




Defining human critical determinants for sustainability: asking psychologists could help

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Abstract

Why are sustainability goals so hard to achieve? In a recent Note & Comment, Santos et al. (Sustain Sci 19:1097–1105, 2024) call for an examination of ‘human critical determinants’ as barriers to the achievement of sustainability goals. We fully support this call. However, we argue that the vital role played by ‘inner worlds’ cannot be understood if abstracted away from the context in which cognition is situated., i.e., it is not just ‘inner worlds’ that must be accounted for, but also their place within their broader situational and social contexts. We recommend future research in sustainability science consider the evidence and frameworks accumulated by psychologists on what humans, as socially and culturally situated organisms, need to thrive, and we explain why this interdisciplinarity could be transformative towards achieving the goals of sustainability science.

Keywords Sustainability goals · Human critical determinants of sustainability · Psychology · Human flourishing

Introduction

While there is now a clear consensus that the sustainable development goals (SDGs) can only be achieved if they are accepted by those responsible for applying and complying with them, how to achieve this acceptance, both in terms of content (what will be changed) and implementation (how change will be driven), remains unclear. At a minimum, how the SDGs are implemented should align with the needs and aspirations of those they affect. In this vein, calls have been made to focus on the human system (Komiyama and Takeuchi 2006) and more specifically on our ‘inner worlds’ (as opposed to external events and social structures—see Ives et al. 2020). In a recent Note & Comment published in this journal (2024), Santos and colleagues respond to these

calls by proposing the concept of ‘human critical determinants’ (HCDs), which they define as ‘traits’ that, while critical (i.e., ‘decisive for reaching sustainability’), can also serve as human sustainability boundaries (HSBs). Among these include the dopaminergic reward system (whereby our brains, in seeking pleasure within the context of a market-based society, risk surpassing sustainable limits of consumption), temporal discounting (whereby assigning a greater value to immediate over delayed rewards may devalue long-term actions required to address climate change), and self-interest and utility (whereby, maximising our own individual utility may come at a expense of a collective good).

As psychologists committed to transformative knowledge in sustainability sciences, we are enthusiastic about this call, and we agree wholeheartedly that a greater consideration of the ‘human sphere’ is vital to achieve sustainability goals. However, we feel the field of sustainability science could benefit from insights from an expert community as it seeks to define these so-called ‘human critical determinants’. The human sphere (including our attitudes and actions towards sustainability goals) is fundamentally shaped by cognitive and psychological mechanisms studied by dedicated scientists. We believe this strong knowledge base can contribute not only in identifying potential barriers, but also proposing solutions to achieve the SDGs.

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Psychological insights into human critical determinants

What can we learn from psychologists about ‘human critical determinants’? We can use insights from the psychological and behavioural sciences to identify potential limitations in the framework presented by Santos et al. (2024).

Limitations

First, a psychological approach would suggest that the proposed determinants may not be in and of themselves barriers given their highly contextually dependent nature. This matters because the same mechanism in different contexts could yield vastly different outcomes with respect to sustainability goals. While the dopaminergic reward system (DRS) is not fully understood, there is evidence to suggest that not only is it not infinite (i.e., it does not operate under the principle of ‘unlimited growth’—see Salamone and Correa 2024), dopaminergic rewards can equally result from sustainability-enhancing behaviours, (e.g., cooperation and punishment of free-riders, Sapolsky 2017, p. 66). Similarly, intertemporal choice is particularly susceptible to contextual framing effects (Lempert and Phelps 2016). Indeed socio-ecological accounts of decision-making find present oriented behaviour may in fact be an adaptive response to environments over which individuals have little control (Pepper and Nettle 2017; Sheehy-Skeffington and Rea 2017). This, in turn, implies that solutions aimed at shifting individual-level mindsets while failing to consider the contextual drivers of those mindsets risk being neither effective nor enduring. Finally, self-interest is fundamentally shaped by contextually calibrated values and norms (e.g., Schwartz and Cieciuch 2022). While values may prioritise individual needs, goals, and utility (i.e., independent values and norms), they may equally prioritise collective and relational needs, goals, and welfare (i.e., interdependent values and norms) (Thomas and Markus 2023). As such what constitutes self-interest can include prosocial values such as care, reputation, and citizenship in broader ‘economies of worth’ (Boltanski and Thévenot 2006). Self-interest can lead to prosocial sustainable behaviours, especially as these behaviours may be motivated by both the calculated self-interest of anticipated reciprocity and by the hedonistic psychological benefit of helping others. Borrowing Simon’s metaphor, Todd and Gigerenzer (2007) summarise, describing the mind and the world as fitting together like the blades of a pair of scissors; neither the cognitive nor the contextual blade alone can explain how the scissors cut. Or, in the words of Peters (1987), ‘one has to understand the socially and politically embedded commons to explain the individual calculus’.

Second, the solutions proposed by Santos et al. (2024) point primarily to ‘personal commitments’ (e.g., cultivating self-control, long termism, and sufficiency over self-interest). Recent work in psychological science has pointed to the risks of this kind of an ontological individualism that conflates the unit of analysis with the unit of action (Brownstein et al. 2022; Chater and Loewenstein 2023). Indeed this literature suggests that there is little evidence that individual-level behaviour change is effective in achieving sustainability goals, and that the ‘responsibilization’ of individuals risks shifting attention away from more meaningful structural drivers of climate crisis (Hagmann et al. 2023). While we agree that a better understanding of ‘inner lives’ is important, we suggest this understanding might be most effectively used to inform where at the institutional level change should be targeted, rather than used to implicate individuals as the primary responsible actors of change.

