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Modernity and the western value-action paradox: contributions from conservation psychology

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We attempt to bridge the value – action paradox inhibiting environmental action by drawing upon work cast within conservation psychology to identify mechanisms by which the processes driving action can be shaped to achieve more sustainable outcomes. The shift toward a more mutualistic orientation with nature suggests the possibility of increasing success of treatments aimed at manipulating the endogenous psychological process (i.e., attitudes, knowledge, efficacy, norms) stemming from value orientation. While empirical evidence illustrates that values can be slow to change, the psychological processes situated higher within the cognitive hierarchy are more susceptible to manipulation. The need for behavioral change is imminent. While developed societies have, for the most part, modernized to the extent basic human needs are amply satisfied, the economic development that has accompanied modernization has coupled economic growth with an unsustainable consumption of natural resources and rising emissions. An increasing number of researchers and activists have called for a transition to a global steady-state economy. We suggest that shifting societal values present an opportunity for modern society to capitalize on humans' increasing empathy for the natural world and to act in more sustainable ways. Research illustrates that those expressing a stronger affinity toward nature (e.g., mutualists) are more inclined to agree with statements suggesting that environmental protection should be prioritized over economic growth and that climate change is primarily driven by the burning of fossil fuels. Unfortunately, as it presently stands, those most inclined to express this sentiment (i.e., those reporting higher incomes, more years of formal education, and residing in urbanized environments) are also more likely to act in ways that contribute to climate change (e.g., car usage, air travel, household energy use). It is a troubling paradox given they have greater capacity for reducing their ecological footprint. With human values shifting toward a more empathetic orientation toward nature, our review implies that now more than ever, efforts to manipulate elements of the cognitive hierarchy are likely to result in behavioral change that can minimize many anthropogenic drivers of climate change.

KEYWORDS

conservation psychology, climate change, values, modernization, cognitive hierarchy

1 Introduction

The concept of values is central for understanding human behavior. Generally speaking, when we think of values, we think of what is important in our lives; e.g., security, freedom, wisdom, pleasure, independence (Horlings, 2015). While a number of differing theoretical orientations have been presented in the literature, likely owing to its appeal to an array of social science disciplines, we consider them to be the most fundamental enduring beliefs that are used to evaluate the desirability of specific modes of conduct (Rokeach, 1973; Fulton et al., 1996; Schwartz et al., 2012). Psychological models accounting for the cognitive processes that drive human behavior typically portray these processes in terms of a hierarchy of constructs that originates with values (see Figure 1; Homer and Kahle, 1988; Fulton et al., 1996; Stern et al., 1999; Milifont and Duckitt, 2010). Given their fundamental role for understanding human behavior, particularly as it relates to human' dispositions toward nature, research on values has received considerable attention in the human dimensions of natural resources literature over the past 40 years (Steinhoff, 1980; Stern & Dietz, 1994; Fulton et al., 1996). There have been several reports over the past decade indicating a shift in U.S. residents' value orientations as they relate to how they feel and act toward nature from a perspective of domination to mutualism (Manfredo et al., 2003; Manfredo et al., 2009; Manfredo et al., 2016). This shift reflects movement away from an orientation suggesting that the management of wildlife should prioritize utilities for humanity and human wellbeing (i.e., the domination perspective) toward a perspective of union and affinity where nature's fauna can be considered extensions of the self (i.e., the mutualism perspective). The shift has complex implications for conservation and the maintenance of biodiversity. With the closer reported union between humans and nature, there is evidence indicating more favorable public sentiment toward protections for wildlife and species' reintroductions (Manfredo et al., 2009). Alternately, there have also been instances of public opposition among mutualists toward the management of invasive and introduced species that threaten the native biota and biodiversity, especially where lethal control measures are considered (Wald and Jacobson, 2014). Intuitively, however, a stronger mutualism orientation could be interpreted as being positive for conservation, biodiversity, and the protection of nature given the closer union between humans and nature (Stern and Dietz, 1994; Inglehart, 1995). Unfortunately, there is a growing body of evidence suggesting the contrary.

In recent papers examining the shift in wildlife value orientations among U.S. residents, Manfredo et al. (2016); Manfredo et al. (2020) reported that a close correlate of value shift was "modernization." These authors operationalized modernization using indicators of income, urbanization, and education, which are highly correlated geographically and at the individual level. Manfredo et al.'s findings illustrated that states that possessed a higher proportion of individuals with a mutualist orientation also reported higher incomes, years of formal education, and were more urbanized, on average. Unfortunately, there is mixed evidence on how the "modernization variable" shapes various conservation and environmental outcomes. For example, findings from a range of contexts illustrates that increasing income is intimately associated with carbon footprint and other adverse environmental impacts (Wiedmann et al., 2020). This plays out in contexts related to energy consumption (e.g., vehicle use, air travel, household energy use; Longhi, 2013; Moser and Kleinhückelhotten, 2017), household water use/conservation (Vickers, 2001; Corral-Verdugo, 2002; Harlan et al., 2009; Fielding et al., 2012), and urban sprawl where lower income groups are increasingly pushed to the urban fringe leading to habitat loss, fragmentation, and the depletion of ecosystem services (Wheeler,

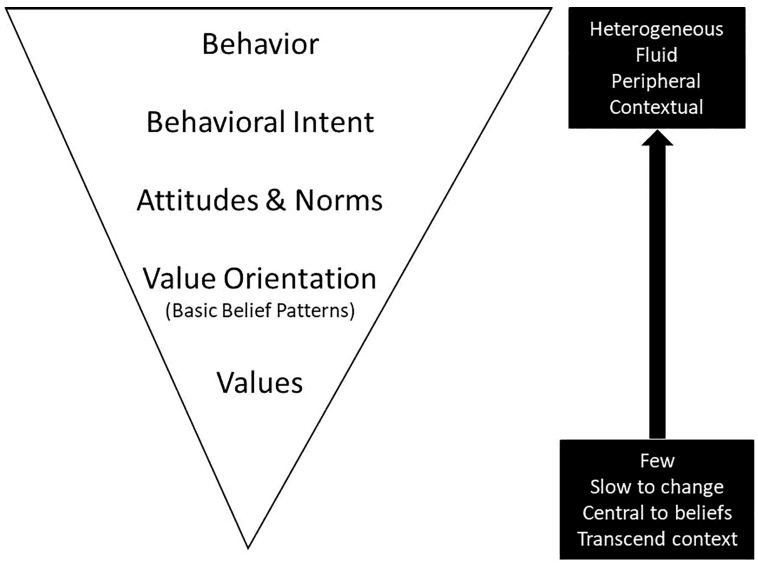

FIGURE 1
Cognitive hierarchy model of human behavior. Adapted from Fulton etal., 1996.

