A Critical Analysis of the WAQ: The Development of a Korean Form

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Abstract
The current study aimed to develop a simplified version of the Korean Workaholism Scale (KOWS) by determining the reliability and validity of the Workaholism Analysis Questionnaire (WAQ) initially created by Aziz et al. The original scale of the WAQ was translated into Korean and then administered to 4,242 working people from a broad range of economic sectors. The nation-wide sample was a representative one from the 17th wave Korean Labor and Income Panel Study in 2014. The main body comprises two steps. First, through an exploratory factor analysis (EFA) as well as a reliability analysis, along with content validity examination among experts, thirteen items from the original WAQ were eliminated. The EFA yielded a four-factor solution with four items established in compulsive dependency (CD), four in illusion of control (IC), four in endurance of conflicts (EC), and four in withdrawal symptoms (WS). This process provided a succinct and convenient measure of workaholism, the KOWS with 16 items. The reliability coefficient (α) of the new scale was .90, and the split-half reliability coefficient was .72. Secondly, confirmatory factor analysis (CFA) was performed by way of structural equation modeling to validate the new construct. This KOWS showed adequate convergent validity (AVE > .5), construct reliability (CR > .7), as well as discriminant validity (AVE > ρ²). Between four subscales of the KOWS and affective commitment (AC) to organizations there proved meager correlation. In conclusion, the KOWS with 16-item psychometric properties is a valid and reliable tool to measure workaholism in South Korea.

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Introduction
Since the confession of pastor William Oates (1968, 1971) that he himself was addicted to work, it is well known that workaholism, commonly defined as an “uncontrollable need to work” (Oates 1971, p. 11), is a very harmful disease not only for the person’s health and happiness, but also for her/his social relationships in the family, the workplace, and in society as a whole (Fassel, 1990; Levy, 2015; Robinson, 1998). However, workaholism does not simply mean overworking; it is an insidious, progressive, and fatal disease (Heide, 2001; Schaef, 1987). The notorious ‘karoshi’ (death from overwork) in Japan or ‘gwarosa’ in South Korea (hereafter Korea) is attributable to the inevitable result of this work addiction that, over time, becomes detrimental to personal health, social relations, and organizational soundness (Schaef & Fassel, 1988). Falling into the illusion of control, workaholics frequently become perfectionists who obtain self-worth or self-identity from their job. However, when they are not working, they feel anxious, unstable, guilty, and empty (Fassel, 1990; Robinson, 1998).

Although a unified definition of workaholism has not yet been established, most researchers regard it as an addiction to work (Aziz et al., 2013; Griffiths, 2005; Quinones, 2018). Thus, this study also regards workaholism as work addiction (cf. Griffiths et al., 2018; Ng et al., 2007; Oates, 1971; Porter, 1996; Robinson, 1998). Workaholism is a serious kind of behavioral addiction (Schaef, 1987), as it leads ultimately to physical death following emotional death. The whole of society praises and perpetuates it (Heide, 2009), instead of trying to make it illegal to protect the addicted, as with certain drugs. Most importantly, society and its institutions such as schools, businesses, and governments function just like a work-addict (Oates, 1971; Schaef, 1987; Schaef & Fassel, 1988): “workaholism is the foundation of a way of life upon which much of American values are built” (Oates, 1971, p. 25). Nowadays, along with modern industrialization, workaholism became a global phenomenon. In sum, it is important to understand workaholism or work addiction as a reflection of societal pathology, not just as an individual disorder (Quinones, 2018; Sussman et al., 2014), although it may appear as one. In our work-oriented society, there is no “such thing as being accepted for our own sakes and not merely for our accomplishments” (Oates, 1968, p. 20).

It is notable that work as an addictive agent can take diverse forms in a performance-oriented society (cf. Heide, 2001): as stimulant, sedative, and paralyzant. For the successful work-addicts who almost always yield high performances, such as professors, managers, and lawyers, work functions as a stimulant
Working makes them feel excited, respected, productive, powerful, and important. Further, for the unsuccessful but faithful workaholics such as rank and file employees, work acts as a sedative. During work they feel relieved, free from the discriminatory atmosphere in their organization as well as in society. Finally, for the deeply frustrated work-addicts who can neither finish their work nor sometimes even get it started, but who are nonetheless still hooked on it, work can often function as a paralyzant. Just taking charge of a project or position calms either their paranoia or megalomania. In every case, work as an addictive agent plays a critical role in mood-altering behavior. This implies that one of the goals of work addiction is not to feel what is happening within and around us (Heide, 2001; Schaef, 1987). The need to not-feel, i.e. to be numb, might come from a fear of failure, weakness, emptiness, and worthlessness, which are historical products of a society that merely values work performance (Heide, 2009; Kemeny, 2002; Oates, 1971; Urbán et al., 2019).

In this regard, three aspects seem essential to conceptualize the dynamic, insidious, and pathological nature of work addiction: first, the compulsive dependency on work, or the inner drive to work as a means to identity-building. Some negative affects, such as low self-esteem, guilt, and a fear of failure can predispose people to workaholism (Aziz et al., 2018; Burke, 2000, 2004; Machlowitz, 1980; Ng et al., 2007; Oates, 1971; Robinson, 1998; Schaufeli et al., 2009). Even if social as well as organizational pressure precipitates work addiction, this external pressure is finally internalized as a compulsive dependency on work (Ersoy-Kart, 2005; Heide, 2001; Mudrack, 2004; Schaufeli et al., 2009). Consequently, underlying processes such as compulsive dependency or inner drives are more critical in conceptualizing workaholism as work addiction than visible symptoms such as excessive working, over-involvement, and work enjoyment (Fassel, 1990; Schaef, 1987; Taris et al., 2005).

The second aspect is the obsessive increase in perfectionist work performance that seeks gratification and social approval, however temporary. Pleasure tolerance inevitably rises (Griffiths, 2011). Over time, workaholic employees invest an abnormal amount of time and energy in work, but this behavior does not necessarily translate into enhanced organizational outcomes in the long term. Rather, workaholics display impaired work performance, resulting from the compulsiveness to make their work more complex than needed (Gorgievski-Duijvesteijn & Bakker, 2010; Scott et al., 1997). They create more job demands for themselves because they are obsessed with unattainable standards and inclined to spend extraordinary time and effort on unnecessary and insignificant activities (Gugliemi et al., 2012; Mazzetti et al., 2016). This gradually leads to an imbalance between work and life. Despite unrelenting and persistent work–life conflicts, work addicts try to endure and manage everyday personal conflicts (in health, relationships, and responsibilities) or they simply escape into more work to forget the agony of their lives (Robinson, 1998). The more powerless they
become in their life processes, the more they get mired in the illusion of control (Fassel, 1990; Heide, 2001; Schaef, 1987). This can occasionally result in symptoms of impatience, unpleasantness, and even aggressiveness (Aziz et al., 2013; Clark et al., 2010).

