


An International Comparison of Factors Related to Long Work Hours¹

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Abstract: This study aimed to examine psychosocial factors related to working long hours, which causes depression, anxiety, and so forth, including *karoshi* [work to death]. In particular, the issue of working very long hours and its impacts on employees is seen as an urgent issue in Japan, and by clarifying the factors associated with this phenomenon, we aim to contribute to efforts to identify appropriate mitigation measures. We proposed a model of factors related to long work hours from multiple perspectives, and tested it in six countries: China, Finland, Germany, Japan, South Korea, and the United States. Data were collected via a web-based questionnaire survey. Results of hierarchical multiple regression analysis showed that organizational level variables were related to work hours in all six countries, but individual level variables were related to work hours only in the United States. In addition, only in Japan did the maintenance dimension of leadership affect the extension of working hours. Organization level factors, rather than job or individual level factors, should be considered when establishing measures to prevent employees from working excessively long hours.

Key words: long work hours, *karoshi* [work to death], international comparison.

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¹This study was supported by KAKENHI (24330188) from Japan Society for the Promotion of Science.

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There is much evidence that working long hours is associated with negative consequences such as depression, anxiety, lack of sleep, high blood pressure, hardening of the arteries, coronary disease (Bannai & Tamakoshi, 2014; Virtanen et al., 2010; Virtanen, Stansfeld, Fuhrer, Ferrie, & Kivimäki, 2012), work-related injury or illness (Dembe, Erickson, Delbos, & Banks, 2005), and a decline in cognitive performance (Virtanen et al., 2009). Additionally, as a consequence of people working long hours, the phenomenon of *karoshi* (death from overwork) emerged in Japan in the 1980s and has become a bigger problem over time.

Karoshi is particular to East Asia as a recognized term (the equivalent terms in Chinese and Korean are *guolaosi* and *gwarosa*, respectively),³ and refers to death resulting from overwork. The term first appeared in the early 1980s in Japan (Hosokawa, Uehata, & Tajiri, 1982), immediately prior to Japan's entry into the so-called bubble economy era. It has been defined as a death due to cerebrovascular/heart disease, suicide due to mental disorders caused by a significant psychological burden, or related cerebrovascular/heart diseases or mental disorders caused by an overload of work (Ministry of Health, Labour and Welfare, Japan, 2018). The results of previous studies have indicated that working long hours is an important antecedent to *karoshi*. Based on these results, the Japanese government adopted an act to promote measures against *karoshi* (Ministry of Justice, 2014), and the Ministry of Health, Labour and Welfare, Japan (2020b) now advises that an overtime workload of more than 100 hr in a given month, or of more than 80 hr per month on average for 2–6 months, is highly correlated with the onset of *karoshi*.

In Japan, the number of approved accident compensation cases in 2019 was 216 (including 86 cases involving death) involving cerebral/cardiac diseases, and 509 (including 88 cases involving suicide or attempted suicide) for mental disorders. However, in the same year, the

number of workers' applications for accident compensation for cerebral/cardiac diseases and mental disorders was 936 and 2,060, respectively (Ministry of Health, Labour and Welfare, Japan, 2020a), meaning that only 23.1% and 24.7% of the applications were approved. Awareness of this low approval rate may discourage many more workers from applying for accident compensation, so these numbers might not reflect the actual number of occurrences of *karoshi*. While the data are somewhat older, Kawahito (1998) estimated based on statistics produced by Japan's Ministry of Health, Labour and Welfare that more than 10,000 workers died annually in Japan because of cerebral/cardiac diseases caused by work overload. In recent years in Japan, various policies and administrative measures (labeled *hataraki-kata kaikaku* in Japanese, literally "change of workstyle") have been instituted with the aim of preventing or mitigating the tendency for people to work excessively long hours and by extension to reduce levels of *karoshi*. However, in view of the present situation and the number of workers' compensation applications and approvals, these measures appear, at least so far, to have been inadequate.

Factors Relating to Long Work Hours

As mentioned above, the negative consequences of long work hours, including *karoshi*, have been examined in many studies. However, there is a paucity of research as to why some people work long hours and some people do not, that is, regarding the antecedents or factors related to working long hours. For example, as for the Japanese tendency to work long hours, the national characteristics and cultural values of Japan and the Japanese people are often mentioned (e.g., collectivism, diligence), but no study has definitively connected these values and characteristics to the practice of working longer hours. Of course, connecting cultural values to an outcome such as working longer hours presents methodological challenges related to how and at what level to measure

³*Karoshi* in Japanese is written 過労死. *Guolaosi* in Chinese is written 過勞死 (traditional) and 过劳死 (simplified). *Gwarosa* in Korean is written 과로사.

cultural values and competing systems of cultural values. On the other hand, studies performed in various workplaces often attribute longer hours worked by some employees to individual level factors such as employee preference, work style, level of workaholism, or perfectionism (Kanai, Wakabayashi, & Fling, 1996), or to behavior related to Type A personality (Friedman & Rosenman, 1959), etc. However, as Japanese people continue to work extended hours despite research pointing to evidence of the various problems associated with doing so, it is reasonable to assume that there are not only individual level factors but also societal and environmental factors (e.g., organizational or job-related factors) influencing workplace behavior.