2006; Dupras and Alam, 2015; Ewing et al., 2016). There is also evidence suggesting that while better educated/higher income groups' express stronger intent to act in environmentally responsible ways, their behavior tells us otherwise (Moser and Kleinhückelhotten, 2017).

This presents quite a paradox for conservation and the protection of nature and its ecosystem services. While households with higher incomes and years of formal education have greater potential and capacity to minimize their carbon footprint (e.g., purchasing electric vehicles, and energy efficient household appliances) and engage in an array of environmentally responsible behaviors, contemporary "modern" lifestyles appear to undermine the sentiment expressed in mutualist value orientations. These lifestyles are key drivers of climate change and are directly contributing to the earth's greatest threat to biodiversity, natural resource conservation, and human well-being. So does it matter that value shift presents opportunities for the protection of flagship species and the reintroduction of large carnivores when modernization-induced climate change irreparably damages the ecosystems on which they depend (Thomas et al., 2004)? In this paper, we draw upon theory and empirical evidence framed within the ontology and epistemology of conservation psychology to identify tangible ways in which the spirit of the mutualist value orientation can be better aligned with behavioral outcomes consistent with the orientation. Somewhere within the "black box" of psychological processes leading from values to behavior, something is undermining the potential for those with the greatest capacity and intent to act. If humans have a genuine affiliation with nature, then urgent attention is required for the conversion of that sentiment into action with the goal of reducing anthropogenic causes of climate change and its devastating impact on the ecosystems in which the human-nature union resides. The sobering evidence suggests the need to narrow the value-action paradox is imperative if we hope to preserve biodiversity and the quality of life for the human populations that depend on its existence (Nelson et al., 2013).

2 Modernization and value shift

Inglehart and colleagues have been documenting global value shift for almost 50 years (Inglehart, 1971; Inglehart, 2017; Inglehart, 2018). Their data illustrate industrialization, economic prosperity, and improved education, particularly that following WWII, brought about an intergenerational value shift where survival and security could be taken for granted and emphasis given to "… free choice, environmental protection, gender equality and tolerance" (Inglehart, 2017, p. 137). He indicated that in the context of highly developed societies, human motivations undergo pervasive change where the satiation of material needs are superseded by needs related to self-expression, belonging, and self-fulfillment. The shift from materialist values (which give priority to economic and physical security) to postmaterialist values (which emphasize free choice, and self-expression) is "… transforming prevailing norms concerning politics, religion, gender equality, tolerance of outgroups, and bringing growing support for environmental protection and democratic institutions" (Inglehart, 2017, p. 139).

Commensurate to the shift in societal values that has accompanied modernization identified by Inglehart and colleagues has been the shift in values as they relate to wildlife. As noted, Manfredo and colleagues' (Manfredo et al., 2003; Manfredo et al., 2009; Manfredo et al., 2016; Manfredo et al., 2020) ongoing work in the context wildlife value orientations in the U.S., revealed a shift from a domination to a mutualistic orientation. Their findings suggest:

1. Industrialization and the development of production agriculture has resulted in an abundance of readily-available food products. With diminishing subsistence needs, the meaning of wildlife is no longer intimately tied to human existence;

2. Modernization has and continues to drive population growth in urban centers. As human settlement displaces the landscape's flora and fauna, opportunities for encounters are further diminished; and

3. Modernization has created conditions that are favorable for the satiation of higher-level needs such as belongingness. With humans' tendency to anthropomorphize nature, the belongingness and connectedness need can be evidenced through our affiliations and identification with nature's fauna.

Intuitively, a societal shift toward deeper affiliation with wildlife should mean positive outcomes for wildlife conservation and there is evidence that mutualism beliefs are associated with individuals' support for policies designed to conserve species (Herman et al., 2013). However, the forces giving rise to this sentiment also produce negative externalities with implications for wildlife habitat and populations. The treadmill of production theory posits that environmental degradation and pollution are an inherent part of economic development, and therefore modernization (Schnaiberg, 1980; Schnaiberg and Gould, 1994). This perspective suggests a strong relationship between environmental harms and economic development. The drive to expand production necessitates withdrawal of natural resources from ecosystems at rates that generally exceed the regenerative capacity of these systems (Foster, 2002; Foster et al., 2010). Modern industries pursue economic efficiencies to enhance the production process and maximize profit. Environmental costs, such as water pollution and carbon emissions are externalized as much as possible to enhance profit (Jorgenson and Clark, 2012). While modern economies utilize technology to decrease the per unit consumption of natural resources, aggregate rates of consumption continue to increase with the maturation of the economy. In this manner, regardless of the maturity of an economy, economic development and environmental degradation are intimately coupled (Shafik, 1994; Stern et al., 1996; Kahuthu, 2006; Alvarado & Toledo, 2017). So regardless of the evolution of values that accompanies economic development and the satiation of humans' basic needs, the transcendence of self-actualization appears to come with environmental debt; a debt to be reconciled by future generations. In the broader context climate change and the myriad behaviors driving the threat to humanity and the flora and fauna on which it depends, there is accumulating evidence

indicating that modernization and modern lifestyles are significant contributors. While values' scholars report a stronger affinity with nature, there is a stark incongruence reflected in individual and collective action that is detrimental to the object of affection. In the discussion that follows, we frame the utility of conservation psychology around efforts to address climate change, its impact on biodiversity conservation and the provision of ecosystem services.