The third aspect of work addiction is suffering withdrawal symptoms when not working. For these workaholics, it is extremely hard to have a life of leisure and contemplation. As McMillan et al. (2001, p. 89) states, workaholism is a “reluctance to disengage from work.” Without it they feel empty, anxious, guilty, dull, irritable, depressed, helpless, and fearful (Burke, 2000; Killinger, 1991; Ng et al., 2007; Oates, 1971; Snir & Zohar, 2008). This is intimately related to their compulsive dependency on work. Consequently, they tend to think of work during free time, while they yearn for leisure during their incessant work (Heide, 2001). This is why they easily relapse into work addiction. Therefore, unless the addict actively and sustainably participate in life-long healing processes, the final destination of workaholism is death. These three aspects seem quintessential to construe the concept of workaholism in terms of behavioral addiction.

That said, it is necessary to assess and diagnose workaholism at the individual level first. Considering that one of the main characteristics of an addictive society is denial, it is extremely significant to acknowledge workaholism as it exists (Porter, 1996; Schaef & Fassel, 1988). Developing an effective and efficient measurement tool is necessary, but the job is far from easy, as noted before, owing to lack of an unanimous definition of workaholism (Buelens & Poelmans, 2004; Griffiths et al., 2018). It might be a life-long process of trial and error for researchers. It is against this backdrop of academic discourse that the current study critically examines one of the newest workaholism measures, the WAQ (Aziz et al., 2013), and tries to develop a succinct and valid measure of workaholism in Korea.

**Critical Review of Previous Workaholism Measurements**

During the last decades, many researchers have made efforts to develop tools to measure workaholism (Urbán et al., 2019). Two American measures have been most widely used in assessing prevalent workaholism: the WART (Work Addiction Risk Test) by Robinson (1989) and the Work–BAT (workaholism battery) by Spence and Robbins (1992), both with 25 items. The WART was the first tool developed to measure workaholism. Robinson (1998) conceptualized work addiction as “an obsessive-compulsive disorder” (p.7). This disorder manifests in self-imposed demands, an inability to regulate work habits, and an overindulgence in work. Meanwhile the WART has been used broadly, showing a moderate correlation with anxiety scale or with a Type A behavior pattern (Ersoy-Kart, 2005). However, despite its contribution to the field of workaholism, it has some problems in reproducing its validity (Aziz et al., 2013;
McMillan et al., 2001). The WART was practically developed using non-representative, homogenous samples such as university students or members of Workaholics Anonymous. Sampling is crucial for a measure’s efficacy. Undergraduate students had quite different experiences with work from the general working population, while Workaholics Anonymous members entered into healing processes with a serious acknowledgement that they have no power to control their lives (Schaef, 1987). In addition, its unstable factor structure is also problematic. Flowers and Robinson’s (2002) principal components analysis of the WART resulted in a five-factor solution. However, just three of these – namely, compulsive tendencies, control, and impaired communication – proved effective in measuring workaholism, while two others, the inability to delegate and lack of self-worth, could not be replicated (Clark et al., 2010). Some researchers even suggested regarding the WART as a uni-dimensional measure by using just the essential sub-scale of compulsive tendency to work (Aziz et al., 2013; Brady et al., 2008; Taris et al., 2005).

The Work–BAT has been most popular in workaholism research (Urbán et al., 2019). It comprises three independent factors: work involvement (WI), work drive (D), and work enjoyment (WE). WI is the affective involvement with work, D is the endogenous pressure to work, and WE is the degree of gratification from working. According to Spence and Robbins (1992), “workaholics” score high on work involvement, high on work drive, and low on work enjoyment, while “enthusiastic workaholics” score high on all three components. Various combinations of the three factors yield up to six workaholic types. However, this tool seems both untheoretical and lacking core components of work addiction (Griffiths, 2005; Urbán et al., 2019). Besides, this measure has often been criticized for inadequate validity, as it was based on a homogenous group of social workers or university students (Burke & Koksal, 2002; McMillan et al., 2002). Moreover, its factor structure turned out to be unstable. McMillan et al. (2002), for example, could not replicate the three-factor model with 320 heterogeneous participants. They just ensured a two-factor model with work drive and work enjoyment (Andreassen et al., 2007; Burke et al., 2002; Ersoy-Kart, 2005; Kanai & Wakabayashi, 2001). Burke and Koksal (2002) even reported that merely one of the three components, i.e. work enjoyment, had adequate internal consistency. However, this facet of work enjoyment in the Work–BAT is not solid, as some workaholics really enjoy their work (Fassel, 1990; Machlowitz, 1980; Scott et al., 1997). In fact, some work-addicts enjoy work, while others do not (Taris et al., 2005), just using it to repress their fear or anxiety. Consequently, the work enjoyment factor seems inappropriate for constructing a workaholism measure.

There are two instruments that were developed later: the Dutch Work Addiction Scale (DUWAS) with 10 items (Schaufeli et al., 2009), and the Bergen Work Addiction Scale (BWAS) with seven items (Andreassen et al., 2012). The DUWAS is mainly based on the Work–BAT and the WART,
consisting of two aspects: working excessively (WE) and working compulsively (WC). Schaufeli et al.’s (2009) reliability analysis revealed that both workaholism subscales (WE, WC) have adequate internal consistency (.68-.78) in Dutch and Japanese samples. The same is applicable to the Italian and Dutch samples (Balducci et al., 2015). However, this tool seems to have insufficient factor structure. Despite the advantage of its simple structure, the DUWAS is based on cognitive behavioral psychology rather than addiction theory. Although defining workaholics as a combination of excessive and compulsive workers (Nonnis et al., 2017; Schaufeli et al., 2009) distinguishes among relaxed, hard, compulsive, and workaholic employees, it does not necessarily provide an adequate equivalence to work-addicts. DUWAS fails to seize the underlying dynamic aspects of work addiction such as the illusion of control, the risk of relapse, and the endurance of conflicts by repressing fear.

The BWAS is built on the components model of work addiction (Andreassen et al., 2014; Brown, 1993; Griffiths, 2005). In spite of its simplicity and convenience, the BWAS runs the risk of having just one item as a single component of work addiction. Considering that one of the core features of workaholics is denial, to measure each component of work addiction via a single item would be unreliable. Besides, as relevant researchers have suggested (MacCallum et al., 1999; Raubenheimer, 2004), we normally need at least three items to constitute one factor or subscale, in order to assess and diagnose work addiction as precisely as possible, unless there is strong theoretical backing for a less-than-three item factor design. Finally, the BWAS proposed a cut-off score for the judgment of workaholism (Andreassen et al., 2014): those responding positively to four or more of seven items are determined to be workaholics. Clinically (and also statistically) clear and useful as it is, this tool might mistakenly judge potential workaholics as healthy and sober. At this point it is noteworthy that workaholism as a behavioral addiction is a progressive and dynamic disease (Fassel, 1990; Heide, 2001; Schaefer, 1987), not just a state. It is extremely hard to provide a clear-cut fiducial point to distinguish between workaholics and non-workaholics. Thus, it is better to consider its scale as continuous, not as binary.