As mentioned above, many researchers around the world have examined the problem of working long hours, but many questions remain unanswered. The purpose of this study is to examine individual level factors, plus societal and environmental (e.g., organizational or job-related factors) factors, to investigate which factors are most important in relation to working long hours (Research Question 1), and while we have acknowledged the difficulty in examining the influence of culture, by investigating factors relating to long work hours in a sample of six countries, we aim to contribute to our understanding of how cultural factors in different countries may also influence labor practices (Research Question 2).

Purpose of the Study

The purpose of the study was to explore, from a multi-level perspective, the psychosocial mechanisms underlying employees' tendency to work long hours. We developed an exploratory model of factors related to working long hours that led us to examine two research questions.

Research Question 1: How are organizational, job, and individual variables related to working long hours?

Research Question 2: How are the factors related to working long hours different in various national contexts?

Development of a Model of Factors Related to Working Long Hours

For Research Question 1, we developed a model designed to examine factors related to working long hours. Because these factors are numerous and varied, we included in the model those that were expected to exert the greatest impact (Figure 1), including sociocultural, organizational, job, and individual level factors. At each of these levels, several factors were expected to be important, including individualism/collectivism and gender egalitarianism at the sociocultural level; organizational systems, leadership, group norms, and teamwork at the organizational level; job-related stressors and autonomy at the job level; and workaholism and the importance of work to the person at the individual level. In the following sections we describe the theoretical bases on which we expected each of these to predict working long hours.

Sociocultural Level

Discussion regarding employees working long hours in Japan has often cited the country's cultural characteristics, such as collectivism, as one of the reasons for this tendency; however, this proposed relationship has not been examined empirically. Some research has been conducted to identify sociocultural factors related to organizational culture and leadership. For example, Hofstede (2015) used the six cultural dimensions of individualism/collectivism, femininity/masculinity, power distance, uncertainty avoidance, long-/short-term orientation, and indulgence/restraint to compare cultures and provide leaders with an understanding as to how they should adjust their leadership styles. In addition, in the Global Leadership and Organizational Behavior Effectiveness (GLOBE) project, House, Javidan, and Dorfman (2001) proposed the following nine dimensions of culture: uncertainty avoidance, power distance, Collectivism I: societal collectivism, Collectivism II: in-group collectivism, gender egalitarianism, assertiveness, future orientation, performance orientation, and humane orientation.

In the current study, we expected individualism/collectivism and gender egalitarianism to be related to working long hours. Often contrasted with Western individualism, Japanese society is collectivist (Triandis, 1995). Relative to those from individualist cultures, employees in collectivist cultures are more likely to work longer hours, as collectivism promotes certain practices such as remaining at work if colleagues still have work to complete even if one has finished one’s own work. Further, House et al. (2001) defined Collectivism I as the degree to which societal institutional practices encourage and reward collective distribution of resources and collective action, and Collectivism II as the degree to which individuals express pride, loyalty, and cohesiveness in their families. Therefore, even within collectivist cultures, when levels of Collectivism I are higher relative to levels of Collectivism II, employees are expected to prioritize work over family, resulting in longer work hours.

Middle-aged men have been found to work long hours at a higher rate than other demographic groups (The Ministry of Health, Labour and Welfare, Japan, 2020a). Gender egalitarianism, or the degree to which a society minimizes gender inequality (House et al., 2001), suggests that a phenomenon in which gender roles dictate that men should work and women should stay at home exists in some cultures. This suggests that when levels of gender egalitarianism are low, gender roles are emphasized, and workplaces are likely to be dominated by men. Accordingly, as the value of work conducted outside the home increases, the production of results at work becomes critical for men. Therefore, because of gender roles, this principle dominates the workplace, resulting in an increase in working hours.