3 Value shift and behavioral change

Resolution of the vexing paradox that lies between human values shift, modernization, and altering behavior that is contributing to climate change will require adaptation on a global scale and necessarily the engagement of the complete spectrum of academic disciplines to inform policy and, ultimately, shift human behavior. Viewed through the lens of a coupled social-ecological system (Ostrom, 2009), psychology is but one of a host of disciplines that must contribute to the science that can improve our understanding of adaption throughout the system. To date, however, much of the research on climate change has been restricted to the natural sciences. Conspicuously, the field of psychology has been underrepresented in both public and academic discourse (Clayton and Manning, 2018). Until recently, for many, the topic did not seem to have psychological relevance (Selinske et al., 2018). There is emerging evidence, however, that research situated within the ontology and epistemology of psychology can make valuable contributions to the discourse on anthropogenic influences on climate change and biodiversity conservation. In the discussion that follows, we review research illustrating ways in which the value-action paradox can be resolved through the lens of conservation psychology. This research provides greater clarity on psychological processes occurring within the black box that appears to be derailing the promise of an emerging mutualist orientation toward the natural world and behaviors that can minimize modern society's ecological footprint.

Returning to the cognitive hierarchy depicted in Figure 1, the perspective distinguishes relatively stable but abstract values (Rokeach, 1973; Homer and Kahle, 1988) from more specific cognitions (e.g., attitudes, norms). While values are considered abstractions from which behaviors manifest (Homer and Kahle, 1988), demonstrating an empirical association between the two constructs has been elusive (Whittaker et al., 2006). Research framed within the cognitive hierarchy perspective, however, recognizes that values provide a foundation for several psychological processes of increasing specificity (Fulton et al., 1996; Vaske and Donnelly, 1999). Values are said to shape individual value orientations and are evidenced in our beliefs and ideologies as they relate to a life domain (e.g., climate change, nature). These beliefs and ideologies give meaning to basic values (Rohan, 2000). In turn, value orientations are said to influence individual attitudes and normative assessments related to stimuli (Zinn et al., 1998; Vaske and Donnelly, 1999). Where attitudes toward an object reflect an individual's evaluation of the entity (Eagly and Chaiken, 1993), norms reflect an individual's assessment of what is an appropriate action in a given situation (Ajzen, 1991), or the individual's beliefs about the dominant patterns of cognition and behavior of social contemporaries (Cialdini, 2007). Research on norms has been used to refer to common behaviors in addition to the beliefs that underlie these behaviors (Farrow et al., 2017). Finally, attitudes and norms shape an individual's intent related to a specific behavior and, ultimately, engage the behavior. There are several other defining characteristics that help to distinguish lower order from higher order constructs within the hierarchy. Lower order concepts are fewer in number, enduring, transcend context, and are central to self-identity. Alternately, higher order concepts are more numerous in number, context specific, and often lack temporal stability (Vaske and Donnelly, 1999).

Nested within the cognitive hierarchy framework, several theories have emerged that attempt to better understand the psychological processes driving human behavior as it relates human-environment interactions; Ajzen (1991) theory of planned behavior (TPB), Schwartz (1977) norm activation model (NAM), and Stern et al. (1999) value-belief-norm (VBN) theory of pro-environmental action. While the theories emphasize different elements of the cognitive hierarchy, they share the assumption reflected in Figure 1; a progression from the general to the particular. Most important, for both policy and behavioral intervention, the depiction of these processes in path model-like linearity provides insight on where policy interventions might prove to be most fruitful for altering behavior. Efforts to manipulate values and value orientations, however, are confounded on several fronts. As noted, basic values and ideologies are more strongly linked to an individual's self-construal and less susceptible to change (Hitlin, 2003). Attempts to manipulate in any direction are likely to be rebuffed should the appeal conflict with the individual's existing value structure (Sherif and Hovland, 1961). At both individual and societal levels, the work of Inglehart and Manfredo and their colleagues reviewed earlier also illustrates that human values are very slow to shift; often occurring over generations. Given the speed of the emerging climate crises (IPCC, 2018), taking aim at altering human values with the goal of encouraging climate mitigative behaviors would likely be dilatory. Manfredo and colleagues work also calls into question what would be an appropriate value orientation even with the prospect of successful manipulation. As noted, their data (Manfredo et al., 2003; Manfredo et al., 2009; Manfredo et al., 2016; Manfredo et al., 2018) illustrate a shift away from domination to mutualism that also coincides with societal modernization. Yet, modernization (i.e., household income, materialism, education, urbanization) also underlies anthropogenic drivers of climate change. We suggest that resolution of the disconnect between human values, their associated ideologies, and behavior lies within the black box of psychological processes that are endogenous outcomes of value orientation but antecedent to intent and action. Given that mutualism reflects a greater empathy toward the natural world, efforts to manipulate higher order elements of the cognitive hierarchy (i.e., attitudes, norms, identity, etc.) in ways that leverage this empathy are increasingly promising.

4 Manipulating the antecedents of intent and action

To illustrate how a focus on the antecedents of intent can result in positive pro-environmental behavioral outcomes (see Figure 2), we provide a brief review of work conducted in an array of contexts that has identified determinants of behavioral change with implications for further research, policy application, and climate change mitigation. The discussion is centered on six broad themes of conservation psychology research; attitudes, knowledge, efficacy, norms, and their intersections with the barriers to action and individual/social identity. Following the cognitive hierarchy approach to understanding human behavior, these concepts can be situted along a temporal plane beginning with attitudes, followed by knowledge, responsibility, and norms along with their associations as moderated by identity and mediated by the barriers to action (Montano and Kasprzyk, 2008). Theorizing and empirical evidence has shown these concepts and associated constructs shape behavioral intent and action.

4.1 Attitudes

Attitudes, in general, and environmental attitudes, in particular, have been considered a crucial construct in environmental and conservation psychology. It has been defined as a psychological tendency expressed by evaluative responses toward the physical environment with some degree of favor or disfavor (Milifont and Duckitt, 2010). Fishbein (2007) has conceptualized attitude as comprising of two components; experiential attitudes which refer to an individual's emotional response to the attitude object (i.e., affect) and instrumental attitudes which refer to evaluations based on an individual's thoughts related to anticipated outcomes (i.e., cognition). The use of attitudes to predict behavior has a long and varied history in human dimensions research (Heberlein, 2012) and in the context of climate mitigation-related behavior. Contexts include the adoption of energy-efficient light bulbs (Harland et al., 1999), public transportation use (Bamberg et al., 2003), and intent to install residential solar (Korcaj et al., 2015).

