

The role of value(s) in theories of human behavior

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Highlights

- Human behavior theories elucidate relationships between values and behavior change
- Values transcend principles; they also refer to importance
- Value-related constructs comprise ~one-third of constructs in 100+ behavior theories
- Conceptualizing values more broadly might fill the value–action gap
- Attending to diverse value types may reveal values’ role in transformative change

Abstract

Many discourses, both academic and public, assume that values, understood as principles (e.g., fairness; loyalty), lead to behavior. We analyze how 134 theories of human behavior treat values, which we define broadly to include value(s) related to both principles (e.g., moral values) and value(s) related to importance (e.g., cost or priorities). We find that values and closely related constructs comprise roughly a third of all constructs (n=2232) in analyzed theories. The nuanced portrayal of values–behavior links offered here is crucial for understanding how values may be associated with transformative change: values must be considered holistically (including principles and importance), alongside other factors.

Keywords

action; behavior; cost; importance; principle; transformative change; value; worth

1. Introduction

Why do people do what they do? This is a central question in social science and for efforts toward transformative change[1]. In a world that confronts substantial and varied wicked problems, a common answer to this question, especially among social actors hoping to incite change (from academics [2–4] to activists[5]) involves values: people do what they do as a result of “what matters to them,” both individually and collectively. Assumptions about the connections between values and individual-level behavior are deeply rooted and omnipresent[6,7]. It is frequently assumed that values strongly influence behavior; socially undesirable behaviors, given this assumption, result from a crisis of value.

Yet despite the intuitive and widespread assumption that values and behavior are tightly linked, research presents a much more complex picture[8]. Scholarly research on the relations between values and behavior is wide-ranging and multi-faceted; arguably many social science disciplines address this link in some way. Collectively these disciplines explore the pathways from values to behavior[9], how behavior can influence values[10], and the more complex ways that values form bases for collective bodies and institutions[11,12]. This body of research also addresses values’ multiple meanings -- including meanings related to principles (which is what many people intend when they mention values) and also meanings related to importance and worth (which includes concepts like price and priorities) [13].

Researchers use the term “value–action gap” to refer to the observation that in many cases, people’s actions do not fully align with their values[14–16]. Clearly, values alone

do not directly determine behavior; many other internal and external influences also play a role. Research on the value–action gap includes a theoretical paper that introduces the concept[15] and a small collection of empirical studies (e.g.,[14,16,17]) that specifically address the specific intersection of values and behavior. Though the “value–action gap” concept has been cited over 1500 times, it has not been systematically explored -- either empirically or in terms of how it dialogues with much existing behavior theory. The few empirical explorations indicate a complex reality[18].

This study aims to enhance our understanding of the relationships between values and human action through a focus on theories of human behavior. Specifically, it systematically analyzes how 134 theories of human behavior address values and value-adjacent constructs.

Because different disciplines approach value in different ways, theories from particular disciplines capture only a limited understanding of value. By using a broad and multidisciplinary interpretation of value, our analysis explores values and value-related concepts across diverse disciplines. This is a necessary step for an interdisciplinary conversation about the intersection of values and behavior. A richer, more holistic picture of values-action links is important not only intellectually, but also given recent statements by international science–policy platforms that values are an important component of moves toward transformative change[19,20].

2. Methods

Our review was conducted as part of Chapter 2 of the IPBES values assessment, which dealt with the conceptualization of values of nature[13,21]. Here we summarize our process of theory selection and analysis (see the supplementary material for further details).

