is recognized as an individual's assenting action, permeability can be passive allowance for intrusion from other spheres (Ashforth et al. 2000; Bulger et al. 2007; Clark 2000). Greater permeability brings about the unpleasant consequences of both job stress and heavier workloads. Flexibility of work-at-life influences in various ways job stress and workload. More flexibility of work-at-life would decrease job stress but increase the number of hours allotted for work. Longer work hours, in itself, is not necessarily negative to all people because of its subjective meaning according to varied values among different individuals and their unique perspectives. Although high flexibility of work-at-life may create more work, flexible individuals are likely to be less stressed with their job despite the increase in work because flexibility—especially, flexibility of work-at-life—oftentimes implies willingness to accept more work.

Further Discussions

Policy Implications

The result of the empirical analysis offers practical insights to managers. To realize the positive potential for the Internet and mobile technologies in workers' quest to achieve WLB, managers need to develop relevant policies and sustain a workplace culture that supports WLB. This study suggests six recommendations for practitioners as follows.

First of all, managers could gain great assistance from periodic evaluation and also research of workers' perception on WLB enabled by using the Internet, mobile devices, and any other emergent technologies. They could attempt to assess the extent to which workers' technology use affects their perception of flexibility and permeability between work and life spheres, and thereby foster a positive and supportive climate in which workers achieve WLB. Furthermore, organizations could extend work-life policies to the consideration of the interplay between growing technology use enabling WLB and personal perceptions on the degree and impact of WLB.

Second, managers should keep aware of ICT's dual impacts on WLB as a double-edged sword and therefore consider that boundaries between work and life spheres are differentially permeable. Work-in-life flexibility (chiefly enabled by emails, phone calls, and short message services after work-hours) in the side of managers may mean undesirable permeability in the side of workers. The analysis showed that most respondents (those who answered as workers) allow life-into-work permeability more easily than work-into-life permeability. ICTs are facilitating a trend toward flex-time and flex-place work policies, but when designing such policies managers should

carefully take into account the adverse effects of ICT-enabled permeability on WLB consequences (job dissatisfaction, job stress, and more workloads).

Third, this study recommends managers to recognize more specified categories and patterns of WLB as a personal preference. There are various preferences of individuals who manage their boundaries between work and life spheres. Prior research (Ashforth et al. 2000; Bulger et al. 2007; Clark 2000; Nippert-Eng 1995) argued that people have a preference between strong and weak boundaries and define their own boundaries proactively rather than reactively. This also means that there are a variety of preferences between strong and weak boundaries. Similarly, managers should consider that worker preferences for integration versus segmentation are not static changing with available and preferable technological capabilities.

Fourth, contemporaries in the age of connectedness need to break the tacit acceptance of the idea that ICT-enabled integration brings better consequence to us than does segmentation. While those with high flexibility and high permeability effectively integrate work and life, those with low flexibility and low permeability strictly segregate work and life. Some take this description as superiority of integration to segregation—but others don't—and previous research found that integration enables high level of perceived WLB (for example: Bulger et al. 2007; Clark 2001). However, any manager must not apply this finding monolithically to their organization. The sample in this analysis has higher proportions of segmentation and interference over integration and autonomy. Those who perceive cross-boundary permeability caused by ICTs outnumber those who perceive cross-boundary flexibility by ICTs. Individuals belonging to the segregation type do not always provoke worse consequences than those in the integration type. Boundary-crossers (the integration type) are overall very satisfied with their WLB because ICT-enabled flexibility in work-at-life and in life-at-work positively influences job satisfaction. Boundary-keepers (the segregation type)—may also feel satisfied with their WLB because ICT-enabled permeability in work-at-life and in life-at-work negatively influences job satisfaction. For some people, segregation between work and home is preferable to integration (Golden and Geisler 2007), and is sometimes perceived as mostly essential (Pocock 2003).