This is not to say that individual-level action should not be considered—indeed we acknowledge that institutions comprise individuals, and that institutional change requires the action of individuals. That said, where individual-level change is implicated, we suggest (1) thoughtfully considering *who* should change (identifying who is best positioned to enact change, what role they are best able to play, and related implications for social justice) (Heindl and Kanschik 2016; Nielsen et al. 2018; Brownstein et al. 2022; Gurtner and Moser 2024), and (2) targeting behaviours that directly impact systems (e.g., voting behaviour for policies that limit fossil fuel usage, rather than individual-level fossil fuel consumption—see Sabherwal and O’Dell 2024).

Alternative frameworks

We can also better inform sustainability science’s incorporation of the human sphere by extending the work of Santos et al. (2024) to integrate existing frameworks from the psychological sciences. While the authors’ ‘inductive evolutionary approach’ produced six human critical determinants, it is not immediately evident that these constructs are the only or indeed the most critical factors to consider. Indeed there exist many needs-based theories of human motivation and behaviour, e.g., Gough & Doyal’s Theory of Human Needs (Doyal and Gough 1984) and Max-Neef’s Human Scale Development (Max-Neef 1991), that have been applied in the area of sustainability (see Gough 2015; Koch et al. 2017; Guillen-Royo 2020; Khan et al. 2023; Lee et al. 2023). Other key motivational elements of human behaviour could include the need to belong (i.e., ‘form[ing] and maintain[ing] strong, [and] stable interpersonal relationships—Leary and Baumeister 1995), the need to maintain self-esteem, the need for self-efficacy (Vignoles et al. 2006).

There is a plausible argument for why these needs may be consequential for sustainability boundaries. For example, the

human propensity for belonging in close groups may influence how we trust and think of others outside our local community or network (Dunbar 2008). This may, in turn, shape climate-related thought, e.g., climate denialism by affecting how we process information counter to our in-group's belief, and action, e.g., demotivating action on behalf of distant others (McDonald 2018). However, it is equally plausible that these motivational factors are neutral and orthogonal to so-called 'sustainability boundaries'. One could belong and have self-esteem and self-efficacy without compromising sustainable development, e.g., by exploring ways in which needs can be satisfied at low energy and resource use (Brand-Correa and Steinberger 2017; Vogel et al. 2021). Similarly, ties with close others could spur individuals towards more sustainable behaviours if those close others model positive climate action (akin to Peattie and Samuel (2018)'s place-based activism). The problem is again not the existence of these needs, but rather how society is collectively organised to sustainably satisfy them.

Perhaps more practically, Basso and Krpan (2023)'s WISER framework organises the SDGs around five categories pulled from the insights of behavioural science: wellbeing, inclusivity, sufficiency, empowerment, and resilience. The authors aim to balance individual benefits (wellbeing) with societal (inclusivity) and environmental (sufficiency) objectives, involving local actors where possible (empowerment) to nurture long-run behavioural change (resilience). This framework, we think, gets closer to achieving the balance between the 'blades' of cognition and context. We believe there is a role for psychologists to play in helping to achieve this balance.

Making room for psychology within sustainability science

Multidisciplinarity is difficult. Working across disciplines poses undeniable challenges, for example, in communicating effectively or in accessing funding (Wullenkord and Hamann 2021; Gurtner and Moser 2024).

But we urge the sustainability sciences to make room for psychologists, broadly defined as scholars employing an empirical approach to the study of the mind, its structure and fundamental processes. This may not currently be the case. A suggestive set of searches (as a preliminary and rough evaluation) of this journal's database on 2 July 2024 using the keyword '*psychology' returns 155 results (out of 1504 possible results—a mere ~10%). '*Behavioral science' gives 124 results (~8%). The keyword '*cognition' leads to 60 results (~4%). To ignore psychology (and related disciplines: notably the behavioral and cognitive sciences) is to risk using outdated narratives about human nature, to draw erroneous conclusions about our 'critical

determinants', and to promote ineffective policy-making. For example, Ives et al. (2020)'s quote Gustave Speth as saying that top environmental problems are 'selfishness, greed and apathy,' rather than 'biodiversity loss, ecosystem collapse, and climate change'. This decontextualized and Hobbesian view of human nature is extremely simplistic, probably wrong, and also hopeless. Human social behaviour is complex, context-dependent and multifaceted. Humans as a species are highly cooperative when given the chance (Tomasello 2014). They can be altruistic, even at the risk of death (Drury 2018). They can mobilise on a large scale to challenge the status quo (Van Zomeren and Iyer 2009; Shuman et al. 2023). Recognizing this is not just about optimism. It is also more accurate, given what we know about human psychology and behaviour. Overall, the question is not whether 'selfishness, greed and apathy' exist, but rather to identify the situations and conditions that make such behaviours possible. This is the particular task of social and personality psychologists (Ross and Nisbett 2011).

Conclusion

One could start by listening to what psychologists, as some of the experts on the human mind and behaviour (along with economists, sociologists, and anthropologists), would have to say. Undoubtedly further psychological research is needed—with special attention paid to producing findings that generalise past WEIRD (Western, Educated, Industrialised, Rich, Democratic) samples (Rad et al. 2018; Henrich 2020), and with greater consideration paid to the role dominant economic systems may play in shaping decision-making and behaviour (e.g., how capitalist economic systems may reinforce neoliberal values such as competition and growth-orientation) (Adams et al. 2019). However, sustainability science could, we believe, readily benefit from existing psychological insights. Sustainability science should work with, and make room for, psychologists. This should start, from our side, by acknowledging the rich insights psychology has benefited from other disciplines, notably sociology in helping to define which, how and why context matters (Ross and Nisbett 2011). This should also continue by joining efforts in sustainability sciences (together with the socioecological systems approach) to understand how minds both shape and are shaped by complex adaptive systems they dwell in (Schill et al. 2019).

Declarations

Conflict of interest The authors declare no conflicts of interest.

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