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COMMENTARY

Toward definitional clarity of technology-assisted supplemental work: A bridge over muddied waters

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In their timely focal article, Hu et al. (2021) highlight the wide range of ICT-related phenomena in the work context. In addition to breadth, we consider it important to examine in depth the definitional clarity of a specific construct discussed by Hu et al. (2021): ICT use for work purposes during after-hours. The focal article only very briefly addresses the issue of various definitions of this phenomenon across studies. We go a step further and argue that a shared understanding needs to be established among researchers regarding five facets of ICT use for work purposes during after-hours (i.e., time frame, content of work behavior, place, compensation, and target group).

Although ICT use for work purposes during after-hours has been addressed by many studies in industrial-organizational (I-O) psychology, the definition of the construct remains blurry. This is also reflected by a multitude of definitions and construct labels used in the literature, including "voluntary work-related technology use during non-work time" (Schlachter et al., 2018, p. 825), "communication technology use for work at home during off-job time" (Wang et al., 2017, p. 93), or "daily smartphone use after work hours" (Derks et al., 2015, p. 163), to name just a few. Even Hu et al. (2021) use different labels within their article (e.g., ICT use for work purposes during after hours, technology use during family time). Although these terms differ, they describe the same phenomenon or closely related phenomena (i.e., jangle fallacy; Kelley, 1927). Moreover, studies on this topic use not only different definitions and construct labels but also different measures, sometimes even for constructs with the same label (i.e., jingle fallacy; Kelley, 1927). These research practices may lead to difficulties in aggregating and comparing research results.

In their review on the topic, Ďuranová and Ohly (2016) assert that the term technology-assisted supplemental work (TASW) "seems to be the best for displaying the immanent characteristics of work-related use of ICT during after-hours" (p. 36). The term was first introduced and defined by Fenner and Renn (2004): "When workers lengthen their working time by performing role-prescribed tasks for their full-time employer by remaining connected to their work, coworkers, supervisors, or other organizational stakeholders, from home or away from work when on holiday, by means of digitized technology, then they are engaging in TASW" (p. 181). They later specified their definition and added that TASW is distributed supplemental work performed by professional or white-collar workers and that it is not covered by a formal contract or compensation agreement (Fenner & Renn, 2010). Although we agree with Ďuranová and Ohly (2016) regarding the advantages of the TASW label and definition, we also call for a specification of the definition of TASW by Fenner and Renn (2004, 2010) with respect to five facets (i.e., time frame, content of work behavior, place, compensation, and target group). In addition, we agree with Hu et al. (2021) and question whether TASW is conceptually distinct from its nontechnological equivalent (i.e., supplemental work).

Acknowledgement: Our title is inspired by the title of a seminal paper by Van Dyne et al. (1995).

Specifying the characteristics of TASW

First, the facet of TASW that is probably most difficult to determine is the *time frame*. The interpretation of time specifications such as "after-hours," "outside of typical working time," "after regular working hours," "nonwork hours," and "family time" is largely delegated to study participants and readers in most studies. It remains unclear when "working time" starts and ends. Fenner and Renn (2004) suggest that "normal" working hours are characterized by a minimum of 40 hours per week and that these are over when employees' colleagues leave the office at the end of a typical workday. With the increasing prevalence of flexible work arrangements and telecommuting, this definition does not seem applicable anymore. A possible solution is presented by Arlinghaus and Nachreiner (2014), who suggest that supplemental work occurs "in the form of any work activity during any planned free time" (p. 2). Furthermore, it remains unclear whether TASW is limited to hours *after* work or can also happen *before* (e.g., checking e-mails during breakfast) or *between* work hours (e.g., making business phone calls during breaks). So far, studies have mostly focused on TASW in the afternoon or evening. Overall, a clear definition of when regular working time ends and when supplemental work begins is currently lacking.

Second, another key facet of TASW is the *content of work behavior*. According to Fenner and Renn (2004), TASW involves performing role-prescribed tasks. Most studies refer to the use of ICTs for work-related purposes in general, without further specifications. Others focus on work-related contacts, connectedness, or mere availability (Ďuranová & Ohly, 2016). Some scales contain various behaviors like availability, checking behavior, and responding to messages (e.g., smartphone use scale; Derks et al., 2015). It is not clear whether all these behaviors really qualify as TASW. Future research thus needs to evaluate potential conceptual differences between active ICT behaviors like email-checking and making phone calls and more passive ICT behaviors like availability or connectedness. So far, it has also not been defined whether tasks ranging at the border between private and work life, such as chatting with colleagues (e.g., via Slack) or administering one's LinkedIn profile, count as TASW.