Organizational Level

Organizational systems, leadership, teamwork, and group norms in the workplace are core concepts that define many of the characteristics of

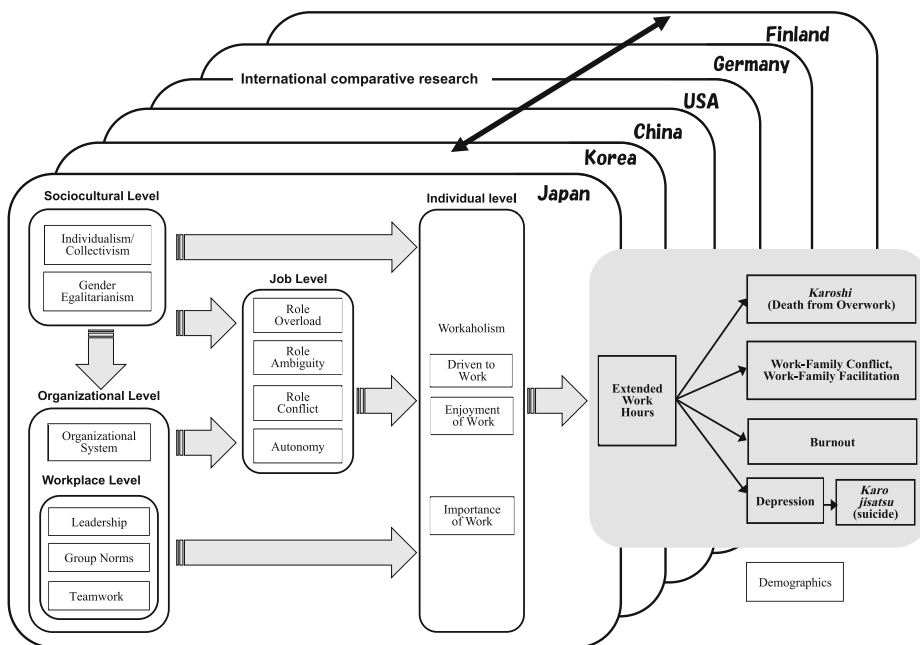


Figure 1 Model of factors related to working long hours.

work environments. We expected the following five organizational systems to be related to employees working longer hours: pay-for-performance systems, work-life-balance systems, individual feedback systems, career development support systems, and the degree to which the organization expects employees to change (Table 1). Pay-for-performance systems, which can be related to job satisfaction, employee commitment, and intensity of work (Ogbonnaya, Daniels, & Nielsen, 2017), and the degree to which the organization expects employees to change, in which long work hours are required for the measurement of performance or change, are likely to be positively related to working long hours. In contrast, work-life-balance systems, which encourage employees to actively manage the boundary between their work and non-work lives (Galea, Houkes, & De Rijk, 2014), are likely to mitigate employees' tendency toward working long hours.

Moreover, leadership is an important factor determining levels of organizational productivity and employee satisfaction. In addition, leadership patterns have the potential to influence working hours. The performance-maintenance theory of leadership includes two functions: maintenance and performance (Misumi & Peterson, 1985). The maintenance function pertains to leader behaviors related to the maintenance of group members, such as showing consideration toward, or promoting interaction between, members. This encourages members of a work group to develop relationships between themselves and with the leader, promoting organizational commitment. The performance function is then divided into two sub-functions (Yamada, 1987), which are pressure performance, which emphasizes productivity and abiding by the rules, and planning performance, which includes planning for attaining group goals. Leaders' use of the maintenance function is likely to discourage individuals from working long hours, while use of both performance sub-functions of pressure performance and planning performance is likely to encourage individuals to work long hours. Additionally, in recent years the concept of

intergroup leadership (Kohguchi, Sakata, & Kurokawa, 2005; Lwin & Hirose, 1997) has been attracting research attention. According to Kohguchi et al. (2005: 83), intergroup leadership is "a leadership function that coordinates intergroup relationships and negotiates between groups." Kohguchi et al. found a positive correlation between intergroup leadership and morale and sense of belonging and a negative correlation with occupational stress. Together, these suggest that intergroup leadership will be effective in reducing extended work hours.

Teamwork includes activities such as mutual support and information exchange between members of working groups (Misawa, Sasou, & Yamaguchi, 2009). Misawa et al. conducted research involving nurses and found that monitoring and coordination, clarification of tasks, information sharing, and mutual feedback were major components of effective teamwork. Of these, monitoring and coordination and mutual feedback are likely to encourage individuals to work long hours. For example, when there is a high level of intra-team monitoring, coordination, and mutual feedback, employees may recognize when one team member is overwhelmed or not performing their tasks up to expected levels. Team members may take time to provide feedback to the under-performing teammate or make efforts to help that individual with their workload, resulting in all of the team members' work hours being extended.

It should also be noted that prescribed group norms in the workplace influence individual working style. If the workplace includes outcome-oriented norms, which encourage overtime, or norms in which one should not cause colleagues trouble, working hours are likely to increase.