To overcome the limitations of the preceding tools, Aziz et al. (2013) developed a new comprehensive measure for workaholism, the Workaholism Analysis Questionnaire (WAQ), which provided a direct motive for this study. It features a 29-item questionnaire that utilizes a five-point Likert scale. In its conceptualization, it even included items reflecting work–life imbalance, as this allegedly represents a shared symptom of addictive diseases. The authors derived five workaholism components based on a comprehensive literature review: work–life conflict (WLC), work perfectionism (WP), work addiction (WA), unpleasantness (UP), and withdrawal symptoms (WD). According to them, it was the first research to work out a better workaholism measure that had been psychologically tested on a heterogeneous working population. They reported that their WAQ proved appropriate in terms of internal reliability as
well as comprehensive validities (convergent, discriminant, and concurrent validity), in measuring workaholism.

Although Aziz et al. (2013) believed they had confirmed the reliability and validities of their WAQ, it is worthwhile to test these features by applying the model to other societies with different cultures. This WAQ has been used in several research projects in America (Aziz et al., 2018; Balkin et al., 2018; Hamilton Skurak et al., 2018; Lanzo, 2016; Moyer et al., 2017; Vitiello et al., 2016). However, most studies measure the level of workaholism simply by the total scores of the scale without analyzing its factorial structure, i.e. regardless of distinctive subscales. Moreover, just one subscale, the work-life conflict, with seven of the original 29 items, was used in one study (Hamilton Skurak et al., 2018). This implies that the stability of the WAQ’s factor structure may not be consistent and sustainable even in the US. In fact, the WAQ’s factorial structure was not persistent in some Korean research. Oum and Lee (2018), for example, found a four-factor solution with 28 items from the WAQ, while Seo et al. (2018) obtained a six-factor solution with 25 items and Yoon (2018) also reached a six-factor solution but with 28 items. In each case, both the factorial structure and the factor names were not consistently replicated. This suggests that the WAQ’s factor structure is not automatically applicable to the Korean population, and its lack of generalizability can be a limitation. Besides, a measurement with 29 items is quite long, lacking the compendiousness principle (Jenkins & Dillman, 1997), which could scatter respondents’ attention. Thus it needs to come under scrutiny, especially when applied to people with different mindsets or in different contexts.

**Methods**

This research proceeded in three steps. First, the original 29-item WAQ was translated into Korean and administered to workers surveyed in the seventeenth wave of the Korean Labor and Income Panel Study (KLIPS). Second, an exploratory factor analysis (EFA) was conducted using SPSS (Statistical Package for Social Science) 21.0 to validate the original WAQ by Aziz et al. (2013) and to obtain a simplified Korean form of the WAQ (KOWS). Third, in order to establish the construct validity for the KOWS, a confirmatory factor analysis (CFA) was conducted using AMOS (Analysis of Moment Structures) 21.0 with maximum likelihood estimation (Campbell & Fiske, 1959). The program of AMOS provides full information on maximum likelihood estimates in the presence of missing data (Arbuckle, 1994). Additionally, the ML method allows testing of a solution using a chi-square statistic, which also has many desirable statistical properties (Boduszek, 2018).
Sample and procedure

A sample of 4,242 respondents, aged 20–70 years old, was drawn from the seventeenth KLIPS conducted from April to September in 2014. The KLIPS began in 1998 and collects data every year on labor and income from 5,000 pre-designated households and their members, aged 15 and over, in urban areas of Korea. The KLIPS also includes the Additional Survey (AS) which in principle is administered once a year. The seventeenth AS was about time use and quality of life, including the 29-item WAQ by Aziz et al. (2013). The survey method was interviewer-administered, in which the interviewer asked questions verbally to the interviewee and recorded their responses. But in limited cases when the potential respondent was not available for an interview, a leaving method (i.e., leaving the respondent with the survey material and picking it up later) or phone interview was also allowed. The share of face-to-face interviews reached 96.6% of respondents in the seventeenth wave. All the data from KLIPS, except for respondents’ personal identification, is freely accessible to the public (https://www.kli.re.kr/klips_eng/index.do) in order to promote non-commercial research and policy.

This seventeenth wave of KLIPS was initially administered to 7,199 working people, and it was the first and the only national data survey on workaholism in Korea. However, for this study the following samples had to be systematically excluded to improve statistical effectiveness: first, the samples from students or unpaid family workers, second, those under 20 or over 70 years of age, and third, samples with missing values in the relevant variables.

This data-cleaning process reduced the number of effective samples in the current study to 4,242 respondents of ages 20–70 working in a variety of economic sectors. About 36% of the respondents were factory workers, 27% professionals, 20% clerical staff, and 17% service employees. There were 1,745 females (41.1%) and 2,497 males (58.9%), and their mean age was 39. Table 1 shows the demographic characteristics and weekly work hours of the sample respondents.

For all analyses in the current study, a significance level alpha (p-value) of 0.05 was chosen. Factor analyses as well as reliability and validity tests were conducted with SPSS and AMOS 21.0. The Korean Workaholism Scale (KOWS) was finally determined by statistical analyses as well as by the views of five volunteer experts. The volunteers were three professors in organizational psychology and two research fellows in labor studies.

Measures

Socio-economic demographics. The questionnaire included topics such as gender, age, annual income, employment type, marital status, work hours and occupational sector.
Workaholism. The 29-item WAQ (Aziz et al., 2013) is a self-reporting questionnaire utilizing a five-point response format. Sample items include, “I enjoy spending evenings and weekends working” and “I often obsess about goals or achievements at work.” The Korean WAQ used translation-back-translation to evaluate workaholism in the seventeenth wave of KLIPS. This translation-back-translation method obtained items closer to the original scale in semantic relevance as well as content similarity. Slightly differently from the self-reporting method of the original WAQ, more than 95% respondents in this study selected, through face-to-face interviews, from the Likert response scale ranging from 1 (strongly disagree) to 5 (strongly agree). Larger scores indicated higher levels of workaholic tendencies. Cronbach’s $\alpha$ was 0.93 in the present study.

