

How abduction can help produce timelier technology research

Commentary on

White, J., Ravid, D., Siderits, I., & Behrend, T. S. (in press). An Urgent Call for IO Psychologists to Produce Timelier Technology Research. *Industrial and Organizational Psychology*.

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The long time lag in I-O psychology technology research observed by White et al (2022) is in stark contrast to how other scientific fields progress with their research, such as in medicine and the biosciences, which especially during the COVID-19 pandemic, have produced life impacting research with an unexpected speed. There is a lot to be learned from approaches in these disciplines, including more systematic collaboration across institutions and research groups, sharing data and ideas. Beyond consideration of these practical strategies, however, I suggest that it is imperative to review our research process in I-O psychology and specifically the interplay of method and theory, if we want to produce timelier technology research.

White et al (2022) point to a central tension in our research approach that contributes to slowing down technology research in I-O psychology (p. 5): “Some scholars have noted that I-O psychology is distinct from other social science fields in its strong preference to develop theories before observing facts (Hambrick, 2007). The domain of technology is unique in that it experiences change at an exceptionally fast rate. For this reason, some I-O psychologists have argued that building unifying, longstanding theories of technology is quite challenging (Landers & Behrend, 2017).”

There is no doubt that we need theory in our field to organise our knowledge base, develop coherent explanations and better predictions (e.g. Suddaby, 2014; Hambrick, 2007). However, scholars have recently criticized the overemphasis on developing/building new theory (Hambrick, 2007: “too much of a good thing?”), which major journals in the field expect (Edwards, 2010). Papers typically employ a deductive or inductive approach, presenting the research process in a linear fashion (van der Ven, 2005; van der Maanen et al., 2007). This can be challenging for technology research, however, as we might observe a phenomenon that we cannot fully explain with existing theory and for which we do not have new theories (yet), especially given the rate of change in technology. For example,

remote/virtual work during the COVID-19 pandemic resulted in many employees reporting so-called *Zoom* fatigue (e.g. Bennet et al., 2021; Neshor Shoshan, & Wehrt, 2021; Shockley et al., 2021). Even though research on virtual meetings existed before, this phenomenon appeared to be new, as the frequency and intensity of these meetings increased against the background of a crisis situation.

As an alternative, or complementary approach, to deduction and induction, abduction can help drive the field forward in technology research. Abduction “begins with an unmet expectation and works backward to invent a plausible world or a theory that would make the surprise meaningful (van Maanen, Sorensen & Mitchell, 2007, p. 1140).” This unmet expectation is also framed in terms of an anomaly, “a novel or unexpected phenomenon that cannot be explained or is poorly understood using existing knowledge” (Saetre & Van De Ven, 2021, p. 684). Abductive reasoning involves paying attention to “hunches” - sudden insights into a problem or phenomenon; a not yet well-formulated thought process that leads to developing explanations and further investigation (Dane, 2020; Van de Ven, 2021). Abductive reasoning is therefore a generative and iterative processes of creating explanations, which are evaluated, to help understand the novel phenomenon (Saetre & Van de Ven, 2021). Abductive reasoning is often applied in medical research (without making this explicit) and has received growing attention in Management and Organizational Behaviour research (e.g. Bamberger, 2018). An abductive approach can facilitate systematic exploration of how a new technology related phenomenon, issue or toolkit impacts employees’ attitudes, well-being and performance.

Saetre and Van De Ven (2021) propose a model of abductive reasoning that involves several stages and an iterative process, starting with the observation of an anomaly (for example, *Zoom* fatigue: why do we feel more fatigued after virtual meetings compared to in-person meetings?). As a next step, the anomaly is confirmed: by collecting new information,

we diagnose its characteristics and the context (for example, do we consistently observe Zoom fatigue in employees who attend video conference calls? When does it occur? Do employees feel fatigued to the same extent when the camera is turned on or off or when they have many calls?). The next stage involves generating hunches (e.g. Do physical aspects such as spatial awareness account for it and/or the lack of human connection?) and in a final stage we evaluate our hunches (for example: to what extent do employees feel a lack of connection with co-workers and experience Zoom fatigue?) to then select the best plausible explanations.

The process of abductive reasoning lends itself to conducting research on technology by focusing on action, exploration, collaboration, dissemination, and creation as suggested by White et al. (2022). For example, action emphasizes studying new technologies as “they are created, and to imagine possible workplace applications, not wait until they are widely adopted” (White et al., 2022, p. 22). This implies being open to studying novel phenomena that - by definition - are not well-understood and require exploration. Going through cyclical stages abduction leads to theory creation and Saetre and Van De Ven (2021) suggest that this process should (and in practice often does) involve collective efforts which speaks to the necessity of having more collaboration and partnerships in technology research in I-O Psychology (White et al., 2022). Collectively, dissemination can take place much faster and more iteratively, at different stages of the abductive process, for example, in order to encourage input from other disciplines and practitioners to collect information on a new technology-driven phenomenon, functionality or toolkit and receive feedback on hunches in the idea generation phase. Abductive reasoning can be applied at different stages of Gartner’s Hype Cycle that White et al (2022) use as a framework for describing the life span of technologies. For example, when the development of a workplace tool is in early stages (innovation trigger stage: White et al., 2022).

Abduction can help us develop a scientific evidence base in I-O Psychology technology research through faster iterations and create new theory, without feeling stifled by it. For further reading and examples of abductive reasoning, please see references below (additional references not cited in the commentary are marked with *).

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