

Missing the forest for the trees: Considerations for the use of nature in consumer spaces

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Funding information

National Science Foundation, Grant/Award Number: S&CC-1952050

Abstract

In the primary article of this research dialogue (*Journal of Consumer Psychology*, 2025), we outlined the social, cognitive, and affective benefits of interacting with nature and briefly discussed the relevance of this work to consumer psychology. In their commentary to our primary article, Haws and Yamim approached nature purely within the marketplace setting and discussed how consumer exposure to natural elements may activate semantic networks that will predictably influence consumer behavior. We contextualized the current response to this commentary under the umbrella of sustainability and sustainable consumer decisions. First, we clarify attention restoration theory, stress reduction theory, and assumptions regarding the preference for nature. Second, we discuss definitions of nature from an interdisciplinary perspective. Building upon this, we speak to the potential semantic activations suggested by Haws and Yamim in response to nature exposure, probing potential individual and group-level variations and the relevance of these differences in the consumer space. Finally, we discuss potential conflicts of utilizing nature in the marketplace embedded within the perspective of sustainability goals. In this sense, we question the consequences and ethical considerations of employing nature as a mechanism to influence consumer behavior.

KEYWORDS

affect and emotion, attention/perception, cognition, ethics and morality

INTRODUCTION

In our original article (Rim et al., 2025), we synthesized theory for why interactions with nature can lead to psychological benefits to humans and discussed the social, cognitive, and affective benefits that can be obtained after interactions with nature. We then discussed the relevance of these results to the field of consumer psychology. The thoughtful commentary by Haws and Yamim (2025) further elaborated on how our primary research may be related to concepts within consumer psychology. Additionally, the Haws and Yamim commentary provoked further thought about what we

consider to be the “elephant in the room,” which is the unification of sustainability on the one hand, and the ethics of nature-based influence in consumer spaces on the other hand.

In their commentary “Seeing the Forest through the Trees and on Tees: Nature and Consumer Decision Making,” Haws and Yamim approach the effect of nature on human behavior exclusively within a marketplace setting (Haws & Yamim, 2025). Here the authors define nature-consumption interactions at four levels: (1) real-outdoor, (2) real-indoor, (3) virtual-outdoor, and (4) virtual-indoor and how human exposure across these four levels may influence consumer goals via

Accepted by David Wooten, Editor; Associate Editor, Kathleen Vohs

Target Article: The affective, cognitive, and social benefits of interacting with nature by Nakwon Rim, Kathryn E. Schertz, Dr. Marc G. Berman. doi: [10.1002/jcpy.1456](https://doi.org/10.1002/jcpy.1456). Commentary I: Nature and consumer decision-making by Kelly Haws and Amanda Yamim. doi: [10.1002/jcpy.1457](https://doi.org/10.1002/jcpy.1457).

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semantic activations. Furthermore, they provide examples for these associations across a marketing mix of elements and outline future research questions in this vein. Haws and Yamim draw attention to an important theoretical framework relating semantic associations and goal activation to consumer behavior in response to natural elements in the marketplace. Here, we build upon a few of their own identified open questions and suggest some potential problems with this theoretical approach. In addition, we identify potential contradictions relating to the origins and potential conflicts of goals.

As an important clarification, while Haws and Yamim mentioned that attention restoration theory (ART; Kaplan, 1995; Kaplan & Berman, 2010) includes a component of stress reduction, stress-reducing effects of nature are theoretically distinct. Those effects are based on stress reduction theory (SRT; Ulrich et al., 1991) and not ART, which is a cognitive theory for why interacting with nature is beneficial by replenishing directed attention. Additionally, the authors conclude that humans harbor an innate attraction to nature. In opposition to this claim, work from our laboratory shows that children do not prefer nature to urban environments (Meidenbauer et al., 2019). We think it is important to point out these clarifications. For the rest of this response, we focus on the theory of semantics and goal activation.