Third, the *place* where employees engage in TASW needs to be clarified. It is unclear whether TASW can happen independent of a specific place or whether it is restricted to the home domain. Fenner and Renn (2004) state that TASW is performed "from home or away from work when on holiday" (p. 181). Most studies adopt this definition and focus on TASW happening at home (e.g., Wang et al., 2017), whereas other studies offer no further specification of the place (e.g., Derks et al., 2015). It thus needs to be clarified whether other locations (e.g., restaurants, parks), the commute, or even the office (after official working hours) can be considered places to engage in TASW.

Fourth, the *compensation* for TASW remains to be clarified. According to Fenner and Renn (2010), TASW is not covered by a formal contract or compensation agreement. So far, studies on the topic provide no information on potential compensation of employees for their work-related ICT use after-hours. We encourage researchers to critically evaluate this facet of TASW. On one hand, time off in return for TASW could reduce the *total* working time to a regular level. On the other hand, TASW still expands the working time *on a specific day* beyond a normal level. Extra pay as compensation for TASW does not affect working time at all. In this respect, it could be interesting to examine differences in the relationships between TASW and employee outcomes (e.g., well-being) under diverse compensation conditions.

Finally, the *target group* of TASW needs to be carefully considered. In their definition of TASW, Fenner and Renn (2010) focus on full-time employed professional or white-collar workers. However, studies on the topic have also included part-time workers because qualitative research showed that part-time workers also engage in work-related ICT use after hours (Eichberg et al., 2021). It is conceivable that engaging in TASW is even more relevant for those working part time because they might be contacted by their full-time colleagues during nonwork hours and feel the need to check their messages to not miss information. Furthermore, limiting TASW

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to white-collar workers should also be reconsidered because non-office-based employees like teachers and even builders can engage in TASW (e.g., preparing lessons, writing invoices). Thus, researchers should discuss the expansion of the TASW definition to professions besides white-collar workers. It would be particularly interesting to compare differences in the experience of TASW in different occupations.

(Technology-assisted) supplemental work

We further consider it important to take a critical look at the technological foundation of TASW. By definition, TASW is accomplished with the help of technological tools. Studies on the topic either consider technology-use in general (e.g., Eichberg et al., 2021) or focus on specific communication media like smartphones (e.g., Derks et al., 2015). In their focal article, Hu et al. (2021) raise the concern that ICT concepts might just be a relabeling of nontechnological concepts that are already well researched. We argue that neither TASW nor its nontechnological equivalent, supplemental work, have already been researched sufficiently. However, we challenge the assumption that TASW is conceptually different from supplemental work. Technological devices are a frequently used means to engage in supplemental work. However, nontechnological forms of supplemental work (e.g., reading a printed paper or book, filing documents) are also possible. The question is whether TASW and supplemental work are distinct constructs that are differently associated with various antecedents and outcomes. In contrast to TASW, research on supplemental work (without a technological component) is rather scarce or even nonexistent. The definition of supplemental work resembles the one of TASW, except that supplemental work may include the use of technology, but it is not obligatory (Venkatesh & Vitalari, 1992). Researchers need to clarify whether it is worthwhile pursuing two paths of research (i.e., supplemental work and TASW). It might be more feasible to sharpen the existing definition of TASW, as described above, and extend it to nontechnological work. To make this decision, it would be helpful to conduct confirmatory factor analyses of respective measurement scales and to compare the antecedents and outcomes of TASW and supplemental work. In case there are differences, supplemental work and TASW need to persist as distinct constructs. If not, these two constructs could be merged.

Conclusion

The use of ICTs for work-related purposes after-hours can be expected to increase in the future. Therefore, researchers across disciplines need to adopt a clear definition of this phenomenon. On this basis, consistent measures could be developed and validated. A shared understanding allows for comparing and aggregating research results without the risk of comparing apples with oranges. In line with the excellent suggestions by Hu et al. (2021), we hope that our considerations encourage researchers to reflect on ICT use for work-related purposes after hours, to share their insights across disciplines, and to work on a consolidated understanding of (technology-assisted) supplemental work.

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