We conducted a meta-review, using two comprehensive reviews of theories of human behavior to develop our list of theories and acquire information about each theory. We focused on theories of human behavior in general to include scholarly research across disciplines. The two reviews refined their lists of theories in different ways: one (from public health) assembled 82 theories based on expert knowledge[22], the other (from planning) included 62 theories based on the most-cited works resulting from a systematic search using variants (alternative spellings, plurals) of the terms “behavior” and “theory”[23]. The lists from these two reviews are thus complementary. Ten theories appeared in both reviews. The final list included 134 theories (see supplementary material). Theories come primarily from psychology (52%) and economics (11%), with the remainder (37%) from ten additional fields (e.g. sociology, political science, human ecology) (See Table S2). The theories included in our analysis tend to be more ‘individualist;’ only a few focus on more collective understandings of behavior or social processes that shape individuals and their actions (see “Behavior and Action” below).

Our analysis centers around ‘constructs’: concepts or ideas that comprise part of a behavior theory. We first identified which constructs were value-related and which were not, then deeply analyzed value-related constructs. Our analysis considered an expansive view on values; it includes value-related constructs that can directly be considered ‘values’ in addition to constructs that are ‘value-adjacent.’ Values constructs include two broad understandings of value: *values related to principles* (mostly principles and life

goals) and *values related to importance* (preferences, priorities, worth; etc.; these values “reflect judgements or measurements of the importance of specific things in particular situations and contexts”[13,21]). ‘Value-adjacent’ constructs are those that are not directly values, but are expressions or phenomena in which values play a central role. We defined constructs as value-adjacent when meaning, importance, priority, ranking, or similar phenomena were central to their content. Examples include norms (institutions that protect and perpetuate certain values) and evaluations; see Table 1.

Our analysis combined deductive and inductive coding of constructs (sometimes called abduction[24]). We identified constructs as value-related when they fit our *a priori* definition of either values or value-adjacent constructs. We then categorized value-related constructs into the categories in Table 1; we created these categories mostly *a priori* (based on the definition of value), then added a few categories during coding (based on additional common themes). The value-related constructs that theories used, however, can be quite confusing and overlapping. Two theories can use different terms in similar ways; conversely, two theories can use the same terms in different ways (e.g., Ostrom’s work[25,26] defines “rules” slightly differently than do many psychological studies (e.g.,[27])). We standardized our coding process, but the coding outcomes were somewhat dependent on coders’ positionalities, so complete replicability is unlikely. See supplementary materials for details on the coding process, including coders’ positionalities. Figure S1 depicts our analysis process. Our database of constructs and their coding is available at [online data repository, blinded for review].

3. Results

Table 1. All value-related construct categories into which we classified the 649 values and value-adjacent constructs (out of 2232 total constructs) in the 134 theories analyzed. The “number of unique constructs” column indicates the number of times we coded constructs into that category across all theories. It is often greater than the “number of theories” column because some theories included more than one construct in a given category.

Category	Definition	Examples	Number of unique constructs in category	Number of theories in which appears
Attitude	Relatively enduring emotional sentiments about a subject. Often relate to favorability/unfavorability of possible outcomes, and are often shaped by external influences and internal beliefs.	attitudes, individual attitudes, work attitudes	31	28
Beliefs	Private cognitive elements held with conviction; mental representations that influence a person's perceptions of specific conditions. Often depend on knowledge.	opinion, internalization, outcome expectancies, consensual	23	17

		beliefs		
Cost	A measure of expense (monetary or not; quantitative or not) of choosing one good or activity over another. Also the monetary value of goods and/or services that producers and consumers purchase.	opportunity cost, firm costs, perceived costs, marginal costs	10	8
Desire	Want of or preference for something; can relate to the appeal of different outcomes.	desirability, desires, desire	5	5
Drive	The motivation to act or react to innate and/or external stimuli, such as appetite or fear.	drive, acquired drive, passion	5	3
Evaluation	Cognitive and affective assessment determined by expectations, judgments, and understanding of future consequences. In evaluation, people reflect on and attach values to attributes to assess alternatives for achieving objectives.	expectancy, self-evaluation, evaluation of consequences, judgment-driven behaviors	38	30
Goals	An objective or desired state/outcome; can be related to intentions. Emerges from individual or collective motivations.	personal goals, shared goals, lower-order goals, higher-order goals, proximal goals	32	16
Identity	Beliefs about oneself or association with particular social groups; can include feelings about or evaluations of those identities.	social identity, commitment to role identities	5	5
Importance	How much something is valued; relative significance.	importance, resource importance, perceived importance of the problem	5	4
Motivation	Inclinations inspired by factors both within and outside of people.	intention, desired consequence, feelings of want, feelings of need	35	25
Needs	A required state or outcome. Can be either conceptual (e.g., competence) or physical (e.g., food). Often arise from awareness of personal feelings stemming from mental or physical discomfort.	awareness of need, basic needs, self-needs	12	8
Norms	Informal rules about behaviors that	social influence,	68	45