While those with a favorable attitude toward the environment are more likely to engage behaviors consistent with those attitudes, for many, there is tremendous ambivalence toward the environment and climate change (Leiserowitz et al., 2015). For this segment of the population, much needs to be done to raise their awareness of the potential costs and benefits of consumer decisions and efficacy in undertaking them. Unfortunately, in the U.S., Americans' concern about climate change and its impact on wellbeing is closely aligned with their political affiliation (McCright and Dunlap, 2011; Egan and Mullin, 2017). Decoupling climate concern from individuals' political worldviews is unlikely in the short term and, consequently, unlikely to result in meaningful policy change at a national level. In spite of this sobering assessment, Egan and Mullin (2017) do offer some suggestions for messaging that might be most productive for raising public concern and action. They recommended focusing messaging on the tangible localized consequences of climate change in addition to the co-benefits of climate change policies that have displayed impact for galvanizing public support (Maibach et al., 2008; Ansolabehere and Konisky, 2014). They also suggested that accompanying the increasing exposure Americans face from climate change-related hazards (Melillo et al., 2014) should be parallel messaging that explicitly links these events to climate. Framed through the lens of Petty and Cacioppo (1986) elaboration likelihood model (ELM) of persuasion, these strategies increase the personal relevance of climate change and subsequent motivation to process message content. So long as the message content is plausible, the message is more likely to receive stronger elaboration (i.e., processing via the "central route"), result in more enduring attitude change, and will be more closely aligned with behavior (Eagly and Chaiken, 1993).

4.2 Knowledge

Following from Petty and Cacioppo (1986) ELM of persuasion, while the provision of climate-related information has the potential to better inform the public, its impact on behavior is contingent on recipients' understanding of the information provided. While many

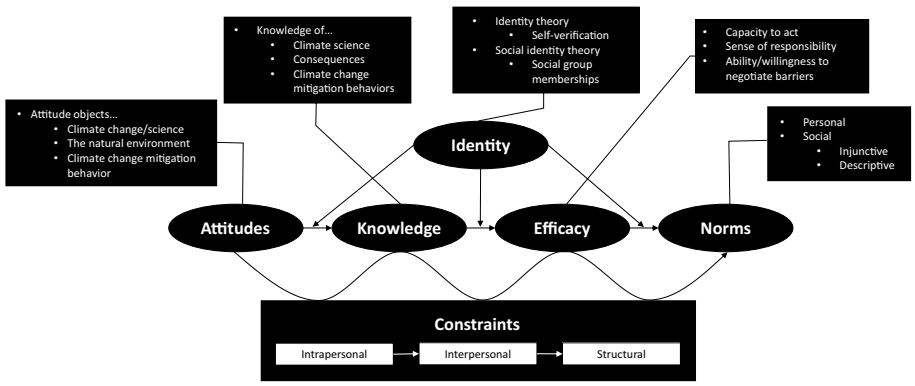

FIGURE 2
Psychological processes linking human values to intent/behavior.

people consider themselves to be well informed about climate change, there are considerably fewer who understand how their own actions can directly impact carbon emissions (Attari et al., 2010; Leiserowitz et al., 2010). The disconnect between knowledge of the issue and knowledge of action strategies has been consistently reported by those working in environmental education research (Hines et al., 1986-87). The issue is further exacerbated by the volume of publicly available misinformation (van der Linden et al., 2017). In the context of ELM, under conditions of uncertainty, individuals are less likely to elaborate upon information provided and rely on peripheral cues that accompany the delivery of the information or message content. In these contexts, the identity of the agent becomes compelling; e.g., politician, news source.

One approach for countering the influence of misinformation both in terms of scientific consensus and individual action recently reported by van der Linden et al. (2017) draws upon inoculation theory (Papageorgis and McGuire, 1961). In medicine, resistance to a virus can be conferred by exposing the patient to a weakened version of the virus (i.e., vaccine). It is strong enough to trigger a response (i.e., the production of antibodies), but not so strong as to overwhelm the patient's immune system. Attitudinal inoculation follows similar logic. That is, a threat is introduced by forewarning people that they may be exposed to information that challenges their existing beliefs. One or more weakened examples of that information are then presented and directly refuted in a process called "refutational pre-emption". Attitudinal resistance is conferred by preemptively debunking false claims and refuting potential counterarguments (van der Linden et al., 2017). Inoculation interventions of this type shift people from shallow, heuristic thinking (i.e., the peripheral route) to more elaborative, considered thinking about a target issue (i.e., the central route; Kahneman, 2003). Communications framed within the inoculation theory perspective aim to provide factual alternatives to displace refuted myths, foster healthy skepticism about misinformation sources, and frame evidence in a worldview affirming manner (Cook, 2016). The approach has been used experimentally to manipulate subjects' understanding of greenhouse gas emissions (Clark et al., 2013), climate science (van der Linden et al., 2017), and the role of science for informing public policy (Bolsen and Druckman, 2015). These approaches offer promising approaches for addressing issues related to climate literacy and the adoption of climate mitigation behaviors.

4.3 Efficacy

Beyond an understanding of climate science and climate action are questions concerning what individuals and institutions can reasonably accomplish in terms of mitigation in addition to who's responsible for action. With federal policy on climate change stalling in the U.S. (van den Bergh et al., 2010; Bostrom et al., 2019), the importance of individual and localized action is receiving increased attention (Dubois et al., 2019). Within existing models framed around the cognitive hierarchy perspective, we see the concept of efficacy conceptualized within constructs related to perceived behavioral control within the TPB (Ajzen and Fishbein, 1980) and the ascription of responsibility within the NAM (Schwartz, 1977) and the VBN (Stern et al., 1999). While there is evidence of considerable uncertainty concerning what behaviors will help slow or halt climate change (Whitmarsh, 2009; Attari et al., 2010; Reynolds et al., 2010), there is also evidence indicating that beliefs about what actions will be effective and what is feasible influence both intent and action (Heath and Gifford, 2002; Heath and Gifford, 2006).