Aziz et al. (2013) proposed five workaholism components on the basis of an extensive literature review: work-life conflict (WC), work perfectionism (WP),

### Table 1. Demographic characteristics of the sample ($N = 4,242$).

| Category          | Subgroups                | Number | %  |
|-------------------|--------------------------|--------|----|
| Gender            | Male                     | 2,497  | 58.9 |
|                   | Female                   | 1,745  | 41.1 |
| Age               | 20 $\leq$ age $< 30$     | 476    | 11.2 |
|                   | 30 $\leq$ age $< 40$     | 1,302  | 30.7 |
|                   | 40 $\leq$ age $< 50$     | 1,245  | 29.3 |
|                   | 50 $\leq$ Age $< 60$     | 869    | 20.5 |
|                   | 60 $\leq$ Age $< 70$     | 350    | 8.3  |
| Annual income     | $AI \leq 20,000$         | 928    | 21.9 |
| (Thousands of US dollars) | 20,000 $< AI \leq 40,000$ | 1,887  | 44.5 |
|                   | 40,000 $< AI \leq 60,000$ | 965    | 22.7 |
|                   | 60,000 $< AI \leq 80,000$ | 305    | 7.2  |
|                   | $80,000 < AI$            | 157    | 3.7  |
| Employment type   | Regular                  | 2,930  | 69.1 |
|                   | Irregular                | 1,312  | 30.9 |
| Marital status    | Unmarried, divorced, widow | 1,194  | 28.1 |
|                   | Married couple           | 3,048  | 71.9 |
| Working hours Per Week | $WH < 30$              | 242    | 5.7  |
|                   | 30 $\leq$ WH $< 40$      | 2,577  | 60.7 |
|                   | 40 $\leq$ WH $< 50$      | 846    | 19.9 |
|                   | 50 $\leq$ WH $< 60$      | 378    | 8.9  |
|                   | $60 \leq$ WH             | 199    | 4.7  |
| Occupational Sector | Manufacturing          | 1,519  | 35.8 |
|                   | Professional             | 1,137  | 26.8 |
|                   | Clerical                 | 861    | 20.3 |
|                   | Service                  | 717    | 16.9 |
|                   | Farming                  | 8      | 0.2  |
| Total             |                          | 4,242  |     |
work addiction (WA), unpleasantness (UP), and withdrawal symptoms (WD). The current study used this scale to develop and validate a simplified Korean form of the Workaholism Scale (KOWS).

**Affective commitment.** In the current study, four questions were adopted to evaluate the respondents’ level of affective commitment (AC) to organization, which was originally developed by Porter et al. (1974) as the Organizational Commitment Questionnaire (OCQ). The four-item questionnaire for this study was established using a selected set of essential questions from the OCQ. The AC proved to be discriminantly valid (Aziz et al., 2013). Response options were provided on a five-point scale, from 1 (strongly disagree) to 5 (strongly agree), with higher scores indicating higher levels of AC. The four items were “This is a good company (workplace) to work at”, “I am glad to have joined this company (workplace)”, “I would recommend joining this company (workplace) to a friend searching for a job”, and “I take pride in being a part of this company (workplace)”. Cronbach’s α of the uni-dimensional construct (AC) was 0.89 in this study. In order to test the discriminant validity of the new workaholism measure, a correlation analysis was also conducted between four subscales of the KOWS and AC.

**Results**

**Reliability analysis**
At first, this study verified the internal consistency of the Korean version of the original 29-item WAQ. The Cronbach’s α coefficient of the whole items was .93 (N = 4,242). The item’s discrimination index (DI) was then analyzed. The DI indicates the correlation between responses to a particular item and total scores on all other items on the test (D’Sa & Visbal-Dionaldo, 2017). It estimates the degree to which an individual item is measuring the same thing as the rest of the items. Table 2 shows, beside the potential Cronbach’s α if each item were deleted, the DI of the 29-items of the WAQ in the Korean national sample and their equivalence to the original ones.

Although the whole reliability coefficient seemed high enough (Cronbach’s α = .93), there were several items with a relatively low DI such as “8. I prefer to work excessive hours, preferably 60 hours or more per week”, “9. I have a need for control over my work”, “10. I have a need for control over others”, and “11. I enjoy spending evenings and weekends working.” More interestingly, these items with relatively low DI scores were quite different in comparison to the American WAQ. Namely, in the case of Aziz et al. (2013), the items such as “15. I consider myself to be a very aggressive person”, “19. I frequently check over my work many times before I finish it”, and “20. I ask others to check my work often” indicated a comparatively low DI. One of the reasons for this discrepancy
Table 2. Item’s discrimination indices (DI) of the Korean and the original WAQ.

| Items                                                                 | This Study (N= 4,242) | Cronbach’s $\alpha$ if item deleted | Aziz et al. (2013) |
|------------------------------------------------------------------------|------------------------|-------------------------------------|--------------------|
|                                                                         | m          | s.d.      | DI      | m          | s.d.      | DI      |
| 1. I feel stressed out when dealing with work issues.                  | 3.05       | .95       | .43     | .93       | .42       |         |
| 2. I feel guilty when I am not working.                               | 2.30       | .79       | .57     | .92       | .58       |         |
| 3. I feel anxious when I am not working.                              | 2.34       | .84       | .65     | .92       | .64       |         |
| 4. I feel bored or restless when I am not working.                    | 2.28       | .80       | .63     | .92       | .54       |         |
| 5. I am unable to relax at home due to preoccupation at work.          | 2.20       | .75       | .66     | .92       | .69       |         |
| 6. I constantly feel too tired after work to engage in non-work activities. | 2.46       | .89       | .56     | .92       | .46       |         |
| 7. I think about work constantly.                                     | 2.22       | .76       | .63     | .92       | .67       |         |
| 8. I prefer to work excessive hours, preferably 60 hours or more per week. | 1.87       | .72       | .34     | .93       | .52       |         |
| 9. I have a need for control over my work.                            | 2.85       | .98       | .38     | .93       | .43       |         |
| 10. I have a need for control over others.                            | 2.48       | .84       | .35     | .93       | .41       |         |
| 11. I enjoy spending evenings and weekends working.                   | 1.87       | .71       | .32     | .93       | .45       |         |
| 12. I frequently have work-related insomnia.                          | 2.03       | .75       | .60     | .92       | .57       |         |
| 13. I feel very addicted to my work.                                  | 2.06       | .74       | .66     | .92       | .58       |         |
| 14. I find myself unable to enjoy other activities because of my thoughts of work. | 2.05       | .67       | .65     | .92       | .71       |         |
| 15. I consider myself to be a very aggressive person.                  | 2.03       | .66       | .54     | .92       | .38       |         |
| 16. I get irritated often with others.                                | 2.22       | .75       | .54     | .92       | .50       |         |
| 17. People would describe me as being impatient and always in a hurry. | 2.19       | .74       | .58     | .92       | .49       |         |
| 18. I often obsess about goals or achievements at work.               | 2.44       | .87       | .56     | .92       | .63       |         |
| 19. I frequently check over my work many times before I finish it.    | 2.78       | .96       | .44     | .93       | .38       |         |
|                                                                         | 2.26       | .71       | .51     | .93       | .30       |         |

(continued)
may simply arise from the different nuance in the wording of the questions, despite a strict translation-back-translation procedure. Another explanation may be cultural difference. For instance, items 8 and 11 could be understood by Korean respondents as examples of a positive work ethic, while items 9 and 10 could be interpreted as a need for autonomy. As a consequence, this study could eliminate four items (8, 9, 10, 11) from the original WAQ, based on low DI.