We contextualize our response to this commentary under the umbrella of sustainability and sustainable consumer decisions. In this response, we discuss definitions of nature in relation to culture and in the consumer setting. In addition, we speak to semantic activations in response to nature exposure, probing potential individual and group-level variations and the relevance of these differences in the consumer space. Finally, we approach potential conflicts of utilizing nature in the marketplace embedded within the perspective of sustainability goals. Ultimately, our discussion is ethical in nature, and albeit incomplete, will leave the readers with perhaps more questions than answers.

DEFINITIONS OF NATURE

Prior to any discussion on the semantic schematic of nature prompted by Haws and Yamim, we first appreciate the considerable ambiguity in how nature may be defined and hope to clarify these difficulties in defining nature for the current context. A working definition for nature to be deployed in the fields of psychology and neuroscience remains unresolved. The difficulty in operationalizing a particular definition of nature for psychology is likely a result of: (1) genuine divergence in individual philosophies relating to what is “natural” and (2) the need for patency of definitions within psychology where a constrained definition may lead to

difficulties in approaching interdisciplinary perspectives. We clarify how nature is defined in psychological research and discuss difficulties in formally defining nature from the philosophical, cultural, and interdisciplinary perspective.

Despite the existence of a philosophical schism (i.e., human activity inclusive or exclusive) in what defines nature, there is relatively high concordance in what participants identify as natural across a variety of contexts (Berman et al., 2014; Ibarra et al., 2017; Overvliet & Soto-Faraco, 2011). This suggests that there are both low-level (e.g., curved edges) and high-level (e.g., presence of trees) features of environments that lead to high agreement among people in what is identified as natural. For this reason, researchers often allow participants to define nature or even how natural any given stimulus is. Certainly, this participant-derived approach to defining nature is one experimental solution to ambiguous definitions of nature. However, it does not account for cross-cultural differences in defining nature. Additionally, the range of information about what is perceived as natural may be lost in averaging across participants. Nevertheless, the high concordance of features that define what is natural suggests that natural elements are those that are both qualitatively and quantitatively distinct from what humans have built. Within the ether of this definition, the four contexts of nature exposure outlined by Haws and Yamim emerge.

Defining nature as elements that are distinct from human activity is contextually appropriate for the current dialogue. Yet, it is important to underscore that a singular, trans-disciplinary, consensus definition of nature would constrain interdisciplinary investigations relating nature exposure to human behavior and experience. This is because distinct disciplines differentially define nature. For example, “nature versus nurture” is a colloquial question in developmental psychology, biology, and neuroscience. In this question, nature refers to innate genetic qualities of a person, while nurture refers to environmental features external to the individual. This is in clear contrast to the definition of nature within environmental psychology where nature refers to elements outside of the individual. As another example, consider a house with a dog and a vase of flowers, a cultivated Japanese garden in the city of Chicago, and the unmanaged Alaskan wilderness. These environments all contain plants and animals, yet are clearly not equivalent, and do not obviously satisfy a single definition of nature. Importantly, these differences extend beyond the identification of nature and harbor implications for human cognition and behavior. This leads to the open definition of nature in philosophy, where the question of what is natural may reasonably consider humans and their activity in that definition since humans are most certainly a part of nature. Thus, it is self-evident that there are practical

difficulties to constraining the definition of nature in an interdisciplinary setting.

NATURE IN CONFLICT OR NATURE IN CONTEXT?

In examining nature as discussed across the ongoing research dialogue, we identify the emergence of a context dependency that confuses the resolution of a definition of nature. For example, take the finding that including natural elements in advertising increases consumers' brand loyalty and purchase intentions (Hartmann et al., 2013). We compare this finding to established findings suggesting that nature exposure leads to altruism, selflessness, and reduced material engagement (Guéguen & Stefan, 2016; Joye et al., 2020; Meidenbauer et al., 2024). To underscore the potential conflict, an individual's perception of a natural element is filtered through an integrated context (Auckland et al., 2007). Put simply, a tree on a soap bottle is likely psychologically distinct from a tree in a forest. In agreement with some research questions outlined by Haws and Yamim, we suggest that natural elements will have a context-dependent influence on consumer behavior.