Recently, in the context of actions that mitigate the risk of climate change, Bostrom et al. (2019) conceptualized efficacious beliefs in terms of two dimensions; a) self-efficacy, which concerns beliefs about actions that can be reasonably undertaken, and b) response efficacy, which concern beliefs about the effectiveness of mitigative actions. Their analysis was also sensitive to the identity of the actor undertaking the efficacious behavior; government, collectives (e.g., community), and individual. Broadly, their findings illustrate that compared to self-efficacy, response efficacy was a stronger predictor of respondents' support for policy on climate mitigation. They also observed that both response and self-efficacy's effect on policy support was strongest in models where the actor was identified as the government or collective. A number of authors (Blake, 1999; Kollmuss and Agyeman, 2002; Lorenzoni et al., 2007; Gifford, 2011) have also discussed the psychological foundation of why people feel that climate change is beyond their control. Lorenzoni et al. (2007) illustrated among U.K. residents there was a commonly shared belief that government and industry should bare the burden of response. Their respondents also expressed a sense of fatalism, noting the scale of the problem, some felt that action at the individual level was seen as inconsequential.

While governments and industry have greater capacity for initiating action (e.g., removing barriers and installing incentives) related to climate mitigation (Adger, 2003; Lorenzoni et al., 2007; Dubois et al., 2019), it is imperative that individuals and their households remain cognizant of their own carbon and ecological footprints. The research we've reviewed suggests much needs to be done to instill a personal sense of responsibility and will to act in ways that are within individual and household capacities. This work, however, identifies an array of tools various institutions can employ to begin to shift attitudes, improve knowledge, and instill a normative expectation within individuals and collectives. McLaughlin (2021) presents several recommendations for leveraging efficacy appeals in communication emanating from the IPCC and other science communicators including a) increasing the use of language that highlights self and collective efficacy, b) balancing images of impacts with solutions, c) engaging narratives of success, d) building individuals' abilities to implement solutions.

4.4 Norms

Moving further along the cognitive hierarchy, a strong body of research has emerged over the past 50 years illustrating the power of norms for shaping environmentally responsible behaviors (see Farrow et al., 2017 for review). In the context of TPB research, normative influence on pro-environmental behavior has been

conceptualized to be the product of two sources; personal and social norms (Bamberg et al., 2007). For personal norms, the evaluation of appropriate behavior in anchored in "their moral worth to the self" (Schwartz and Howard, 1984). As such, the evaluation can, in some instances, be independent of the behavior and preferences of others. Because of their association with an individual's moral sensibilities and societal values, actions that are congruent with an individual's personal norms are more likely to elicit emotions linked to pride whereas actions considered incongruent elicit feelings of guilt (Onwezen et al., 2013). Alternately, for social norms, behavioral expectations, obligations, and sanctions are anchored in social groups. Social norms are generally understood to be the shared rules of conduct that are manifested in individual and collective approval or disapproval of specific behaviors (Elster, 1989). This form of social information can influence behavior for a variety of reasons; i.e., people often desire to fit in with specific reference groups, avoid social disapproval, or seek social esteem. The behavior of others in given contexts can also provide an indirect indication what is appropriate or effective for the context (Farrow et al., 2017).

In a further distinction of social norms, Cialdini et al. (1990) conceptualized social norms being comprised of two forms; injunctive and descriptive. Where descriptive norms refer to what most people do (i.e., what *is* done), injunctive norms describe what most people approve of doing (what *ought* to be done) in certain contexts. In the focus theory of normative conduct, they indicate that social norms are only likely to influence behavior when they are made salient during the decision-making process. Because of their independence of the individual's moral compass (i.e., personal norm), their influence on behavior lies in the social cues present in the decision-making environment. Cialdini and Goldstein (2004) cite three main motivations for conformity; accuracy, affiliation, and positive self-esteem. They note that "people have a strong need to enhance their self-concepts by behaving consistently with their actions, statements, commitments, beliefs, and self-ascribed traits" (p. 602).

While there is evidence that both social and personal norms exert considerable influence over intent and action (Harland et al., 1999; Manstead, 2000; Onwezen et al., 2013), given that personal norms linked to an individual's moral sense of self and value system (van der Werff and Stegg, 2016), the implication is that they are relatively resistant to manipulation. Cialdini and Goldstein (2004), however, have demonstrated that in a variety of contexts social norms can be manipulated in ways to achieve desired outcomes, particularly for the environment. They stress that, when communicating with the public, descriptive (what people typically do) and injunctive (what people typically approve or disapprove) content in normative messaging must be in alignment. They note that "there is an understandable, but misguided, tendency to try to mobilize action against a problem by depicting it as regrettably frequent" (p. 105). Unfortunately, when "Information campaigns emphasize that rampant polluters are spoiling the environment" there is the implication that many people are acting in this undesirable manner. In this context, the descriptive norm is at odds with the injunctive norm. In a field experiment examining the depreciative behavior of visitors to Arizona's Petrified Forest National Park, Cialdini and colleagues (2006) reported that exposing message recipients to descriptive normative information increased the incidence of depreciative behavior (i.e., removal of artifacts), whereas focusing them on injunctive normative information was more likely to suppress the behavior. Their message treatments focused on manipulating the levels of behavior for the descriptive norm (e.g., "Many past visitors… ") and the valence of the messaging (i.e., statement and accompanying image) for the injunctive norm. Cialdini and colleagues' efforts at persuasion could be applied in array of contexts where agencies attempt to inform their constituents of *what is* being done by residents of their community (i.e., positive actions) and *what ought* to be done.

4.5 The moderating effect of identity

In our discussion of how elements of the cognitive hierarchy interact with identity we draw on tenets of identity theory (Stets and Burke, 2000) and social identity theory (Tajfel and Turner, 1979). In the context of Figure 2, we suggest that identity moderates the relationships that constructs share with one another. These two theories speak to two dimensions of the self; a) the personal identity (i.e., identity theory) which is revealed in the individual attributes that make the person unique (or similar) to others within society, and b) a social identity (i.e., social identity theory) which is considered that part of an individual's self-concept derived from membership(s) with social groups of personal significance. These theories' conceptual overlay rests on their emphasis on social world commitments (Stets and Burke, 2000).