**Factor extraction through EFA and content validity**

The current study conducted an exploratory factor analysis (EFA) on the WAQ’s 25 items, using the Korean representative heterogeneous sample on workaholism (N = 4,242). This data-driven EFA identifies the underlying

### Table 2. Continued.

| Items                                                                 | This Study (N = 4,242) | Aziz et al. (2013) |
|----------------------------------------------------------------------|------------------------|--------------------|
|                                                                      | m  | s.d | DI  | Cronbach’s $\alpha$ if item deleted | DI  |
| 20. I ask others to check my work often.                              | 2.15 | .68 | .65 | .92                                  | .61  |
| 21. I frequently feel anxious or nervous about my work.               | 2.39 | .80 | .53 | .92                                  | .58  |
| 22. It takes me a long time to finish my work because it must be perfect. | 2.06 | .64 | .53 | .92                                  | .56  |
| 23. I experience conflict with my significant other or with close friends. | 2.38 | .86 | .61 | .92                                  | .76  |
| 24. My work often seems to interfere with my personal life.           | 2.54 | .91 | .58 | .92                                  | .77  |
| 25. I often put issues in my personal life “on hold” because of work demands. | 2.53 | .88 | .55 | .92                                  | .73  |
| 26. I often miss out on important personal activities because of work demands. | 2.45 | .87 | .48 | .93                                  | .65  |
| 27. I find it difficult to schedule vacation time for myself.         | 2.22 | .70 | .51 | .93                                  | .56  |
| 28. I have difficulty maintaining friendships.                        | 2.16 | .69 | .53 | .92                                  | .48  |
| 29. I have difficulty maintaining intimate relationships.            | 2.16 | .69 | .53 | .92                                  | .48  |

*Note. m = mean, s.d = standard deviation, emphasis added by the author.*
relationships between a large number of interrelated items, when there are no prior hypotheses about factors or patterns amongst them (Costello & Osborne, 2005). The EFA for this study was performed using maximum likelihood (ML) method and oblique factor rotation. This took place instead of a principal component analysis (PCA), as it seemed that certain correlations existed among the sub-scales of workaholism (Brown, 2006; Roberson III et al., 2014), which was ex post proven in Table 5. The reason for the choice of ML estimation instead of PCA was namely that the former differentiates between unique and common variance, whereas PCA does not (Jolliffe, 2011).

At first, according to the first result of the EFA, this study could further eliminate six relatively irrelevant items (item numbers 1, 6, 16, 17, 21, 23) from the 25 items of the WAQ. Items with pattern coefficients smaller than .40 were omitted to determine the saliency of significant items with the factors (Roberson III et al., 2014). The factor pattern matrix loadings (i.e., pattern coefficients) are the linear combinations of the factors that make up the original standardized variables. This procedure allowed the study to obtain a five-factor solution (Eigenvalue > 1.0) with 19 items. This factor structure was very similar to the original WAQ, although shortened. The factorial structure explained 63.3% of the total variance.

In the next step this study conducted the EFA with 19 items once again, in order to extract more significant items for an assessment of workaholism. The second EFA with the maximum likelihood (ML) method and oblique factor rotation produced a four-factor solution (Eigenvalue > 1.0) with 16 items with pattern coefficients larger than .50, which accounted for 64.9% of the total variance. According to the recommendations of Roberson III et al. (2014), the pattern matrix with coefficients of the extracted factors is shown in Table 3.

In retrospect, a total of 13 items were omitted from the original 29 items of WAQ: four items (8, 9, 10, 11) owing to relatively low item’s discrimination index (DI < .40), six items (1, 6, 16, 17, 21, 23) based on comparatively low pattern coefficients (factor loading < .40), and an additional three items (7, 28, 29) for the same reason under a stricter cut-off (factor loading < .50). Beside these statistical analyses, the content analysis by five volunteer experts for this study revealed that many items were either irrelevant in Korean culture, or seemed to be nomologically inappropriate for construing workaholism. For example, items 23, 28, and 29, all related to intimate social relationships, seemed rather to be the negative consequences or even social background of workaholism (McMillan et al., 2004; Robinson, 1998; Robinson & Post, 1997), rather than constructive elements of it. Other items appeared to be either an expression of the need for job autonomy (9, 10) or Type A behavior patterns (16, 17, 21). Furthermore, items like 1, 6, 7, 8, and 11 were likely to reflect the working culture of long hours in Korean society, rather than to represent workaholism per se (Schaef & Fassel, 1988). Although in July 2017, the Korean government lowered its legal maximum working hours from 68 to 52 hours a
week, to date there is little evidence showing that people are in practice working less, not to speak of the whole society’s generally strong workaholic tendencies that have developed since the 1960s (Kang, 2000; Koo, 2001). This procedure provided a four-factor solution for a potential Korean version of the WAQ: as many researchers have similarly indicated (Fassel, 1990; Flowers & Robinson, 2002; Schaef, 1987; Scott et al., 1997), such factors as compulsive dependence on

| Item                                                                 | Factor loading | Factor                          |
|----------------------------------------------------------------------|----------------|---------------------------------|
| 3. I feel anxious when I am not working.                            | .95            | 1. Withdrawal symptoms (WS)     |
| 4. I feel bored or restless when I am not working.                  | .85            |                                 |
| 2. I feel guilty when I am not working.                             | .78            | (EV = 7.5, \( \alpha = .89 \)) |
| 5. I am unable to relax at home due to preoccupation at work.       | .51            |                                 |
| 25. I often put issues in my personal life “on hold”                 | .93            | 2. Endurance of work-life conflict (EC) |
| because of work demands.                                            |                | (EV = 2.0, \( \alpha = .85 \)) |
| 26. I often miss out on important personal activities because of work demands. | .92            |                                 |
| 24. My work often seems to interfere with my personal life.         | .63            |                                 |
| 27. I find it difficult to schedule vacation time for myself.        | .60            |                                 |
| 19. I frequently check over my work many times before I finish it.   | .81            | 3. Illusion of control (IC)     |
| 18. I often obsess about goals or achievements at work.             | .68            | (EV = 1.6, \( \alpha = .79 \)) |
| 22. It takes me a long time to finish my work because it must be perfect. | .64            |                                 |
| 20. I ask others to check my work often.                            | .53            |                                 |
| 14. I find myself unable to enjoy other activities                  | .76            | 4. Compulsive dependence on work (CD) |
| because of my thoughts of work.                                     |                | (EV = 1.2, \( \alpha = .83 \)) |
| 12. I frequently have work-related insomnia.                        | .69            |                                 |
| 13. I feel very addicted to my work.                                | .66            |                                 |
| 15. I consider myself to be a very aggressive person.                | .59            |                                 |