	are considered acceptable within particular social groups.	social pressure, social norms		
Preferences	A prioritized alternative, object, or subject in relation to another. Often based on the favorability or "liking" of an alternative.	individual preferences, competing preferences	13	11
Priority	Indication of identification as one thing being more important than something else	priority, community priorities	3	3
Rationality	Use of a strategic and criteria-based process to compare means, constraints (i.e. laws) and outcomes in order to optimize/maximize potential benefits, utility, or advantages. May involve pros and cons comparisons.	rationality, bounded rationality, reasoning	9	9
Rules	Guidelines or directives for what is standard, allowed, or appropriate. More formalized than norms.	decision rules, personal rules, laws and regulations	12	11
Utility	Includes both a general conception of usefulness and economic understandings of utility as a way to compare the intensity of a preference for one (usually consumption) decision over another.	marginal utility, expected utility, diminishing utility	14	10
Value as principle	Principles, virtues, or other indications of fundamental importance; include ethical, moral, aesthetic, and religious values. Some theories name particular values (e.g., fairness, reciprocity, social enhancement) and other theories distinguish different types of value (e.g., egoistic values, altruistic values), but most theories name values in general.	values, value systems, tangle of values, enjoyment values, morality	45	30
Value as worth	Relates to wealth, outcomes, or value of a gain; often associated with an amount (relative or absolute) or quantity.	functional value, subjective value, temporal valuations, psychological value	23	15
Weight	Measure or assessment based on the importance or value attributed to something (object, action, variable, etc). Can be quantitative or non-quantitatively relative. In equations,	variable weights, decision weights, percentage	4	4

	refers to probabilities or percentages of importance compared to a total value.	weight, index weight		
Mixed	Were identified as one single construct in a theory, but included more than one of the construct themes in this table.	self-attitudes, social-personal nexus	34	26
Other	Wide-ranging. Includes a) social factors such as social belonging and acceptance, roles, peer influence/pressure, religiosity, and power; b) contextual factors external to the individual and determined by values, such as policies, priming strategies, and extrinsic motivations (e.g. rewards and incentives); and c) individual-level factors that are largely internal (though influenced by context) (e.g., worldviews, time horizon evaluation).	reward, custom and fashion, worldviews, perceived barriers/consequences of behavior, time horizon evaluation, efficiency, consistency, perceptions of the self, roles	223	88