Job Level

Job stressors and autonomy on the job are important factors that characterize jobs and job-related stress. Karasek (1979) proposed the job demands-control model, which focuses on the combination of job demands and job control as determinants of work-related stress. In the current study, we measured the job

demands of role ambiguity and role conflict, and the job control indicator of autonomy. Role ambiguity is associated with increased tension and anxiety (Bedeian & Armenakis, 1981) while both role ambiguity and role conflict are associated with decreased motivation (Campbell, 2016; Chang & Chang, 2007). At the same time, increased autonomy should allow employees control over when and how to get their work done, likely improving efficiency (Golubova, 2011). Given these findings, we expected higher levels of role ambiguity and role conflict to be positively related to working longer hours, because decreased motivation reduces working efficiency, and higher levels of autonomy to be negatively related to working longer hours, because improving autonomy increases working efficiency.

Individual Level

Workaholism (Spence & Robbins, 1992) and the importance of work to each individual employee (Misumi, 1987) were examined to measure individual differences in working style. Spence and Robbins (1992) posited that workaholism consists of the three dimensions of work involvement, drive or compulsion to work, and enjoyment of work. They described workaholics as individuals who (a) exhibit high levels of work involvement, (b) are highly driven or compelled to work by inner pressure, and (c) show low levels of enjoyment of work. However, only two factors, drive to work and enjoyment of work, have generally been observed in subsequent research, and job involvement has seldom emerged in factor analyses (Kanai et al., 1996; McMillan, Brady, O'Driscoll, & Marsh, 2002). Given the instability of job involvement as a factor, we examined only the workaholism components of drive to work and enjoyment of work. While enjoyment of work may lead to longer work hours because people like working, we expected higher levels of drive to be more strongly associated with longer working hours due to accompanying feelings of compulsion and guilt when not working (Graves, Ruderman, Ohlott, & Weber, 2012; Laurence, Fried, Yan, & Li, 2020). The concept of the importance of work (Misumi, 1987) to the

individual employee was examined in the international Meaning of Working Life study, which was initiated in 1977. When levels of importance of work were higher, we expected employees to work longer hours.

Country Comparison

For Research Question 2, to examine the factors related to working long hours in various national contexts, we collected data from six countries in different regions of the world. From Asia, in addition to Japan, China and South Korea were considered because each is similar to Japan as a collectivist society; however, *karoshi* has not been observed in these countries to the extent it has in Japan. It is only in the last decade that *karoshi* has been observed in South Korea (Kim, 2011), while it has not yet emerged as a documented phenomenon in China. These similarities and differences suggested that it would be helpful to examine both collectivism and the work environments in these Asian countries as they relate to work hours.

In addition to these Asian countries, we collected data from three Western countries, including the United States, Germany, and Finland. The United States has similar levels of workaholism to those observed in Japan (Spence & Robbins, 1992), but *karoshi* has not emerged as a phenomenon there. Finland and Germany were considered because their work cultures were expected to be completely different from that of Japan. Finland, for example, is considered to be a world leader in flexible work culture, and the country's high levels of interpersonal trust and emphasis on work-life balance create a work climate (Savage, 2019) that is quite different from Japan (and from the other countries under consideration).

Method

Subjects

Following the receipt of informed consent, data were collected in the six countries using a web-

based survey, with a target of 600 responses collected from each country. To facilitate survey distribution and collection, we contracted with NTT Com Online Marketing Solutions Corporation. Conditions for inclusion in the study were that participants be between 20 and 60 years of age and employed (either full- or part-time). For each sample of 75 participants, the instructions to the survey company were to aim for ratios of 70:30 full time to part time employees, an even 50:50 split between those employed in manufacturing and non-manufacturing organizations, and a 30:40:30 ratio of technical white collar, non-technical white collar, and blue-collar employees. We were agnostic as to organization size, marital status, and whether or not participants had children. In total, 4,092 individuals from the six countries responded to the online survey (Table S1). According to Miura and Kobayashi (2015), online surveys engender satisficing behavior, whereby subjects do not devote the appropriate amount of attentional resources to answering questions. Therefore, we deleted responses that indicated that an unrealistic amount of time was spent responding to the entire survey or that demonstrated unnatural or uncooperative response patterns (such as 1, 1, 1...) from the dataset. This data cleaning process resulted in 3,611 valid responses (88.2%; Table S1 in the Supporting Information). In addition, because insufficient responses were received from workers with non-regular working patterns in some countries, we included only regular (full-time) workers, treating and removing as outliers those respondents who indicated that they worked less than 12 or more than 100 hr per week. Ultimately, the final sample included 2,747 subjects (Japan, 343; South Korea, 401; China, 569; the United States, 472; Germany, 546; Finland, 416). Participant information, including descriptive statistics concerning gender and age are presented in the Supporting Information (Table S1).

This study was approved by the Ethics Committee of Graduate School of Education and Human Development, Nagoya University (Approval No. 12–222).