First, for identity theory, identity is defined as the set of meanings ascribed to the self that serve as a standard or reference that guides behavior (Burke and Stets, 1999). In this light, the self is considered compilation of discrete identities, tied to the roles individuals occupy throughout their lives, and are made salient in specific contexts (Stryker and Burke, 2000). In this manner, individuals have as many identities as they do roles. Role identities are said to be self-definitions that people apply to themselves and are a consequence of social category memberships (Burke, 1980). Role identities also have affective and behavioral outcomes. Accompanying roles are expectations that prescribe appropriate role-related behaviors. Satisfactory enactment of roles not only confirms and validates a person's status as a role member but also reflects positively on self-evaluations (Callero, 1985). The perception that one is enacting a role satisfactorily should enhance feelings of self-esteem, whereas perceptions of poor role performance may engender doubts about one's self-worth, and may even produce symptoms of psychological distress (Thoits, 1991). The process of role enactment, where one strives to experience congruence between internalized self-meanings and salient peers' acceptance of outward expressions of those meanings is known as verification (Stets and Burke, 2014). Role identities are also organized hierarchically, such that those situated most prominently are more likely to be invoked in given situations compared to those identities situated further down

the hierarchy (Stryker, 1987). Tied to salience is an individual's commitment to the identity. Emphasizing the social nature of the identity theory perspective, identity salience is determined by the degree to which the individual's relationship with significant others is dependent on being a particular person that is defined by the role identity (Stryker and Stratham, 1985). Commitment to a particular identity is high if people perceive that many of their important relationships are predicated on occupancy of that role (Hogg et al., 1995). By acknowledging the impact of social networks on individual's self-concepts, identity theory links the wider social structure (in terms of role positions) and the individual's more intimate social networks (through levels of commitment to different role positions) to the self-concept.

Social identity theory (in addition to the sub-theory, self-categorization theory; Tuner et al., 1987) provides insight on how individual attitudes, emotions, and behaviors are influenced by the group memberships to which they belong. As noted earlier, human basic needs theories suggest that individuals search for a sense of belonging, relatedness, and identification (Maslow, 1943; Deci and Ryan, 2000). The perception of belonging to a social group fulfils a basic human need for bonding and plays an important role in an individual's self-concept (Stets and Burke, 2000). Through the process of self-categorization, individuals attach their sense of self to their group membership. Social group memberships can be large-scale social categories (e.g., gender, ethnicity), groups we choose to belong to such as professional groups (e.g., psychologist), or interest-based groups (e.g., environmental groups). When a person categorizes in terms of a particular social identity, the categorization process causes an accentuation of similarities between the self and other ingroup members, and an accentuation of differences between the self and outgroup members (Fielding and Hornsey, 2016). Categorization, therefore, results in an individual's attitudes, beliefs, and behavior assimilating to the norms of the salient social group and polarizing away from relevant outgroup norms. Drawing on social comparison theory (Suls and Wills, 1991), social identity theory also posits that, in order to maintain a positive and clear self-concept, group members are motivated to see their groups as distinct from other relevant groups and superior to other relevant groups. Consequently, ingroup members favor other ingroup members over outgroup members in evaluations and the distribution of resources (for reviews, see Brown, 2000; Hewstone et al., 2002). We are more inclined to consider ingroup members more likable, knowledgeable, and trustworthy than outgroup members (Tanis and Postmes, 2005; Foddy et al., 2009).

The importance of identity for understanding human behavior as it relates minimizing anthropogenic drivers of climate change lies in the manner in which it interacts with the antecedent processes of action. Beyond influencing behavior directly (Whitmarsh and O'Neill, 2010; van der Werff and Stegg, 2016; Estrada et al., 2017), identity also impinges upon these antecedent processes in ways that ultimately shape behavior. Given that individual and social identities emerge within a cultural context, societal values can be considered antecedent to identity (Kirk and Okazawa-Rey, 2010). The lifelong processes shaping what individuals and communities consider meaningful, value, and ostracize also augment individual and collective's senses of self (Hitlin, 2003). These senses of self can have cognitive and affective implications. Beginning with the concept of attitudes toward the suite of climate-related objects (see Figure 2; e.g., climate change, science, nature, mitigation behaviors), attitude formation, maintenance and change is contingent on both the role the individual occupies (e.g., science teacher, mother, activist) and the social worlds to which individuals are tied. These roles and affiliations help to determine how climate-related information is processed (i.e., central or peripheral routes) and the individual's disposition toward the information encountered. Social judgement theory (Sherif and Hovland, 1961) also suggests that for those whose role (e.g., science teacher) and affiliation (e.g., scientific community) supports a genuine concern for the climate and environment, misinformation about the state of the environment is readily rejected (i.e., narrow latitude of acceptance). Alternately, for those with role and social affiliations where nature or scientific literacy has little personal relevance, the latitude of acceptance for climate (mis)information will be comparatively broad and the latitude of rejection narrow. Individuals' attitudinal posture toward climate change and consumption of climate-related information has direct implications for their knowledge of the causes, consequences, and mitigation (Kellstedt et al., 2008). For example, individuals committed to an identity aligned the protection of nature (e.g., "environmental identity"; Whitmarsh and O'Neill, 2010; van der Werff and Stegg, 2016) will be more motivated to seek and consume climate-related information (Armstrong et al., 2018) and situate themselves in social worlds where climate-related information is more readily shared (Hogg and Smith, 2007). Their thoughts and actions will more closely align with the norms of their role-based affiliations to which they are most committed (Stets and Biga, 2003).

Social identity theory also provides insight on how group affiliations shape the processing of climate-related information. Referred to as motivated reasoning (Hart and Nisbett, 2012), rather than learning and acting on facts, people often interpret new information in ways that align with and reinforce their group commitments. Motivated reasoning affects which information people consider as they think about a given issue and how they use that information to make judgements and draw conclusions. Unfortunately, we see this play out in the politicization of climate change with conservatives more inclined to dismiss climate science compared to liberals (Washburn and Skitka, 2017). Another form of motivated reasoning referred by Landrum and colleagues (Landrum et al., 2017) is identity protective cognition. When identity protective cognition is activated, people avoid beliefs that could potentially alienate them from their chosen group as a means of protecting their sense of self. While denying that climate change exists might seem irrational to some people in the context of scientific consensus, it may be a perfectly rational conclusion from a social identity perspective if your peers and your group also deny climate change. So, in addition to shaping how we think about climate change and its mitigation, social identity theory perspectives also provide insight on individuals and collectives perceived responsibility to act (Steentjes et al., 2017).