3.1 The role of values in behavior theories

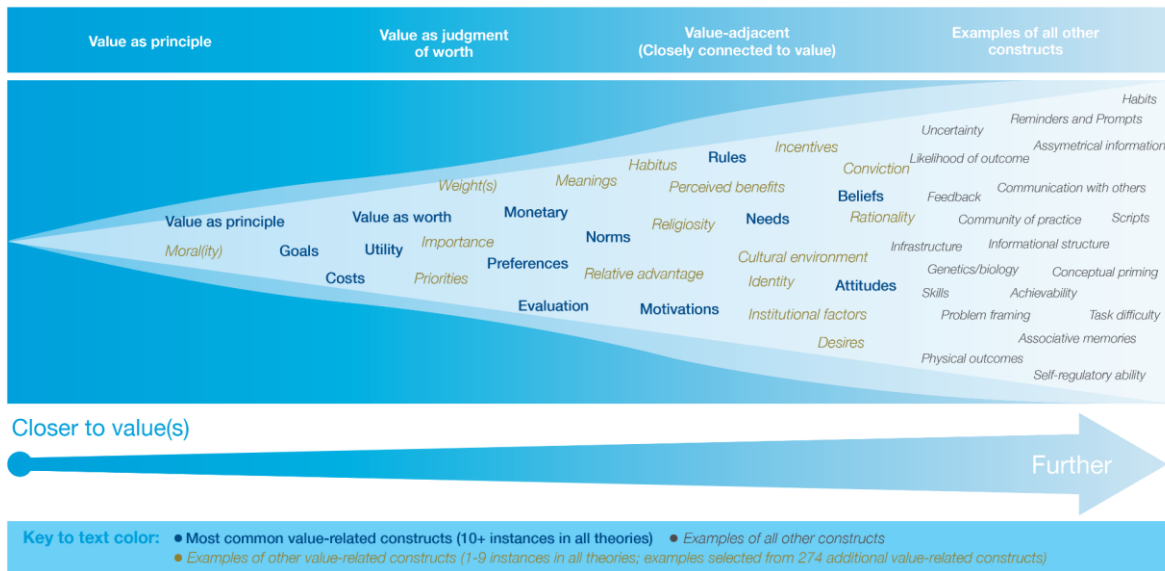
In the theories analyzed, values or value-adjacent constructs comprise about 29% of theoretical constructs used to explain behavior. Of these, 45 (2% of total constructs) are value as principle; 23 (1% of total constructs) relate to value as importance; and 581 (26% of total constructs) are value-adjacent. Table 1 provides definitions of all of our construct categories, the number of times each category appeared in our database, and the number of theories in which it appears. Figure 1 visualizes the relative proximity of each construct category to values as principle and provides examples of value-adjacent constructs (both those in our construct categories, and those that fell into the “other” constructs category).

The theories we analyzed provide hundreds of examples of how values and value-adjacent concepts can play diverse roles in behavior theories. Figure S2 details two theories from quite distinct fields to provide examples.

Figure 1. Relationships between value-related constructs and all other constructs in theories of behavior. The idea of moving “further” from values, from left to right, indicates that as we move further to the right, the categories and constructs listed are increasingly conceptually distinct from values as related to principle. Further to the right, values related to principles play less important roles, and some value-adjacent constructs may be entirely independent of values-as-principle. The increasing size of the cone surrounding the constructs indicates the increasing prevalence of the type of construct (values related to principle; values related to judgment of importance; value-adjacent; all other constructs) in the literature. Coding produced exact counts of each (see Table 1), but because theories define and cluster constructs in diverse ways, results are best understood as approximate representations of the prevalence of various concepts.

(Figure based on [21])

Factors associated with behavior:



3.2 The broad reach of values

Our analysis lays the groundwork for an interdisciplinary conversation about links between values and behavior. Whereas psychology, from which a majority of our theories come (Table S2), largely defines values as principles, and economics defines them largely as costs or worth, a full exploration of values' role in behavior reveals a wide range of value concepts as related to behavior. The broad definition of values that we (following recent global science-policy processes [21]) use reveals a wide range of relationships that are obscured by narrow definitions. Our approach illuminates a suite of value-related phenomena that is not present in any one theory; these phenomena range from worldviews to moral conviction to economic cost.

When values–behavior links are considered, there is much more at play than values as principles. In the theories we analyzed, values related to principles are a very small proportion of the overall set of values-related constructs associated with behavior. One way to understand this result is to consider that people constantly make judgments about importance; these judgments relate to value. Thus to fully understand value, we must consider its many forms – it does not always manifest as a discrete, individual principle (e.g., fairness). Indeed, many forms of value may be independent of values-as-principle [28]. This is why, in English at least, the word value has multiple interrelated meanings [29]. Our analysis encompasses this rich meaning.