Measures

The sociocultural level variables were measured using three scales: Collectivism I (the degree to which organizational and societal institutional practices encourage and reward collective distribution of resources and collective action; item example: “In this society, leaders encourage group loyalty even if individual goals suffer”), Collectivism II (the degree to which individuals express pride, loyalty, and cohesiveness in their families; item example: “In this society, parents take pride in the individual accomplishments of their children”), and gender egalitarianism (item example: “In this society, boys are encouraged more than girls to attain a higher education”) (Dickson, Den Hartog, & Mitchelson, 2003; GLOBE Foundation, 2006). Each scale consisted of four items, and responses were provided using a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The gender egalitarianism score was reversed such that higher scores indicated higher gender egalitarianism.

The organizational level variables were measured using four scales: organizational systems, leadership style, teamwork, and group norms. The organizational system (5 items) and group norm scales (11 items) consisted of original items developed for the study (Table 1). For these items, participants were asked to indicate the degree to which they believe their workplace has a given system or norm. The leadership style scale contained 13 items from Misumi and Peterson (1985), and item examples are “Your supervisor keeps you informed of the plans for and tasks of your work for the day” and “Your supervisor strongly demands that you finish work within the allotted time” for the performance function, and “Your supervisor supports you fully” for the maintenance function. Additionally, we included three original intergroup leadership items developed for this study, which were designed to ascertain the degree to which employees felt that their leaders interacted, negotiated with, or were assertive toward other groups in the organization. These items are based on Kohguchi et al.’s (2005) intergroup leadership scale, but simplified to focus more parsimoniously on a

leader's ability to acquire resources from outside the group (item example: "Your supervisor is assertive toward those in upper levels and other departments when necessary"). The teamwork scale contained 13 items from Misawa et al. (2009). Example items are "At my workplace, if someone seems to have a great deal to do, there is always someone willing to help out," and "At my workplace, long-term team goals, such as yearly goals, are decided in discussion with all team members." The organizational level variable responses were provided using a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

The job level variables were measured using two scales: job stressors and autonomy. The job stressors scale contained 9 items from Rizzo, House, and Lirtzman (1970) and Watanabe, Mizui, and Nozaki (1990). Item examples are "I have not received a clear description of the contents of my work" for role ambiguity, "I often receive conflicting requests from multiple people at work" for role conflict, and "I must manage a great deal of work" for role overload. The autonomy scale contained 3 items developed for this study, for example, "I am free to make adjustments to my work schedule." The job level variable responses were provided using a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

The individual level variables were measured using two scales: the Workaholism Battery and importance of work. The Workaholism Battery contained 14 items from Spence and Robbins (1992). Item examples are "I seem to have an inner compulsion to work hard, a feeling that's something I have to do whether I want to or not" for driven to work, and "Most of the time my work is very pleasurable" for enjoyment of work. This variable's responses were provided using a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Importance of work was a single item, "Overall, how important is work in your life?", which used a 5-point Likert-type scale ranging from 1 (*not important at all*) to 5 (*very important*) (Misumi et al., 1987).

In addition, to measure the dependent variable, subjects were asked to indicate the

number of hours worked in a typical week. We also collected data concerning demographic variables such as age, sex, marital status, number of children, industry, size of current company, current job, level of responsibility (Supporting Information, Table S1), religious affiliation (for South Korea and the United States, Tables S2 and S3 in the Supporting Information), and Ethnicity (for the United States, Supporting Information Table S3).

Because this study aimed to compare results across 6 countries, it was very important that the content of the questionnaires used were equivalent across the six languages primarily used in these countries. In order to ensure this, we began with a Japanese version of the survey and then bilingual translators translated/back-translated these into the language of each target country (Brislin, 1980). Any disparities in translation were resolved collaboratively by the research team and the translators. When original English language scales existed, we used those in the English version of the survey.

So that each country's data exerted an equal amount of influence in factor analysis, similarly sized subsets of data were randomly sampled from each country. This resulted in a reduction in the size of the data set from 2,747 subjects to approximately 1,800 subjects (i.e., 300 subjects from each country). The results of an exploratory factor analysis (maximum likelihood, promax rotation) confirmed that leadership style included the three factors of maintenance and intergroup leadership, pressure performance (production emphasis), and planning performance (initiating structure). The Cronbach's α s for these three factors were .893, .735, and .719, respectively. It is interesting that intergroup leadership was absorbed into the maintenance function here. Coordinating intergroup relationships and conducting intergroup negotiations were perceived by our study participants as group maintenance behaviors. Teamwork was comprised of two factors, support for teamwork and goal-oriented teamwork (Cronbach's α s: .850 and .748, respectively), rather than the four expected factors. When the factors were analyzed together, job stressors and autonomy emerged as four factors as

expected. These were role ambiguity, role conflict, overload, and job autonomy, with Cronbach's α s of .693, .752, .649, and .718, respectively. Workaholism was shown to be comprised of the two expected factors of enjoyment of work and drive to work (Cronbach's α s: .866 and .660, respectively). Organizational systems and group norms could not be extracted to produce meaningful factors; therefore, each was treated as a single-item scale. Cronbach's α s for all scales included in the study ranged from .649 to .893, and most scales reached satisfactory levels of internal consistency.