Note. KMO = .919, \( \chi^2 = 1,423.5 \), d.f. = 98, p < .001, Factor Extraction Method = Maximum Likelihood, Rotation Method = Oblique (Direct Oblimin) with Kaiser Normalization, Total Variance Explained = 64.9%, Cronbach’s \( \alpha = .897 \) (N of items = 16, p < .01).
work (CD), illusion of control (IC), and endurance of work–family conflict (EC), along with withdrawal symptoms (WS), were extracted as essential factors for explaining workaholism in Korea. These factors encompass the underlying aspects of workaholism as work addiction. While the CD and WS represent the quintessential aspects of workaholism as a behavioral addiction, as the workaholism over time dynamically progresses, the IC, as well as EC, shows up more intensively, and much stronger (Fassel, 1990; McMillan et al., 2001; Robinson, 1998; Schaef, 1987; Schaef & Fassel, 1988).

For the confirmation of content validity, five volunteer experts from either organizational psychology or labor studies examined both the factor structure and the individual items. According to Aiken (1985), the content validity is established, when the V-coefficient calculated on the basis of both the rating scores by expert panels and the number of experts participated is larger than .7. In the current study the Aiken’s V for all the items indicated between .76 and .89. Thus, this study revealed the content validity of the 16-item scale (KOWS).

The Cronbach’s $\alpha$ for the internal consistency of the new KOWS was .897. The split-half reliability coefficient of the new scale was .72. As a result, the present study could preliminarily obtain 16 items suitable for measuring workaholism in Korea (Table 3). However, as many researchers have noted (Brown, 2006; Pratarelli & Browne, 2002; Van Prooijen & Van Der Kloot, 2001), the validation of a new construct should be scrutinized by conducting a theory-driven confirmatory factor analysis (CFA).

### CFA for the KOWS

In the third step, the current study carried out a CFA on the 16-item KOWS, using a structural equation model (SEM) to test the validity and reliability of the new construct. As noted before, the four-factor structure of the KOWS seemed quite different from the five-factor model of Aziz et al. (2013) in the US and proved to be even better in terms of model fit (cf. Table 6). According to Campbell and Fiske (1959), we need to demonstrate the discriminant (or distinctive) as well as convergent validity to establish the construct validity of a new measure. Convergent validity is defined as the extent to which two and more measures of constructs that theoretically should be related, are in fact related. In contrast, discriminant validity applies to two and more dissimilar scales that are statistically divergent. All the indices resulting from the CFA in this study showed appropriate fit and implied that the four dimensional construct represented the Korean data well.

**Convergent validity and internal consistency.** As Fornell and Larcker (1981) recommended, convergent validity can be established if AVE (average variance extracted) for all dimensions exceeds .50 and construct reliability (CR) is larger than .70. In the current study, AVE for all the four dimensions was >.50.
The CFA produced the following results (Figure 1; Table 4). Although CMIN/DF ($= 14.52, p < .001$) was relatively high, all other indices for model-fit indicated that this measurement model was statistically appropriate and acceptable. Table 4 shows that all the standardized regression weights ($\beta$) were more than .5 ($\beta > .50$), all the average variance extracted (AVE) were larger than .5 (AVE $> .50$), and all the construct reliabilities exceeded .70 (CR $> .7$). The AVE provides an estimate regarding to what extent item variance comes from the construct in question (Brown, 2006; Pratarelli & Browne, 2002). Thus it is similar to the item’s discrimination index (DI) in its relevance to internal consistency. Further, CR is substantially similar to Cronbach’s $\alpha$ coefficient for the reliability of the related items in the model. Consequently, the

![Figure 1](image-url). Confirmatory factor analysis of the four-dimension model (KOWS). Note. e: Residual of observed variables; i: 16 items of the KOWS with original numbers; Figures on the arrow that connect latent variables* to observed ones** are factor loading for each item. Figures on the arrow that correlate two latent variables are correlation coefficients. *Latent variables: CD, IC, EC, and WS. **Observed variables: i 1 to i 16. CD = compulsive dependency, IC = illusion of control, EC = endurance of conflicts, WS = withdrawal symptoms.
convergent reliability, as well as the internal consistency, of the new workaholism construct was statistically confirmed.

Discriminant validity. This study also examined the discriminative reliability of the construct to ensure latent variables in the model (WS, IC, EC, and CD). Each construct can be discriminated from the other three constructs, by comparing the AVE and correlation coefficients ($\rho$) of the factors. When the AVE for each latent variable is larger than the shared variance (i.e., the square of correlation coefficient) of the other variables, discriminant validity is established (Zait, & Bertea, 2011). As shown in Table 5, all the AVE exceeded the square of $\rho$ ($\rho^2$), respectively, validating the discriminant reliability of the new KOWS construct.

As noted above, Table 6 shows the difference in model fit indices between the five-factor model by Aziz et al. (2013) and the four-factor model in the current study. It is obvious that the four-factor model in the present study fits much better in measuring workaholism in Korea (Table 6).

A discriminant validity test: KOWS subscales and AC

As Table 5 shows, the present study examined the correlation between the four dimensions of the KOWS, i.e., CD, IC, EC, and WS, and one of the differential

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### Table 4. Convergent validity and internal consistency of the KOWS.

| Factor → Item Nr. | B     | s.e. | Critical ratio | $\beta$ | AVE | Construct reliability | Cronbach’s $\alpha$ |
|-------------------|-------|------|----------------|--------|-----|-----------------------|--------------------|
| WS → 5            | 1.00  |      |                | .72    | .77 | .93                   | .89                |
| WS → 2            | 1.13  | .02  | 48.58          |        | .78 |                       |                    |
| WS → 4            | 1.29  | .02  | 53.93          |        | .86 |                       |                    |
| WS → 3            | 1.41  | .03  | 55.87          |        | .90 |                       |                    |
| IC → 22           | 1.00  |      |                | .73    | .58 | .85                   | .79                |
| IC → 20           | 0.77  | .02  | 36.03          |        | .63 |                       |                    |
| IC → 18           | 1.12  | .03  | 41.31          |        | .74 |                       |                    |
| IC → 19           | 1.16  | .03  | 39.53          |        | .70 |                       |                    |
| CD → 15           | 1.00  |      |                | .62    | .72 | .91                   | .83                |
| CD → 13           | 1.46  | .04  | 39.69          |        | .80 |                       |                    |
| CD → 12           | 1.36  | .04  | 37.83          |        | .74 |                       |                    |
| CD → 14           | 1.31  | .03  | 39.73          |        | .80 |                       |                    |
| EC → 27           | 1.00  |      |                | .60    | .68 | .89                   | .85                |
| EC → 26           | 1.46  | .04  | 42.18          |        | .87 |                       |                    |
| EC → 25           | 1.57  | .04  | 42.90          |        | .90 |                       |                    |
| EC → 24           | 1.19  | .03  | 37.72          |        | .73 |                       |                    |