3.3 Distribution of value-related constructs in theories and across time

In most analyzed theories, between 11 and 50% of constructs were value-related (this aligns with the overall average of 29% of constructs that were value-related). Twelve

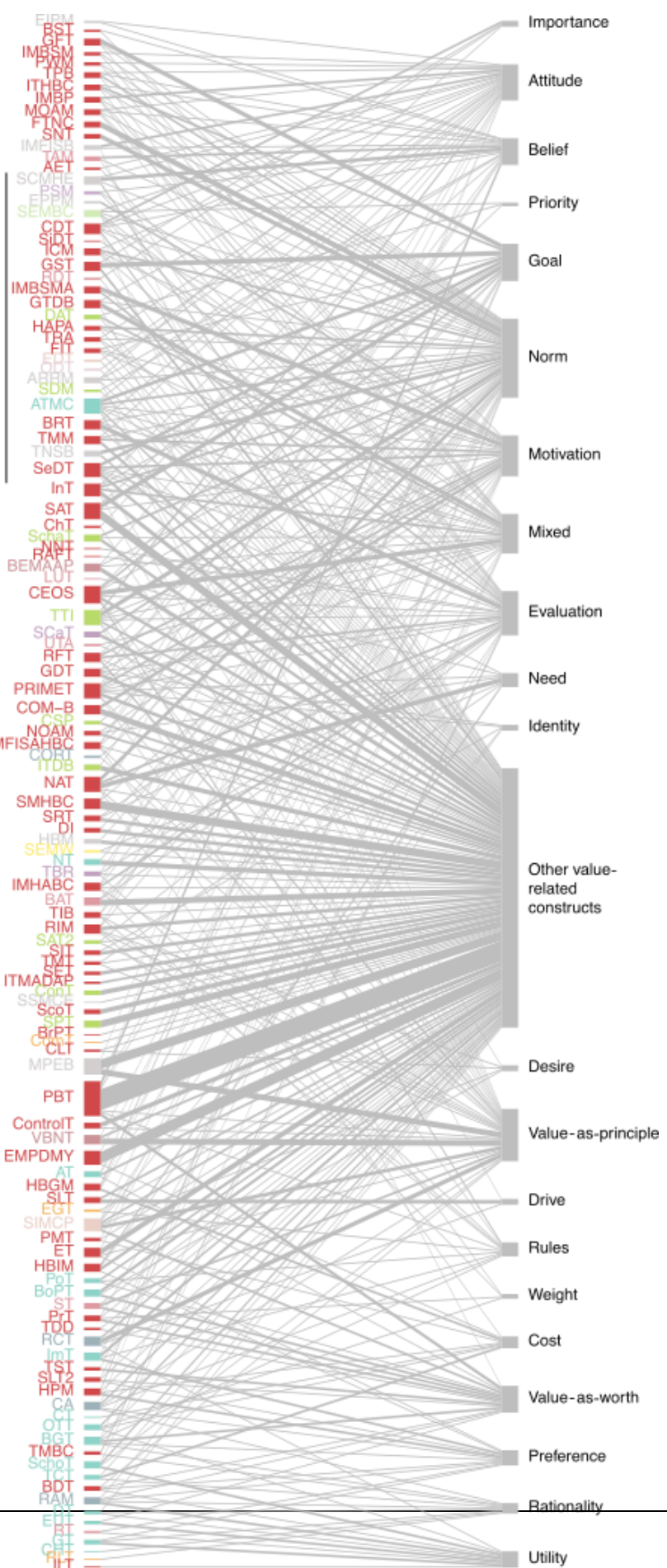
theories had no value-related constructs, and within three theories (Focus Theory of Normative Conduct, Goal Framing Theory, and Social Choice Theory) over 90% of the constructs included were value-related (Figure S4).

Theories included in our analysis were published over nearly a quarter millennium, starting with Adam Smith's 1776 work. Our sample included articles published sporadically until 1972; starting in 1972, it included theories published in every year except for 1997. Across time, there are no remarkable patterns in the proportion of constructs in each theory that are value-related (Figure S5).