Finally, several reviews of identity, norms, and their implications for shaping climate-related attitudes and behaviors have recently appeared in the literature (Ferguson et al., 2016;

Fielding and Hornsey, 2016; Reynolds et al., 2010). From these, Fielding and Hornsey (2016) offered several recommendations for framing messages aimed at shifting attitudes and behavior to reduce anthropogenic drivers of climate change. First, they recommend the use of ingroup messaging with the assumption that the message source will more likely be trusted. From an ELM perspective (Petty and Cacioppo, 1986), even if climate change is not a personally relevant concern, decision heuristics that that invoke peripheral routes of processing will more likely have the desired persuasive outcome. Second, Field and Hornsey recommend the forging of a superordinate identity. To avoid intergroup conflict, they suggested that framing environmental and climate-related issues as being relevant to all social groups. A superordinate group identity is then constructed from the collection subgroups whose broader identity is framed around the challenges of confronting environmental and climate concerns. A third suggestion is to link social identity and pro-environmental outcomes. An example offered was to link an individual's regional identity with local environmental concerns and the locally driven actions undertaken to confront those concerns. Last, Fielding and Hornsey recommend using messaging that highlights the ingroup pro-environmental norms. This can be achieved by emphasizing the ingroup's injunctive norm (i.e., what group members ought to do) in addition to the descriptive norm (i.e., what group members currently do).

4.6 The mediating effect of constraints that inhibit action

Another significant factor contributing to the value-action disconnect concerns the constraining factors mediating the psychological drivers of intent. These constraints lie within the individual, their social worlds and culture, and the institutions that govern daily life (Blake, 1999; Kollmuss and Agyeman, 2002; Lorenzoni et al., 2007; Gifford, 2011). The organizing framework that we have adopted for understanding the array of constraints that impinge on climate mitigative behaviors comes from the health and leisure literature where constraints to healthy choices are conceptualized in terms of three dimensions; intrapersonal, interpersonal and structural constraints (Crawford et al., 1991; Jackson et al., 1993; Mannell and Loucks-Atkinson, 2005). Where interpersonal constraints refer factors that are unique to the individual (e.g., laziness, lack of efficacy, personal resources), interpersonal constraints extend to the individuals' social networks and broader cultural forces (e.g., social norms). Alternately, structural constraints refer to the environmental and policy-related factors that can inhibit (or enhance) adaptive action. While policy-related constraints are not the focus of this review, an understanding of the psychological drivers that can ultimately lead to policy change is germane. For example, while few individuals can negotiate structural constraints on their own as they may relate to federal policy, targeted interventions have potential downstream impacts on individual voting behavior, lobbying decisions, and philanthropy – all of which can shape adaptive capacities and climate mitigation on a significantly larger scale.

The authors of the tripartite conceptualization of constraints (Crawford et al., 1991; Jackson et al., 1993) also hypothesized that constraints are experienced sequentially such that behavior is dependent on the successful negotiation of each form of constraint beginning with factors most proximal to the individual (i.e., intrapersonal) to those most distal (i.e., structural). The hypothesized sequence is not unlike that reflected in the cognitive hierarchy. That is, the negotiation of a constraints inhibiting climate mitigative behavior requires an awareness of the constraint and how it can be negotiated (e.g., the cost of renewable energy sources and their availability), a capacity and willingness to negotiate the constraint (e.g., the cost of photovoltaic panels and the availability of rebates), and consideration of the normative consequences stemming from the behavior (e.g., are photovoltaic panels on neighborhood homes commonly seen)?.

While a full review of the constraints impacting climate mitigation and adaptation is beyond the intent of this presentation, Gifford and colleagues (Gifford, 2011; Lacroix et al., 2019) developed a five-factor model of the psychological constraints inhibiting behavioral change. In the context of our hierarchical model of constraints, four of their factors align with our intrapersonal constraint dimension and one with our interpersonal domain. For intrapersonal constraints, they identified barriers related to beliefs that; a) behavior change is unnecessary ("change unnecessary"), b) climate mitigation behavior change is too disruptive to individual lifestyles and life goals ("conflicting goals and aspirations"), c) individuals' have poor understanding climate change, its science, and the ascription of responsibility, and d) individuals' already do enough to mitigate climate change and both industry and the government need to do more ("tokenism"). Their fifth dimension, "interpersonal relations", focusses on the (social) normative pressures that impinge on action and aligns with the interpersonal constraint dimension. Ideologies and identities are shaped by social groups, preconditioning appraisals of (climate) risk and policy (Kahan et al., 2011). These psychological constraints have potential to intrude upon all processes reflected in Figure 2 and, ultimately, negate behavior change and adaptation. Conversely, the literature we've reviewed pertaining to elements within the cognitive hierarchy provides guidance for decision makers on how policy and programs can help individuals negotiate constraints to meaningful action.

4.7 Behavioral feedback

While not depicted in Figure 2, it is also understood that there are feedback loops throughout the cognitive hierarchy. These feedback mechanisms have the potential to affirm desirable behavior. For example, the undertaking pro-environmental behavior can elicit feelings of pride or guilt depending on the action undertaken (Schnieder et al., 2017). The experience of pride, as opposed to guilt, then serves to motivate future congruent action based on prior experience. Similarly, behaviors that are normatively consistent with existing personal and social norms also serve to motivate future action owing to the behavior's impact on an individual's self-esteem (Venhoeven et al., 2016). Like the effect of pride (or guilt), behavior aligned with an individual's moral compass and their peer's

expectations improves individual self-image. And, in the context of identity theory (Stets and Biga, 2003), environmentally responsible behavior that aligns with an individual's role-related identity, increases the likelihood of self-verification and positive self-evaluations. So not only does this behavioral feedback inspire future environmentally sensitive behavior but is also key for driving individuals' efforts to negotiate constraints that might thwart their intent (Kollmuss and Agyeman, 2002).

5 Conclusions and recommendations for future research

In this paper, we attempt to bridge the value – action paradox by drawing upon work cast within conservation psychology to identify mechanisms by which the processes driving action can be shaped to achieve more sustainable outcomes. The shift toward a more mutualistic orientation with nature suggests the possibility of increasing success of treatments aimed at manipulating the endogenous psychological process (i.e., attitudes, knowledge, efficacy, norms) stemming from value orientation. While empirical evidence illustrates that values can be slow to change, the psychological processes situated higher within the cognitive hierarchy are more susceptible to manipulation.