Having completed these factor analyses, we returned to the full data set of 2,474 responses and repeated the factor analysis process for the data within each country. Examined this way, factor structures were unchanged and most scales reached satisfactory levels of internal consistency. Those for which internal reliability was slightly low included drive to work and planning performance in Finland (Cronbach's α s: .595 and .524, respectively) and role ambiguity in South Korea and Germany (Cronbach's α s: .589 and .491, respectively). Given the high level of consistency between the results of the two factor analyses, we used all of the data from each country (2,747 subjects, see Table S1 in the Supporting Information) in this study.

Results

Hierarchical Multiple Regression Analysis for Each Country

To examine the factors related to working long hours in each country and compare between countries, we performed a hierarchical multiple regression analysis for each country (Table 1; see Supporting Information, Tables S4a-f for the means, SDs, Cronbach's α s, and correlations by country). Variables that explain working hours were entered in four steps. In Step 1, working hours was the dependent variable and the sociocultural level variables were entered along with the control variables. While it was not possible to compare the influence of cultural variables between the countries in this study, we used the cultural variables as controls

to account for individual differences in the perception of culture among participants in the country samples. In Step 2, the organizational level variables were entered into the equation. As noted above, we treated each of the organizational system and group norm variable items as an individual variable. In Step 3, the job level variables were entered, and in Step 4, the individual level variables were entered.

Organizational Level

The organizational system regarding employee change indicated opposite effects in Finland and South Korea. Expectations that employees will change encouraged individuals to work longer hours in South Korea ($\beta = .154, p = .039$), however, in Finland, expectations that employees will change discouraged people from working longer hours ($\beta = -.111, p = .034$). The individual feedback system was found to discourage people from working longer hours in China ($\beta = -.131, p = .036$).

Leadership style affected working hours only in Japan, where the maintenance function and intergroup leadership encouraged people to work longer hours ($\beta = .247, p = .002$). Of interest, while not statistically significant at the .05 level, pressure performance ($\beta = -.123, p = .083$) and planning performance ($\beta = -.118, p = .078$) do seem to discourage people from working longer hours in Japan.

The group norm in which it was commonplace to work overtime affected work hours positively in all countries (South Korea: $\beta = .219$, China: $\beta = .272$, Japan: $\beta = .329$, the United States: $\beta = .389$, Finland: $\beta = .251, ps < .001$; Germany: $\beta = .100, p = .032$). However, the outcome-oriented group norm and the group norm in which individuals avoided placing colleagues in difficult positions did not affect work hours. In China, ease of taking time off decreased working hours ($\beta = -.122, p = .016$). In Germany, the norm of treating coldly those whose work is inefficient increased work hours ($\beta = .119, p = .020$). In Finland, the norm of clearly documenting work that requires immediate completion increased work hours ($\beta = .116, p = .039$) and unwritten rules decreased work hours ($\beta = -.120, p = .031$).

Table 1 Working hours in a typical week and hierarchical regression for each country

Country	Japan	Korea	China	United States	Germany	Finland
Working hours in a typical week (<i>Mean, SD</i>)	47.2 (9.5)	45.1 (8.4)	42.5 (6.5)	40.6 (8.6)	39.1 (9.0)	40.4 (6.2)
Sociocultural Level						
Collectivism I	0.050	-0.023	-0.002	-0.060	-0.119*	-0.023
Collectivism II	-0.054	0.013	-0.021	-0.022	0.032	-0.066
Gender egalitarianism	0.024	-0.028	0.008	0.039	-0.062	-0.023
Organizational Level—Organizational System						
This company has introduced a pay-for-performance system.	0.115	0.032	0.065	0.028	-0.005	0.029
This company has introduced a system to help employees maintain work-life balance.	-0.043	-0.090	-0.001	-0.027	0.041	-0.061
This company has introduced a system through which employees are evaluated based on feedback.	-0.152	-0.012	-0.131*	-0.013	0.067	0.036
This company has robust professional development programs for employees.	0.024	-0.040	0.027	0.042	0.084	-0.050
This company constantly demands change of their employees.	0.004	0.154*	0.000	0.029	0.018	-0.111*
Workplace Level—Leadership and Teamwork						
Maintenance and intergroup leadership	0.247**	-0.001	-0.048	-0.035	0.061	-0.066
Pressure Performance (production emphasis)	-0.123	0.047	-0.002	-0.068	-0.105	-0.020
Planning Performance (initiating structure)	-0.118	0.002	-0.068	0.028	-0.026	-0.061
Support for team work	-0.009	0.130	-0.003	-0.074	-0.081	0.005
Goal-oriented team work	0.017	-0.024	0.026	0.018	0.014	0.018
Workplace Level—Group Norms						
At my workplace, being efficient and achieving goals are most important.	-0.040	-0.019	-0.092	-0.060	-0.030	-0.007
At my workplace, the smooth functioning of the entire workplace takes precedence over everything else.	-0.045	-0.076	0.047	-0.080	-0.073	0.080
At my workplace, it is commonplace to work overtime (more than 40 hr per week).	0.329***	0.219***	0.272***	0.389***	0.100*	0.251***
At my workplace, the work that requires completion is clearly documented.	-0.039	-0.044	-0.019	0.044	-0.085	0.116*
At my workplace, those whose work is inefficient are treated coldly by coworkers.	0.058	-0.048	0.014	-0.059	0.119*	-0.008
At my workplace, those who are highly competent are given the most work to do.	-0.031	0.046	-0.022	-0.036	-0.001	0.034

