

Increasing impact for sustainable development: Environmental psychology in transformative research

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In environmental psychology, we observe a lively debate – one that intensifies and subsides since decades – on the importance of theory versus impact (Lange et al., 2021; van Valkengoed et al., 2021; Stern, 2000). Although environmental psychology is an applied science in itself, at times environmental psychologists lose a sense of the bigger picture of the complex interdependence of entities in the world. We identify three pain points that we would like to address: (1) In recent years, calls for a stronger impact orientation, an inclusion of contextual factors, and a consideration of different actor groups in studying pro-environmental behavior increased again (Bögel et al., 2022; Lange et al., 2021; Nielsen et al., 2021). Critique arose that the current strong focus on theories in environmental psychological research may render our findings less applicable

or even irrelevant to other disciplines and sectors (Nielsen et al., 2021). Indeed, to date, it remains often unclear how to actually change the predictors that we find for certain behaviors and how to actively contribute to innovations. (2) There seems to be a stronger focus on environmental impact of existing behavior alternatives (e.g., how to convince people to use the bike instead of the car) than on systemic change, which we believe is needed to achieve long-term impact. (3) Research from environmental psychology still addresses primarily consumers or citizens – or psychology students – as distinct entities.

First, to pursue more impact orientation within environmental psychology, we argue that an overarching framework well suited is transformation research (Wiek & Lang, 2016). Transformation research comprises two strands (Wittmayer & Hölscher, 2017): (a) descriptive analytical research, which describes and analyses sustainability related challenges and solutions, (b) transformative research, which involves societal actors (e.g., companies, municipalities) in the research process and actively supports societal change processes. Especially transformative approaches provide promising elements in terms of impact orientation. However, thus far, psychological theories and methods, allowing a deeper understanding of people's behavior, motivations, and attitudes, are hardly applied in transformation research (Bögel & Upham, 2018).

Current contributions to the discussion, among others, point to ontological and epistemological differences between psychology and transformation research as a reason for the scarce integration of both fields (Wullenkord & Hamann, 2021). At the same time, recent discussion papers (e.g., Hanss, 2021) highlight possibilities and advantages of a stronger integration of both lines of research.

Second, systemic approaches might facilitate a more holistic approach to behavior change. For instance, the idea of system innovations (Kleihauer & Führ, 2023) aims at integrating all relevant stakeholders to establish long-lasting and far-reaching change. System innovations are interplays of technical, social, and organizational innovations embedded in a regulatory framework (Elzen et al., 2004). As such, system innovations exceed the sum of single innovations towards sustainable development. For instance, an effective transformation of mobility systems (e.g., local transport systems) to reduce CO₂-emissions will not succeed, if only focusing on individual behaviors (e.g., citizens using an innovative vehicle). Instead, a system innovations perspective would consider relevant stakeholders and context factors, such as cycling infrastructure, availability of public transport, gasoline prizes, parking space regulations, an established culture of going by bike or car, and many more. Here, a systemic approach integrating technical as well as organizational innovations can benefit from scientific evidence derived from environmental psychological studies (e.g., Müller et al., 2024; Theis et al., 2021). At the same time, environmental psychological methodologies can be advanced through adaptation to the requirements of transformative research problems.

To develop impulses for system innovations in those lines of research, a number of analytical instruments are commonly applied. Among them are systems analyses and actor analyses to deter-

mine, which actors are relevant for a certain change process as well as the more complex *Interdisciplinary Institutional Analysis* proposed by Bizer and Führ (2015). One popular methodology is the development of a so-called *Theory of Change* (Oberlack et al., 2019; Deutsch et al., 2021; Schenten & Rehn, 2021a, 2021b). Usually, a transdisciplinary team of researchers and relevant stakeholders create a conceptual long-term strategy comprising specific steps (outputs), and results (outcomes) that eventually should lead to a specific systemic goal (impact) (Claus and Belcher, 2020), e.g., climate neutral urban transport. To develop such a theory of change, a goal is defined for a certain sector (e.g., using scenario processes such as the approach coined by Geschka, 2006) and backcasting will reveal which elements have to change in order to reach that goal. Once key actors are identified, it will be investigated which factors influence key actor groups and their behaviors, i.e., incentives and constraints. As the systems approach stems from ecosystem research (Geels, 2004), it requires defined system boundaries (e.g., transportation in Germany or in a specific region). This facilitates the consideration of contextual factors that may be relevant and to include them in empirical investigations. Insights on behavior-influencing factors from such empirical studies may be specific to the system at hand. However, reviewing these studies across systems may allow for identifying commonalities. These can inform the further development of behavior theories with high applicability to impactful behaviors. This approach considers a variety of actors, it involves complex interrelations between individuals, infrastructure, regulations, and it acknowledges contextual factors (e.g., time, societal developments) at a large scale. Across these different steps of analysis, environmental psychologists can contribute their expertise in terms of e.g., behavioral change, motivation, and identity in relation to environmental issues. Importantly, such work requires openness for broadening one's own disciplinary scope, translation capabil-

ity, and ‘disciplinary modesty’: (environmental) psychologists alone cannot save the planet. We desperately need inter- and transdisciplinary collaboration (Freeth & Caniglia, 2019; Rau et al., 2018).

Third, we argue that psychology should not limit itself to consumers or citizens, when it can also (a) contribute on a level of interrelated groups (e.g., social psychology, organizational psychology; cf. Upham et al., 2020), and (b) address individuals of other target groups in relation to their role in a larger social context (e.g., mayors, CEOs; IPCC, 2022). Therefore, we suggest reconsidering action theories and the role of individuals: acknowledge their power without shifting the entire responsibility for required behavioral change upon the individual – thus neglecting important roles of economy, industries, and politics.

To conclude, while there already are theories from environmental psychology that acknowledge contextual factors (cf. van Valkengoed et al., 2021), systemic analyses in transformative research informed by environmental psychology can integrate both contextual and psychological factors. Furthermore, such lines of research can facilitate the development of explanatory models for high impact behaviors and it can ensure the applicability of findings in real-life contexts. (Environmental) psychologists can contribute to transformative research not only with their methodological expertise but on a theoretical and organizational level, as well (e.g., Stokols et al., 2008). In sum, we believe that such strong integration of transformative research and environmental psychology can substantially advance research and practical solutions for sustainable development.

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