Beyond the difficulties in understanding the effects of nature across the consumptive context, it is important to consider the contextual utility of approaching a regulated, constrained definition. To this end, we discuss the potential ethical concerns with leveraging a loose definition of nature to influence consumer behavior, particularly in markets where engagement with products may directly influence individual health. The most pertinent example of this is found in Haws and Yamim's discussion of "natural" labels on food. Even though this signal on packaged goods significantly influences consumer perceptions of the health, purity, or sustainability of foodstuffs, there is not, at present, sufficient regulation to ensure these claims are met (Skubisz, 2017). Current evidence suggests that even though "natural" labels on foods are perceived as salutogenic, consumption of these goods does not identifiably improve human health (Dall'Asta et al., 2020; Kaur et al., 2016, 2017). Thus, constraining the definition of nature for foodstuffs through regulation will benefit consumers by enhancing consumers' ability to make informed decisions about the overt features of the product they are consuming. Here, a constrained definition of nature has the potential to significantly influence individual health. In turn, difficulties in defining what is natural ought not to deter consumer applied settings and its researchers from constraining this definition in a context-specific manner.

In all, we conclude that the definition of nature is dynamic and context dependent. However, given that deploying "natural" elements in a consumer context can potentially influence human behavior, it is important to

responsibly consider the definition of nature in the context of human health and consumption. In all, this ambiguity, individuality, and context dependency in defining nature leads to our discussion of varied semantic activation in response to natural elements.

UNIQUE TO THE INDIVIDUAL? SEMANTIC ACTIVATIONS OF NATURE AND CONSUMER BEHAVIOR

The central thesis employed by Haws and Yamim relates to how natural elements may activate a specific set of semantic associations that influence consumer behavior. In this section, we discuss two main responses to this idea. First, semantic associations may vary widely at the individual and group level, and as the lack of a consensus definition of nature insinuates, this effect likely extends to semantic associations of natural elements. Furthermore, it is not clear the extent to which a semantic activation of any kind will influence consumer behavior in any tractable, unified manner.

To begin, there is a clear influence of individual and cultural contexts on a semantic network. Early conceptions of a semantic map or field define this concept as the "sum total of thoughts, memories, emotions, needs, and motivations associated with a particular place" that are "potentially amenable to some form of consensual organization along a certain number of dimensions." (Desbarats, 1976). Supporting this conception, semantic priming and the processing of semantic relationships is found to vary with age, cultural background, and sex (Gutchess et al., 2010; Madden et al., 1993; Wirth et al., 2007; Wulff et al., 2022). While these differences in semantic association, priming, and activation have not been tested in relation to nature, specifically, the associations outlined by Haws and Yamim should be empirically validated across these demographic contexts prior to acceptance of their proposed theory. Importantly, it should also be investigated how associations with nature may vary within a cultural context.

Relating to the marketplace, the context of individual exposure to natural elements as discretized by Haws and Yamim (real-outdoor, real-indoor, virtual-outdoor, and virtual-indoor) may have variable influence on connectedness to nature and subsequent semantic associations. To test this, researchers may use classical reaction time techniques for probing semantic associations in response to different types of stimuli within varied contexts (Meyer & Schvaneveldt, 1976). In summary, while there are certainly commonalities in semantic associations (Nelson et al., 2004), semantic associations are also highly variable. This likely extends to associations to nature, particularly as natural elements are deployed with varied media and densities and may result in variable consumer behaviors to targeted semantic activations.

Moreover, it is not well understood how semantic priming will lead to the activation of a trait, thought, or behavior, or the time course of this activation (Sela & Shiv, 2009). While this lack of consensus potentially undermines goal-activation theory broadly, it is particularly challenging in the context of the potential semantic-driven goal activation of natural elements in the consumptive context. This problem can be observed from several perspectives. First, Haws and Yamim cite the goal-discrepancy theory of nature exposure from Joye and colleagues (Joye et al., 2024) as a justification for proposing a semantic-goal activation theory of nature specifically. However, in addition to the current lack of operationalization of the new theory from Joye, the theory suggests that exposure to natural elements leads to an extinguished goal discrepancy, which would ultimately reduce the enactment of any consumptive behavior. This point underscores a paradox and motivates many tracks of inquiry proposed by Haws and Yamim insofar as nature exposure/immersion is shown to reduce materialism, increase altruism, and reduce self-enhancing behavior (Guéguen & Stefan, 2016; Joye et al., 2020; Schertz et al., 2023). Thus, how the empirically determined effects of nature on human cognition, affect, and behavior interact with the consumer space remains to be sufficiently explored.