Table 1 Continued

Country	Japan	Korea	China	United States	Germany	Finland
At my workplace, people who work longer hours are evaluated more highly.	0.033	-0.071	-0.004	0.043	-0.070	0.055
At my workplace, there are a lot of many customs, traditions, and other unwritten rules.	-0.018	-0.028	-0.011	-0.009	-0.020	-0.120*
At my workplace, it is reasonably easy to take time off when needed.	-0.096	-0.049	-0.122*	-0.073	0.012	0.000
At my workplace, we are capable of keeping harmony by being sensitive to the atmosphere.	0.012	0.019	0.011	0.001	0.081	-0.045
At my workplace, we should not bother colleagues with concerns regarding our work.	0.059	-0.051	0.006	0.081	0.005	0.013
Job Level						
Job stressor—ambiguity	-0.023	0.049	-0.100	0.001	-0.045	-0.019
Job stressor—conflict	0.040	-0.056	-0.003	0.001	0.119*	0.080
Job stressor—overload	0.094	0.162*	0.062	0.120*	0.191**	0.112
Job autonomy	0.038	-0.002	0.006	0.160**	0.059	0.128*
Individual Level						
Workaholism—enjoyment of work	0.018	-0.112	-0.058	0.012	0.006	0.109
Workaholism—driven to work	-0.036	-0.085	0.053	0.099*	0.049	-0.081
Importance of work	0.100	0.006	0.086	0.054	0.023	0.090
R^2	0.214	0.128	0.136	0.283	0.145	0.180
F	0.135	0.055	0.086	0.232	0.094	0.114
Df	2.715*** (31, 310)	1.751** (31, 369)	2.718*** (31, 537)	5.569*** (31, 438)	2.812*** (31, 512)	2.715*** (31, 384)

* $p < .05$, ** $p < .01$, *** $p < .001$.

Job Level

Role conflict encouraged people to work longer hours in Germany ($\beta = .119, p = .040$), and role overload encouraged individuals to work longer hours in South Korea ($\beta = .162, p = .017$), the United States ($\beta = .120, p = .035$), and Germany ($\beta = .191, p = .001$). In the United States and Finland, job autonomy paradoxically increased work hours ($\beta = .160, p = .009$, and $\beta = .128, p = .024$, respectively).

Individual Level

Drive to work encouraged people to work long hours only in the United States ($\beta = .099, p = .048$). In addition, importance of work did not affect numbers of working hours in any of the countries.

Discussion

The Relations of Working Long Hours and Organizational, Job, and Individual Factors

With regard to Research Question 1, the factors relating to long work hours examined in the study included organizational level, job level, and individual level variables. The results showed that the organizational level variables were related to work hours in all six countries and the job level variables were related to work hours in all countries except China and Japan. However, the individual level variables, such as drive to work, were related to work hours only in the United States. Long work hours are often attributed to personal factors (Friedman & Rosenman, 1959; Kanai et al., 1996), but in this study personal factors did not impact work hours in any countries except the United States. This suggests that we cannot attribute longer work hours to personal factors. From these findings, interventions aimed at impacting organizational and job factors are necessary if organizations want to mitigate against employees working dangerously long hours.

Cross-country Comparison Factors Related to Working Long Hours

With regard to Research Question 2, the group norm indicating that it is commonplace to work overtime was associated with increased work hours

in all six countries, whether the countries were individualist or collectivist, suggesting that in order to reduce the tendency for employees to work dangerously long hours, interventions should target reducing the encouragement of overtime work.