Fifth, permeability is of more managerial interest than flexibility. A priority issue in developing policy needs to lie in permeability rather than flexibility. ICT-enabled permeability leads to the perception of more job stress and heavier workload. The effects of ICT-enabled flexibility and permeability on consequences of WLB seem quite opposite of one another. While ICT-enabled flexibility is greatly associated with perception of desirable consequences, higher permeability enabled by ICTs causes perception of undesirable consequences. This finding deserves careful scrutiny. The result of the regression-based analysis revealed that ICT-enabled permeability exerts greater leverages on both positive and negative consequences than does ICT-enabled flexibility. Individuals' perception of consequences by the work-life infiltration is more sensitive to ICT-enabled permeability than to ICT-enabled flexibility. While infiltration of work-into-life tends to produce more negative consequences such as stress and overwork, infiltration of life-into-work is likely to generate a positive consequence in the form of job satisfaction.

Last, there is a generational gap in the perception of WLB that managers (especially in organizations with age diversity) should care about. Technology-enabled WLB is not free from a digital divide issue. The impact of mobile technologies on WLB is

complicated by the generational effect that younger cohorts are more likely to adopt and utilize new technologies and therefore enable the work-life infiltration. Relatively younger generations, such as Generations X and Y, are less flexible with work-at-life but more flexible with life-at-work, and yet, their permeability is not much different from permeability in other generations.

Research Limitations

Implications from the findings might be constrained by some methodological weaknesses of this empirical research. First, limitation in measurements restricts further interpretation. Key variables have binary or ordinal values so that the data is advantageous for making typology and categorizing similar patterns into the same group. However, since this study does not employ measures for continuous variation, it cannot explain the marginal effect (useful for developing policies) of explanatory factors on dependent variables.

Second, the measures of flexibility and permeability do not capture deeper meanings such as intention and volition, though they still have conceptual usefulness to explain different patterns of WLB. Flexibility and permeability are not just behavioral but attitudinal and psychological concepts because WLB is a subjective matter (Crosbie and Moore 2004). Personal motivators for WLB should be considered with a relevant qualitative approach (Baptiste 2008; Daniels 2006).

Third, this study does not consider particular capabilities of the Internet and mobile technologies in detail; instead, the term "technology use" is used to encompass various usage and capabilities of the Internet and mobile technologies. The data is based on capabilities (including email and instant messaging) that many use most frequently in their daily lives rather than capabilities that certain generations or segments of the population tend to dominate the usage.

Fourth, for better estimation by regression, employing a variety of dummy variables requires a sufficient number of individual observations belonging to each category. Although the overall pattern found in this study may not differ much from the analysis of the larger sample, a meaningful focus on particular types or categories of individuals requires an increase in the sample size.

Last, there may be a recursive relationship between some dependent variables—between WLB consequences variables, and between permeability and flexibility. Research has argued for the inverse relationship between job stress and job satisfaction (for example: Sullivan and Bhagat 1992). Since this study focuses on different relationships (what determines WLB dimensions, types, and consequences), it does not analyze the possible relationship among the dependent variables. Such a more complicated relationship (relationships between explanatory variables and dependent ones, and then another possible connection of other dependent variables with the relationships identified in this study) can deserves a priority topic for next research on WLB.

Conclusion

The analysis suggests answers to the three research questions addressed in the introduction. The dimensions, types, and consequences of WLB are significantly predicted

by the use of ICTs. Flexibility and permeability have a reciprocal relationship; those who are more flexible in work-at-life are willing to allow for the intrusion of work into life, and permeability of life-at-work would lead to less flexibility of work-at-life. Flexibility and permeability, however, have different effects on job satisfaction, job stress, and workload. Especially, permeability is of managerial interest because of its larger magnitude in the impact than flexibility. ICTs have the dual effects: flexible and permeable between work and life spheres. When designing and developing organizational policies, managers should consider a variety of personal preferences in flexibility and permeability. Individuals analyzed in this research do not have fantasy of WLB integration that earlier studies touted. This may be reality: not all prefer work-life blurring enabled by ICTs. For the sake of researchers and practitioners, personal preferences for WLB can be categorized and patterned in terms of the two WLB dimensions (flexibility and permeability) or any other criteria. These preferences become more complicated with the emergence of new ICTs (for example, beeper, PDA, cell phone, Blueberry, smart phone, and then a novel device we cannot imagine yet). Managers and policies should support individual workers' preferences for boundaries blurred or re-defined by existing and emerging technologies, while facilitating the workers' well-being and feelings of satisfaction in both work and life.

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