Value-related constructs were used in diverse combinations (Figure 2). Theories from economics demonstrate the most clustering in the value-related constructs they include (e.g., utility, cost). Theories from other fields tend to use a variety of constructs, with no obvious concept-cluster patterns.

Figure 2. Relationships between value-related constructs (right) and each of the 134 theories analyzed (left), where font color (left) represents the discipline with which each theory is associated. Theories and constructs are ordered according to co-occurrence: theories depicted closer together share more constructs, and constructs depicted closer together occur more frequently together in theories (though the span of diagonal lines demonstrates that constructs are used in various combinations). Clustering of theories by discipline (depicted by clusters of font colors) and corresponding locations of constructs indicate that some constructs are more common in particular disciplines. For example, constructs such as utility and rationality appear across from and are strongly connected to a cluster of economics theories; this indicates that these constructs are disproportionately used in economics. Thicker lines indicate that a given theory included more than one construct in a particular category. The height of the horizontal lines to the left of each construct name is proportional to the number of times constructs in that category appeared in all theories. The width of the horizontal colored line next to each theory is proportional to the number of value-related constructs in that theory. Theories are denoted by the acronyms of their names; see the supplementary materials (Table S3) for full theory names. Figure made using R package bipartite[30].

- Disciplines**
- Anthropology
 - Urban & Regional Planning
 - Economics
 - Psychology
 - Education/Communication
 - Management science
 - Socio/Psych
 - Political economy
 - Biology
 - Sociology
 - Marketing
 - Computer science
 - Medicine and Public Health
 - Political science



3.4 Other factors that impact behavior

Our analysis demonstrates that values are associated with behavior in diverse ways, yet that many factors other than values also impact these connections. Multiple reviews document the suites of factors associated with behavior; unlike many theories, these reviews attempt to be relatively comprehensive.

Reviews of the factors that impact pro-environmental behavior in particular include value-related categories at roughly the same proportion as the 29% of our findings (three of ten categories[31]; two of nine categories[32]; and three of 12 categories[33]). Common factors other than value-related constructs factors include demographic characteristics (e.g., income)[34], knowledge[31], feelings such as self-efficacy or fear[35], physical capacity to engage[36], biophysical features and physical infrastructure[37], and behavior type[38]. This pattern likely matches that in other fields (e.g., health-related behavior).

4. Discussion

4.1 Conceptual distinctions and epistemological matters

Blake[15], the geographer who coined the term “value–action gap”, recognizes the difficulty in separating values, attitudes, beliefs, and similar phenomena. Others have similarly noted “lax terminological distinction” with these concepts[39]. Our analysis, paired with an understanding of value-articulating institutions[11], resonates with this perspective; as we describe below, a conceptual reason underlies the lax terminological distinction. (Blake includes behaviors in the list of concepts that are difficult to distinguish; we side with others (e.g., [39]) in seeing behavior as easier to separate.)

Our results also speak to epistemology and reductionism. Most theories in our sample acknowledge that the constructs they address are connected; some (e.g., Practice Theory[40]) say that the elements cannot be studied in isolation because they are interdependent[1]. This distinction is epistemological: it concerns the best “way to know” the world. Different epistemological approaches adhere to different opinions on how much the world’s processes and interacting entities can be reduced to allow them to be studied, but all arguably recognize inherent interconnections[41–43]. Behavior theories exhibit a wide range of epistemological allegiances: more reductionist theories divide things more starkly, and more interpretivist/phenomenological theories offer less division and discreteness. Our analysis takes a middle road; though we classified theories into categories, we did not aim to create an ontology of new definitions (i.e., typology) that unambiguously sorts each concept (*sensu* [44]). Rather, our goal was to consider the varied ways that diverse value-related concepts are marshalled to understand human behavior. The landscape of concepts coming forward is complex. The same word may reference to different concepts as different words may refer to the same underlying concept. Future research might consider the benefits and drawbacks of a standardized value ontology that cuts across disciplines.