Furthermore, one's perceived connectedness to nature may influence the effects of nature (Ives et al., 2018), and we suggest that this likely extends to the semantic associations activated following an encounter with nature in the marketplace. In particular, the network of semantic associations to nature is likely variable based on perceived connectedness to nature. Thus, it is possible that nature exposure prior to or in a consumer setting may influence purchase intent or sustainable purchases on a highly individual or cultural basis. Accordingly, sustainable consumer behaviors via exposure to natural elements may not be a tractable target outcome. The effect of individual connectedness to nature on semantic associations could be investigated with classical reaction time methods, including self-reported connectedness to nature as an independent variable (Meyer & Schvaneveldt, 1976). Beyond the challenges of uniformly influencing consumer decision-making and driving sustainable consumer behavior in the marketplace may not represent the goals of companies, marketers, individuals, or even climate activists, in parallel.

CONFLICTING GOALS AND THE USE OF NATURE

In the commentary written by Haws and Yamim, the discussion of semantic associations to nature is ultimately approached in relation to consumer behavior and goals, with a particular focus on sustainability. Integrating these perspectives through our own lens, we identify an

implicit paradox in deploying nature as a tool for driving (sustainable) consumer behavior. This identified paradox motivates the following proposal: If nature, by any definition, is to be employed in the marketplace and studied empirically based on its ability to influence consumer behavior, both the impetus and outcome of these investigations and translations ought to be thoroughly scrutinized from the perspective of ethics, values, and morals.

As alluded to earlier in the response, we identified a paradox related to using nature in the marketplace in that nature exposure is shown to reduce materialism and consumptive behaviors. Thus, wielding nature to drive consumption of any kind is ostensibly in conflict with these prior findings. Of course, evidence suggests that including natural elements in the marketplace can increase positive affect, which may translate into brand attitudes and purchase intentions (Brenngman et al., 2012; Hartmann et al., 2013). Also, if nature is more pleasant, it may cause people to stay longer in stores and other consumer venues (Brenngman et al., 2012). However, it is unclear to what extent natural elements in the consumer space will truly lead to more consumption of sustainable or eco-friendly consumer-based goods, for example. In fact, it has been shown that eco-scores on packages increase perceptions of sustainability to a greater extent than they influence purchase intentions (Taillie et al., 2024). To experimentally resolve this aspect of the paradox, studies would have to investigate actual purchases in response to exposure to nature-based adverts, packaging, shopping centers, and online interfaces. This is becoming more feasible in the present research environment with, for example, open e-commerce datasets (Berke et al., 2024).

Building upon this paradox, while there is evidence to suggest that using natural elements in the marketplace can increase sustainable choices, the target of sustainability is likely better achieved through means outside of the consumptive marketplace. For example, Ives et al. (2018) set forth a conceptual framework for improving sustainability via connectedness to nature. Their primary thesis states that philosophical and emotional connections with nature will exert strong leverage in shifting societal values and sustainability practices. The strength of these connection types is opposed to that of material (e.g., consumption of goods from nature) and experiential (e.g., spending the day outside) connections with nature, which are likely to exert relatively little torque in shifting society toward sustainability. Thus, even though material exposure to natural elements in the marketplace may shift consumer behavior toward more sustainably labeled decisions, the impact of these encounters on true sustainability is potentially insignificant.

Importantly, the relevance of the perceived paradox of deploying nature to the target of consumer psychology is highly dependent on the goals of this work or the location where it is translated. Put differently, while

sustainability “naturally” arises in the commentary as well as in our original article, environmental sustainability cannot be assumed to be a primary goal of a company, the marketplace, or of the economy. In fact, failure to either acknowledge this ambiguity or speak to the direction of the applications of the proposed research questions in this dialogue may lead to imprecise or illogical theoretical claims or to deployments of natural elements in the marketplace without any improvements in, or potentially with direct harms to, genuine sustainability.