Note:* B: Unstandardized regression weights; s.e.: standard error; Critical Ratio > 1.96; $\beta$ > .5; AVE (Average Variance Extracted) >.5; Construct Reliability >.7.
variables from workaholism construct: the affective commitment (AC) to organizations (Aziz et al., 2013; Buelens & Poelmans, 2004; Porter, 1996; Scott et al., 1997). AC refers to the level of emotional attachment and identification with the organization (Porter et al., 1974), which is, according to Aziz et al. (2013), quite different from the construct of workaholism as a behavioral addiction. Porter (1996) also stressed that workaholics are often isolated, incapable of team playing, and rigid in thinking and acting. Precedent research reassured the two constructs, workaholism and affective organizational commitment, are theoretically distinctive (Buelens & Poelmans, 2004; Scott et al., 1997). Table 5 shows extremely low correlation coefficients \([.02 < \rho < .13]\) between four factors of KOWS and AC. Discriminant validity is established when measures of different constructs are proven to be uncorrelated with each other (Campbell & Fiske, 1959; Zait, & Bertea, 2011). Therefore, the results in Table 5 provide evidence that the KOWS practically has discriminant validity.

**Discussion**

The present study had two main objectives: (1) to assess the psychometric properties of the original WAQ, and (2) to develop and validate the simplified Korean version of the Workaholism Scale (KOWS). The first step was to translate and conduct a linguistic and semantic validation of the WAQ. The K-WAQ
was administered to a representative sample of 4,242 heterogeneous workers in Korea (Table 1). The reliability as well as the factor structure of the WAQ was then examined (Tables 2 and 3). A repeated EFA finally produced a simplified form of WAQ, the KOWS, with a four-factor structure on 16 items (Table 3). Discriminant as well as convergent validity was examined by conducting a CFA (Figure 1; Tables 4 and 5). Furthermore, discriminant validity was tested with the help of the affective commitment (AC) scale (Table 5).

Through this study, it became clear that the five-factor model of workaholism by Aziz et al. (2013) is inadequate for evaluating workaholism in Korea (Table 6). The sequential factor analyses (EFA, CFA) yielded an adequate four-factor model of workaholism construct for the country’s working population. This is very similar to the results from previous research that proposed a four-factor model, even with different items or component naming (cf. Flowers & Robinson, 2002; Robinson et al., 2001; Urbán et al., 2019).

The original WAQ has been considerably improved by way of statistical corroborations, not only compendiously shortened, but also increased in its model fit (Table 6). The analysis with structural equation modeling (SEM) confirmed that the KOWS consists of 16 items and four factors (CD, IC, EC, and WS) with sufficient convergent and discriminant validity. Five volunteer experts from either organizational psychology or labor studies reassured the content validity of the new scale. The renewed scale has high internal reliability (Cronbach’s \( \alpha = .897, p < .01 \)). Therefore, this study comes to the conclusion that the KOWS is a reliable as well as valid tool for Korea to measure its prevailing workaholism.

On the other hand, several limitations of the WAQ (Aziz et al., 2013) have been found during the verifying processes that can be summarized as follows.

1. Interestingly enough, a CFA revealed that the five-factor structure of the original WAQ had an inadequate model-fit for the Korean sample (N = 4,242). Before conducting an EFA in order to extract relevant items and factors for a Korean workaholism scale, this study performed a CFA on the previously proposed model of the WAQ with 29 items and five factors by Aziz et al. (2013). The fit indices of the five-factor solution of the WAQ showed insufficient fit for the Korean representative data (Table 6): \( \chi^2 = 14,238, \ df = 359, \ p < .001; \ RMR = .056, \ AFGI = .724, \ NFI = .766, \ CFI = .771; \ TLI = .746; \ RMSEA = .094. \) According to T. A. Brown (2006), the best model-fit is to obtain both RMR and RMSEA \(< .05, \) and at the same time, AFGI, NFI, CFI, and TLI \( > .90. \) The preliminary results from the CFA unarguably imply that the measurement model has room for much improvement.

2. The same measure can be differently experienced among people in different socio-cultural backgrounds. It is not only a problem of translating the English questionnaire into Korean, but also a problem of the context
within which people have long been feeling, thinking, and working. This may be no surprise, given that the homogeneity of Korean society is considerably greater than many other societies, especially those in the West, and in particular the US (Kohls, 2001). Besides, especially during the rapid industrialization from the 1960s onwards, Koreans have identified themselves with their work much more so than Americans (Heide, 2001; Kang, 2000; Koo, 2001). These imply that the WAQ could be considerably restructured by processing Korean national data.

3. The five-factor structure of the original WAQ, i.e., work–life conflict, work perfectionism, work addiction, unpleasantness, and withdrawal symptoms, does not seem to reflect or, at least, name the essential processes of workaholism as a behavioral addiction. When workaholism is defined as an unmanageable intrinsic drive to work that is detrimental to health and relationships (Oates, 1971; Robinson, 1998), the essential construct of workaholism should include such components as compulsive dependency on work, the illusion of control, tolerance of conflicts, denial of one’s own addiction, and withdrawal symptoms (Fassel, 1990; Robinson, 1998; Schaef, 1987). In this respect, WAQ-factors such as work–life conflict and unpleasantness, are negative consequences of workaholism rather than essential aspects of it. (Brady et al., 2008; Robinson, 1998; Taris et al., 2005). Workaholism is by definition a disease that involves an obsession with work, despite a work–life imbalance or conflict. In this case, a new name like ‘endurance of work–life conflict’ instead of ‘work–life conflict’ per se would be more appropriate to conceptualize workaholism as a behavioral addiction (Schaef & Fassel, 1988). Moreover, workaholism can be either a result of a dysfunctional family of origin or a cause for present familial conflicts (Robinson, 1998). Accordingly, several items signaling the breakdown of intimate relationships should be excluded from components of a workaholism construct.

4. It seems awkward that the WAQ entails the factor name ‘work addiction’ as part of its construct, considering that the terms ‘workaholism’ and ‘work addiction’ indicate, in their deep sense, the same compulsive behavioral disorder (Oates, 1971; Quinones, 2018; Robinson, 1998; Schaufeli et al., 2009). Therefore, a renaming of this subscale as ‘compulsive dependency on work’, instead of ‘work addiction’, would be more precise.

5. Some items seem overlapping or even superfluous. For example, items 23, 28, and 29 overlap, at least partially. Item 13 (“I feel very addicted to my work”) that asks directly about work addiction might be superfluous, although statistically significant, when there are other indirect essential questions.