4.2 Behavior and action

This work’s main limitation relates to the different meanings of and literatures around

the terms “Behavior,” “Action”, and “Practices.” This analysis includes primarily theories that identify themselves as related to “behavior.” Though the reviews we used include a few theories that refer to action or practices, neither focused on these terms. ‘Behavior’ is the term used more commonly in psychology and economics, most branches of which focus on human individuals and put little or no emphasis on social processes that shape individuals (and their practices) or on decisions by collectives. Our results thus over-represent individually oriented constructs. Yet despite this focus, the list of theories we analyze includes multiple theories that focus on the social environment (e.g., social practice theory[40] and actor-network theory[42]).

Some researchers emphasize the conceptual distinction between behavior and action[45,46]. Work on “behavior” tends to focus more on personal practices (e.g., recycling or “responsible purchasing;” almost all of this research is conducted in developed countries); incorporation of social factors in this literature (e.g., frequent inclusion of social norms) address their influence on individual behavior. Work on “action,” in contrast, often focuses more on collective, civically oriented, and system-focused activities (e.g., requesting policy changes) than on private, individual activities, and it attends more closely to social contexts [47]. Yet another body of literature addresses practices (e.g., social practice theory)[40]; this body of theory heavily emphasizes the importance of social structure, context, and influence to determining human “practices” – i.e., modes of being and activities. Researchers note that a focus on behavior at a personal (or individual) level can be a limitation when applied to environmental issues[47,48]. To further complicate this story, however, distinctions between behavior and action are not clear-cut; some typologies of behavior include action[45] and some typologies of action include behavior[1].

Despite our review’s leaning toward individually focused theories, the theories analyzed included a variety of constructs related to social context and influence (for instance, they included the fundamental constructs of power and worldviews, which fell into our “other” category; see [49,50]). When these more individually focused theories attend to societal influences, they tend to focus on how this context influences individual behavior, rather than on how people’s values reflect such influences, nor on how values are embedded in institutions (notably, norms and legal rules) that impact behavior. Though it is important to note the limitations of the search strategy employed in this analysis, it is also important to note that the analysis addressed the role of non-individual factors – if often in a somewhat piecemeal, less integrated way. This analysis thus provides a comprehensive summary of the role that values, defined broadly, play in the complex suite of factors that relate to human action.