Surely, the targets of the potential application of nature-based consumer psychology must be addressed. For example, Haws and Yamim build upon existing work (Vanhatalo et al., 2022) and discuss how including plants in a fast-food restaurant may reduce the consumption of unhealthy foodstuffs. While theoretically interesting, the origin or incentive of such an action is particularly unclear, given a fast-food restaurant is explicitly motivated to promote sales of fast food. Furthermore, Haws and Yamim cite a series of non-trivial examples of consumer goals ranging from signaling “outdoorsiness,” to harboring deep connectedness to nature. These few examples underscore how research in this field may be antithetical to the goals of marketers or companies as compared to individual consumers.

Beyond the ambiguity in target goal fulfillment (i.e., the individual vs the company/marketplace), “greenwashing” provides a strong example where nature in the marketplace is deployed for the goal of improved consumer perception or loyalty without any improvements in sustainable practices. Greenwashing is effectively the combination of firm espousal of environmental friendliness or sustainability without measurable adherence to pro-environmental actions (Delmas & Burbano, 2011). Large energy companies, the tobacco industry, and commercial plastic firms have been particularly scrutinized for this classic form of greenwashing (de Freitas Netto et al., 2020; Moran et al., 2024; Nazareth et al., 2019). An important subtype of greenwashing, however, refers to including natural elements in advertising or marketing to increase perceptions of eco-friendliness (Parguel et al., 2015). Many of the proposals in Haws and Yamim's article run the risk of this fate in the marketplace. Unfortunately, greenwashing is a particularly pernicious aspect of including nature in consumer spaces given that consumer demand for more sustainable products and practices may be a primary driver of this firm-level behavior with the goal of increasing brand loyalty (Delmas & Burbano, 2011). In total, we perceive such outcomes of using nature in marketing to be antithetical to the goals of improving the health of an individual or improving the health of the environment.

There is an argument to be made that the purpose of scientific inquiry is to build knowledge and understanding without the influence of potential application. In opposition to this, given our understanding of the profound

benefits of exposure to nature and biodiversity for human health and well-being, outlined in our primary article, we the authors do not approach this dialogue without the bias of valuing sustainability and conservation. We may even go so far as to pose the question of whether it is ethical to use nature as a psycho-manipulative tool in the marketplace. That said, we acknowledge that the genuine pursuit of pro-environmental outcomes may not be shared across the marketplace. Thus, to most effectively answer the research questions outlined by Haws and Yamim, scientists should clarify the target of a goal-based theoretical approach. In other words, for the consistency of any theoretical claim and its translation within consumer psychology, the targeted beneficiaries (e.g., consumer protections, corporate sales, and environmental sustainability) of incorporating natural elements into consumer spaces should be clarified.

CONCLUSION

The attentive commentary from Haws and Yamim thoughtfully provoked the current theoretical discussion. Haws and Yamim broadly assert that natural elements will act via semantic associations to influence consumer behavior. Haws and Yamim take a constrained definition of nature, but we believe that even this constrained definition has ambiguity and can be influenced by context. Relatedly, to better understand the effects of natural elements on activating semantic associations, it is important to identify individual and cultural differences in semantic associations to natural elements and subsequent behavioral outcomes. Importantly, it must be evaluated whether including natural elements in the consumer space has a significant effect on purchasing behavior, especially because nature exposure is shown to reduce materialism. If including nature in consumer spaces can, in fact, enhance sustainable consumption, the extent to which this can benefit companies, consumers, the environment, and society should be evaluated. Here, the potential conflicts between economic and human-based goals should be kept in mind. In this sense, beyond the careful assessment of the origin and target of nature-based goals, one should necessarily question the consequences and ethical considerations of employing nature as a mechanism to influence consumer behavior.

DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

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How to cite this article: Berman, M. G., & Strauss, A. (2025). Missing the forest for the trees: Considerations for the use of nature in consumer spaces. *Journal of Consumer Psychology*, *00*, 1–7. <https://doi.org/10.1002/jcpy.1458>