


COMMENTARY

## How abduction can help produce timelier technology research

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The long time lag in industrial-organizational (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 have produced life-changing research with an unexpected speed especially during the COVID-19 pandemic. 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:

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, long-standing theories of technology is quite challenging (Landers & Behrend, 2017). (p. X)

There is no doubt that we need theory in our field to organize our knowledge base and develop coherent explanations and better predictions (e.g., Hambrick, 2007; Suddaby, 2014). 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 and often present the research process in a linear fashion (e.g. Bamberger, 2018; Van de Ven & Poole, 2005; Van 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 et al. 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

**Table 1.** Additional Reading

Bamberger, P. A. (2019). On the replicability of abductive research in management and organizations: Internal replication and its alternatives. <i>Academy of Management Discoveries</i> , 5(2), 103–108. <a href="https://doi.org/10.5465/amd.2019.0121">https://doi.org/10.5465/amd.2019.0121</a>
Fisher, G., Mayer, K., & Morris, S. (2021). From the editors—Phenomenon-based theorizing. <i>Academy of Management Review</i> , 46(4), 631–639. <a href="https://doi.org/10.5465/amr.2021.0320">https://doi.org/10.5465/amr.2021.0320</a>
Golden-Biddle, K. (2020). Discovery as an abductive mechanism for reorienting habits within organizational change. <i>Academy of Management Journal</i> , 63(6), 1951–1975. <a href="https://doi.org/10.5465/amj.2017.1411">https://doi.org/10.5465/amj.2017.1411</a>
Kistruck, G. M., & Slade Shantz, A. (2021). Research on grand challenges: Adopting an abductive experimentation methodology. <i>Organization Studies</i> , 1–17. <a href="https://doi.org/10.1177/01708406211044886">https://doi.org/10.1177/01708406211044886</a>
Krakowski, S., Luger, J., & Raisch, S. (2022). Artificial intelligence and the changing sources of competitive advantage. <i>Strategic Management Journal</i> . <a href="https://doi.org/10.1002/smj.3387">https://doi.org/10.1002/smj.3387</a>
Miller, C. C., & Bamberger, P. (2016). Exploring emergent and poorly understood phenomena in the strangest of places: The footprint of discovery in replications, meta-analyses, and null findings. <i>Academy of Management Discoveries</i> , 2(4), 313–319. <a href="https://doi.org/10.5465/amd.2016.0115">https://doi.org/10.5465/amd.2016.0115</a>
Mueller, J. (2018). Finding new kinds of needles in haystacks: Experimentation in the course of abduction. <i>Academy of Management Discoveries</i> , 4(2), 103–108. <a href="https://doi.org/10.5465/amd.2018.0081">https://doi.org/10.5465/amd.2018.0081</a>

existing knowledge” (Sætre & 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; Sætre & Van de Ven, 2021; Van de Ven, 2007). Abductive reasoning is therefore a generative and iterative process of creating explanations, which are evaluated, to help understand the novel phenomenon (Sætre & 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 behavior research (e.g., Bamberger, 2018). An abductive approach can facilitate systematic exploration of how a new technology-related phenomenon, issue, or toolkit affects employees’ attitudes, well-being, and performance.

Sætre 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 with 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 (e.g., to what extent do employees feel a lack of connection with coworkers 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. X). This implies being open to studying novel phenomena that, by definition, are not well understood and require exploration. Going through cyclical stages of abduction leads to theory creation, and Sætre and Van De Ven (2021) suggest that this process should (and in practice often does) involve collective efforts, which addresses 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, 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 the references listed in Table 1.

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