While the focus of our review has been on the literature framed within the cognitive hierarchy, there is a diverse and emerging literature that also draws from psychological theory that complements the work we portray as shaping human behavior. We see the potential for three lines of research that could complement the processes depicted in Figure 2. First, recent work drawing on self-determination theory (Deci and Ryan, 2000) has shown that when motivation to engage in stewardship and environmentally responsible behavior is internalized (intrinsic), individual action is significantly more impactful compared to when external incentives (extrinsic) are offered (Cooke et al., 2016; Baierl and Bogner, 2023). In the context of our model depicted in Figure 2, it would likely have implications for individuals' appetite for information (knowledge) and for their understanding and willingness to act (efficacy).

Second, work exploring the influence of emotion on behavior has also been an important factor for understanding conservation, especially in the context of wildlife. Depending on socio-cultural affiliations, individual dispositions toward certain species can vary widely ranging from fear to happiness, joy to anger (Castillo-Huitrón et al., 2020). Research is also illustrating that individuals' emotional response to climate change messaging has implications for sustainable behavior (Brosch, 2021). These emotions shape the extent to which a sense of responsibility drives action (efficacy). The mechanisms by which emotions are stirred have varied. Where some work has focused on eliciting negative emotions such as fear and guilt (Moser, 2016), other work has focused on hope-based message content emphasizing the importance of solution-oriented individual and collective action (Ojala, 2015).

Last, the framing of issues related to sustainability, climate action, conservation, and environmentally responsible action in terms of moral imperatives has also demonstrated implications for behavior. The moral pathways by which action is inspired can, however, vary depending one's moral posture. For example, the issue of trophy hunting for the sake of conservation has long been controversial. Opponents expressing deontological orientations (i.e., the morality of an action is determined by the inherent nature of the action) cite the need for respecting individual animal rights (Ahmad, 2016). Alternatively, proponents express support citing a pragmatic utilitarian (i.e., the morality of the action is determined by its consequences) need for local communities who are charged with conserving the species. While the two orientations share the same conservation goal, the behavioral pathways are very different impacting all psychological processes depicted in Figure 2. The success of strategies for solving problems of climate change, resource efficiency, and environmental impacts depend on whether changes in public behavior can and will supplement available technical solutions. It has been challenging for psychologists to translate the complexity of human behavior into policy recommendations. Thaler and Sunstein (2008) work related "nudges" provides a platform that links our understanding of human behavior with policy and its economic rationales by altering the choice architecture in which decisions are made. The architecture is comprised of the informational and physical environment guiding and enabling choice outcomes. The framework has been utilized in a number of fields including the promotion of pro-environmental and sustainable behaviors. In a recent review of empirical evidence that has emerged since Thaler and Sunstein's work, Mertens et al. (2022) identified three principal psychological barriers to behavior change and the array of nudge tools that have been utilized to overcome these barriers. These barriers manifest themselves in the constraints we identify in Figure 2 and account for much of the mystery in the value-action paradox. The first barrier identified by Mertens et al. was the limited access to decision-relevant information. Studies enabling the negotiation of this constraint have attempted to increase the availability, comprehensibility, and personal relevance of decision information. For example, Landon et al. (2018) demonstrated the utility of the effectiveness of descriptive social norms in promoting household water conservation. They provided households with comparative information about their household consumption compared to others within their neighborhood. Significant declines were observed among high use households.

The second barrier identified by Mertens et al. (2022) referred to the limited capacity to evaluate and compare choice options. Interventions designed to address this constraint have focused on altering the utility of choice options through their arrangement in the decision environment. One technique that has demonstrated success for reducing consumption across a variety of resources is to change the default options in instances where individuals fail to choose from the array of options. For example, a single-sided print option is a default which contributes to much higher volumes of paper than if default would have been double-sided copy. A Swedish study showed that 30% of paper consumption is determined by the default and that by switching the default to a double-sided option paper consumption could be reduced by 15% (Egebark and Ekström, 2013).

The third barrier identified Mertens et al. (2022) referenced the intention-behavior gap stemming from issues of procrastination and intertemporal discounting. In this instance, motivation to act is seen to fade over time. A commonly utilized commitment nudge involves providing individuals with feedback on their progress related to the target behavior. In a meta-analysis of information-based conservation experiments, Delmas et al. (2013) reported that, on average, individuals in the experiments reduced energy consumption by an average of 7.4% across 156 published studies. Further, individualized feedback via audits and consulting resulted in the largest reductions.

The need for behavioral change is imminent. The earth's carrying capacity is being exceeded in relation to at least three planetary boundaries; climate change, the nitrogen cycle, and biodiversity loss (Rockström et al., 2009). In the case of climate change, if the global community does not manage to achieve climate reduction targets set by the United Nations Framework Convention on Climate Change, there is a strong likelihood that future generations' ability to satisfy basic human needs (e.g., related to food and water security and safe environments) will be affected (IPCC, 2013). While developed societies have, for the most part, modernized to the extent basic human needs are amply satisfied, the economic development that has accompanied modernization has coupled economic growth with an unsustainable consumption of natural resources and rising emissions (Akizu-Gardoki et al., 2018). An increasing number of researchers and activists have called for a transition to a global steady-state economy (Koch, 2015). We suggest that the shifting values identified by Inglehart, Manfredo and colleagues represent an opportunity for modern society to capitalize on humans' increasing empathy for the natural world and to act in more sustainable ways. Their recent findings (Manfredo et al., 2018) illustrate that those expressing a stronger affinity toward nature (e.g., mutualists) are more inclined to agree with statements suggesting that environmental protection should be prioritized over economic growth and that climate change is primarily driven by the burning of fossil fuels. Unfortunately, as it presently stands, those most inclined to express this sentiment (i.e., those reporting higher incomes, more years of formal education, and residing in urbanized environments) are also more likely to act in ways that contribute to climate change (e.g., car usage, air travel, household energy use; Da Silva and Pownall, 2014). It is a troubling paradox given they have greater capacity for reducing their ecological footprint. With human values shifting toward a more empathetic orientation toward nature, opportunities exist to nudge humanity toward sets of behaviors that reduce their environmental impacts using the mediating constructs constituent of the cognitive hierarchy, thus helping to solve the value-action paradox.

Author contributions

GK – Conceptualization, writing. AL - Conceptualization, writing. All authors contributed to the article and approved the submitted version.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fcosc.2023.1092259/full#supplementary-material

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