The organizational system regarding expectations that employees will change indicated opposite effects in Finland and South Korea. It is likely that the meanings of this expectation of change differ between these two countries. In Finland, the reduction of work hours has long been pursued as a means of promoting work-life balance (Japan Institute for Labour Policy and Training, 2009), and changes in the workplace could be implemented systematically to promote further reduction. In contrast, individuals must work longer hours to accomplish requested changes in South Korea, as the country's economy has expanded considerably since the 2000s (Japan Institute for Labour Policy and Training, 2014). As above, we can understand that the economy and policies of each country impact individual work hours.

The effect of leadership in Japan was inconsistent with our expectations. The maintenance function of leadership was associated with longer work hours while the two performance functions of leadership indicated a tendency to work fewer hours. It is notable that of the six countries included in the study, leadership related to work hours only in Japan. The finding that the function of leadership increased work hours suggests that leaders required employees to work longer hours. Why would the maintenance function lead to increased work hours in Japan? The maintenance function is not collectivism per se, but the maintenance function combined with collectivism could result in the performance of a unique style of the maintenance function in Japan. The Hawthorne study (Roethlisberger & Dickson, 1939) demonstrated the importance of employees' relationships with their managers, but later research indicated that these relationships could be used to exploit employees (Bendix, 1957). If the maintenance function is used unconsciously by leaders to exploit employees in Japan, this is a considerable problem and requires further examination in future research.

In addition, the finding that work hours were reduced via the influence of the performance function is of interest. The performance function is a control function under which planning performance includes job planning and setting time limits for duties, while pressure performance includes a focus on achievement of results and strict observation of rules and deadlines. Because present conditions suggest that extended work hours are common in Japan, encouraging leaders to make use of the performance function might help to reduce work hours. Japanese managers may be using the maintenance function of leadership properly but not balancing this with use of the performance function of leadership. In other words, these results suggest that one of the characteristics of the Japanese workplace is that supervisor–employee relationships are good, but based more on the maintenance function of leadership than the performance function.

Interestingly, overload did not exert an influence on work hours in China, Finland, and Japan. In other words, extended work hours occurred in these countries regardless of whether employees felt overworked or not. Overall, there was no effect of job level or individual level variables on work hours in China and Japan. In contrast, work hours in the United States appear to be predicted by the quantity and characteristics of the work itself, by individual employees' personalities, and by workplace norms, and the combination of these factors results in highly individualized differences in work hours in this country.

Suggestion Regarding Effective Prevention of Extended Work Hours

From the finding that individual level variables were related to work hours only in the United States, the research suggests that interventions on organizational and job level factors should be considered globally. In China and Japan, only organizational level variables were related to work hours so these countries should take measures to intervene at the organizational level to prevent employees from working excessively long hours.

Limitations and Suggestions for Future Research

The current study involved the examination of psychological factors related to working long hours via a comparison of data from six countries, and some interesting findings were observed. However, the economic structures and employment environments in the six countries differ considerably, as do policies, regulations, standards, and norms concerning work hours. Given this, various explanations could be attached to the same phenomenon in different countries. Therefore, further examination of these psychological factors, including differences in economic structures, employment environments, and government policies is required.

Additionally, though we examined data related to sociocultural, workplace, and individual level factors, all of the data for the study were collected from focal participants and we cannot ignore the influence of the individual's cognition when we examine sociocultural and workplace level factors, so future studies in this area should endeavor to make use of methodologies accessing data from supervisors, HR directors, and other sources.

Another limitation of the study was that the R^2 for extended work hours was relatively low (R^2 range: .128 to .283; adjusted R^2 range: .055 to .232). Therefore, examination of the possibility that factors external to the study affect work hours is also required. In addition, we used the back-translation method to develop the questionnaire to ensure item equivalence between countries. However, it is not clear whether these items were equivalent with respect to work culture; therefore, further research is required to clarify this issue. Additionally, because this study made use of cross-sectional data, conclusions regarding causality are impossible. Longitudinal studies are thus encouraged.

Conflict of Interest

The authors have no conflicts of interest directly relevant to the content of this article.

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Supporting information

Additional Supporting Information may be found in the online version of this article.

Table S1. Subjects' responses and demographics, n (%), Mean (SD), according to country

Table S2. Religious affiliation in Korea, n (%)

Table S3. Religious affiliation and ethnicity in the United States, n (%)

Table S4a. Means, SDs , Cronbach's α s and correlations of Japan ($n = 343$)

Table S4b. Means, SDs , Cronbach's α s and correlations of Korea ($n = 401$)

Table S4c. Means, SDs , Cronbach's α s and correlations of China ($n = 569$)

Table S4d. Means, SDs , Cronbach's α s and correlations of the United States ($n = 472$)

(Received May 25, 2020; accepted February 1, 2021)