6. Last but not least, according to exploratory factor analysis, some items seem to be inappropriate for inclusion in a certain factor. For example, item 9 (“I have a need for control over my work”) had too weak a correlation to the factor ‘work addiction’ to be included. The same is applicable to items 8, 10, and 11. In addition, item 1 (“I feel stressed out when dealing with work
issues”) appeared to belong to job stress, rather than to workaholism itself (cf. Porter 2001), thus showing a relatively low pattern coefficient. The same was applicable to items 6, 7, 16, 17, 21, 23, 28, and 29. In sum, this study finally obtained a compendious Korean Workaholism Scale (KOWS) with the help of both statistical analyses and the views of five volunteer experts comprising three organizational psychologists and two researchers from labor studies.

The present study also provides several theoretical as well as methodological implications. First, through this study one of the essential aspects of workaholism, the compulsive dependency on work, is clearly replicated. As Robinson (1998, p. 7) defines it, workaholism as a behavioral addiction is “an overindulgence in work to the exclusion of most other life activities” which is detrimental to work–life balance, relationships, and personal health. McMillan et al. (2001) also regarded workaholism as a “personal reluctance to disengage from work”, which is provable by the compulsion to work regardless of place or time. Almost all researchers agree to include this aspect of compulsive dependency on work in defining workaholism, even though there are still discrepancies (Atroszko et al., 2019; Griffiths et al., 2018; Harpaz & Snir 2003; Quinones, 2018). In the present study, the compulsiveness dimension of the WAQ was well extracted as CD. This indicates that work-addicted people may be incessantly driven to work to an excessive extent by something inside themselves (Fassel, 1990; Harpaz & Snir, 2003; Robinson, 1998; Spence & Robbins, 1992). Further, this dimension relates more and more to others, as work addiction insidiously progresses and deepens. Sufferers endure everyday conflicts in order to enjoy the drug ‘work’, either as stimulant or as sedative, or even as paralyzant (EC), or seek illusion of control to secure their drug (IC), and experience withdrawal symptoms when going without it (WS). The KOWS, consisting of four factors such as CD, IC, EC, and WS, fits well with the addiction model of workaholism construct.

Second, however, the most important question in this context is why people voluntarily devote their time and energy to working so obsessively and excessively, as Ersoy-Kart (2005) underlined, despite all the work–life conflicts, sometimes even to their death. Work-addicts tend to “deny”, or to “rationalize”, their obsessive work habits, to “feel better” (Fassel, 1990; Robinson, 1998; Schor, 1992). To be exact, they become addicted to work in order not to feel what is going on within and around them (Heide, 2001; Schaefer & Fassel, 1988). This might be because they are not stable in their deep psyche, but possessed by fear (Burke, 2000; Heide, 2009). That is the fear of failure to survive or achieve secular success, including social or organizational recognition. They often have vulnerable senses of autonomy, low self-esteem, and volatile sobriety (Burke, 2004; Clark et al., 2010; Robinson, 1998). Although nobody is free from the performance-oriented societal climate, and thus from the external societal pressure to work excessively (Kemeny, 2002), it is apparent that work-addicts
have a uniquely strong intrinsic drive to overwork. This implies that the workaholics have experienced certain *trauma*, collectively or individually, such that they had to *internalize* external pressure in order to survive (Gruen, 2007; Heide, 2009; Herman, 1992). However, little theoretical attention has been paid to this significant aspect. Further discussions are needed.

Third, in order to elucidate the relationship between trauma and addiction, we might need to take quite a different approach to workaholism than the conventional psychological or clinical one: a trans-disciplinary approach, as suggested by Quinones (2018). She emphasizes the macro factors affecting work addiction. In this respect it seems highly relevant to investigate how a society as a whole has historically experienced a modernization process towards a society, in which work has become a central value of people’s lives (cf. Heide, 2009; Schor, 1992; Thompson, 1967).

Fourth, one of this insight’s implications is that a self-reporting assessment of workaholism has considerable limitations. As a consequence, using observational and questionnaire tools in combination is highly desirable (Aziz et al., 2013). Moreover, as shown above, some items seem neither meaningful nor applicable to many respondents working in different culture. For this reason, different measurement tools may be necessary for heterogeneous respondents with unique social and historical contexts.

Fifth, any scale for assessing workaholism should encompass specific self-defense mechanisms to sustain addictive work patterns. In the present study, factors such as *endurance of work–life conflict* and *illusion of control* function as defensive mechanisms to sustain and perpetuate work addiction. This may be because, on the one hand, workaholics obtain their identity or self-worth from work (Burke, 2004; Flowers & Robinson, 2002; Oates, 1971), while on the other hand, they tend to avoid feeling the pain of their reality by getting hooked, consciously or unconsciously, on work (Fassel, 1990; Robinson, 1998; Schaef & Fassel, 1988). Therefore, people can be so compulsively dependent on work that they even enjoy overworking, *despite* everyday work–life conflicts. They willingly endure all the conflicts between work and life by feeling contented with the former. In other cases, they hide themselves behind work, in order to avoid confronting their conflictual reality. Furthermore, they try to control their lives at work or at home by deliberately organizing their time, energy, feeling, and emotion in certain directions. They often deny their painful reality, rationalizing their work addiction. Without work, they feel depressed and extremely powerless, which occasionally leads to suicide. In sum, more discussion is needed on the self-defense mechanisms of work-addicts in order to deepen our understanding of workaholism as a behavioral addiction.

This study inevitably has some limitations, and thus proposes ideas for future research. Above all, although the current study provides a preliminary Korean version of the KOWS by reconstructing the original WAQ, this validation research was based upon the first and the sole data set investigating
workaholism in Korea on a national level. Given that, from 2015, KLIPS no longer surveys workaholism, it is hard to re-validate the new KOWS measure with an updated representative sample. This study also cannot assert that the KOWS is the best measurement tool for workaholism in Korea, even if it is better than the original. It might be necessary to re-validate it with updated data, in order to develop and create a better assessment tool.

In addition, further empirical research is necessary, based on this study's Korean form of 16-item KOWS, to highlight, for instance, the relationships between workaholism, social relationships, and organizational effectiveness. For example, it would be significant to examine how such factors as dissatisfaction with social relationships or organizational commitment are related to increasing workaholism (cf. Avanzi et al., 2012). Beside this variable-centered research, person-centered research based on the new measure is also needed to enrich the field (cf. Gillet et al., 2018). Such research would ultimately contribute to reducing and overcoming this fatal disease of working people.

Moreover, as mentioned above, a trans-disciplinary approach is urgent to integrate both micro-level and macro-level insights on workaholism (cf. Quinones, 2018). Otherwise, much research, though well-intended, could merely play a role as a co-dependent in the addictive system (Schaef & Fassel, 1988) that systematically promotes workaholism, which would simply perpetuate the problem, instead of ameliorating it.

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