4.3 The value–action gap

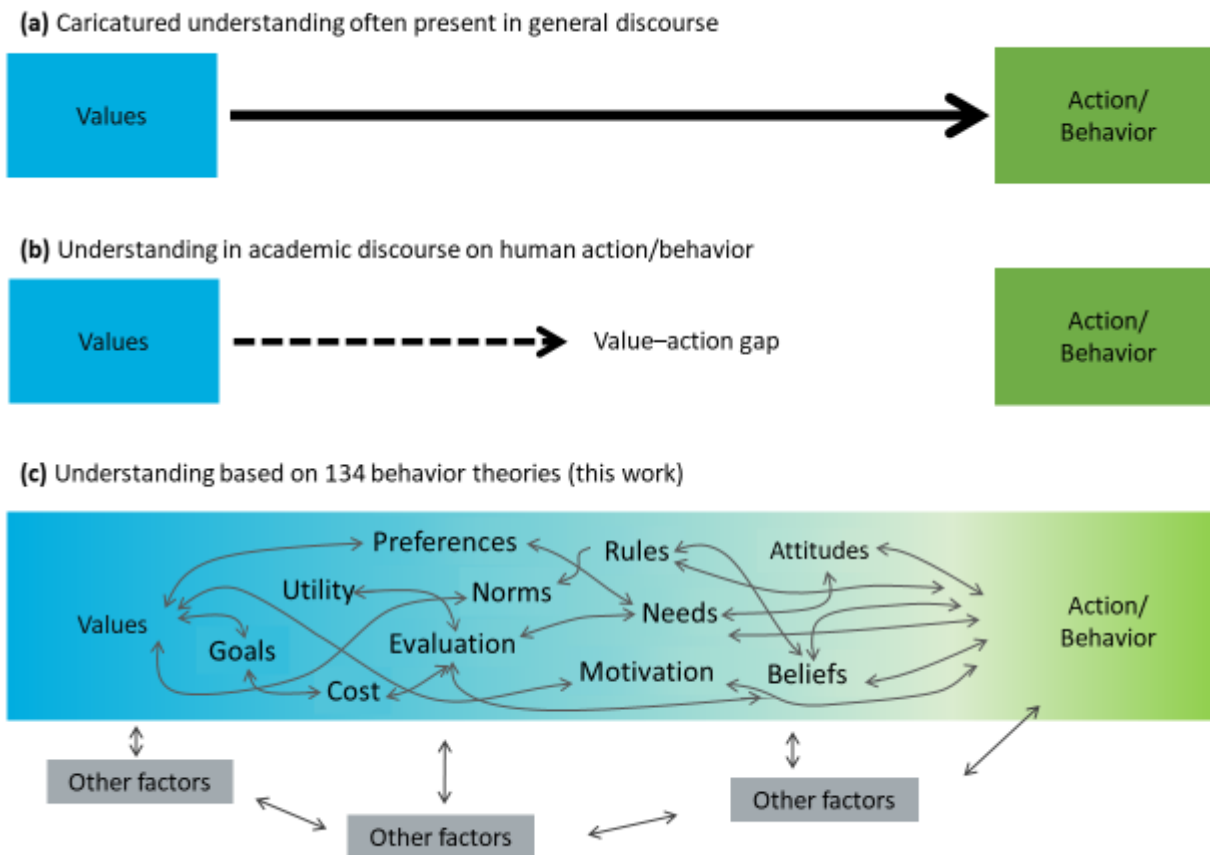
The lack of a one-to-one relationship between values and behavior is sometimes labeled the ‘value–action gap’[14–16]. Our finding that value-related concepts comprise about 29% of theoretical constructs used to explain behavior both supports a simplistic idea (Figure 3b) of the value–action gap (71% of constructs were not rated as value-related), but also demonstrates that values infuse many factors (29%) related to behavior.

Though the idea that values impact behavior is widespread (Figure 3a), especially in common conceptions, the idea that there is a gulf between values and behavior has equivalent cachet among more knowledgeable academics (Figure 3b). Indeed, Blake’s

original value-action-gap paper is often cited along with evidence that values and behavior are not correlated; many scholars appear to interpret the term to have this meaning. Yet this use misses the core point of Blake’s value–action gap paper: that the relationship between values and action “is characterized by a more complex relationship between individuals and socioeconomic and political institutions than is recognised”[15] in most situations.

The value–action gap refers to values as principles. Our review supports the idea that the purported “value–action gap” is fairly large when we conceptualize values as principles. Yet our review also suggests that the value–action gap is smaller if we conceptualize values more broadly, i.e., to include values as importance, and also recognize that values are embedded in institutions of different kinds. Indeed, this is what Blake originally suggested. If we conceptualize values even more expansively –to include not only value as importance, but also value-adjacent concepts and thus institutions that are infused with values—does this change our understanding of the value–action gap? This leads to consideration of the role of values in social structures.

Figure 3: Schematics of the way that values are often thought to impact behavior (a); the “value–action gap” that has received attention in behavioral sciences (b); and the complex pathways indicated by the present study (c).



4.4 Values and social structures

It is well recognized that social structures are linchpins of behavior, so much so that such a statement is almost a tautology. Socially oriented understandings of human behavior or action emphasize the role of societies/communities in establishing shared values and institutions (e.g., norms) that form the identities of individuals who belong to a culture[51,52]. People reproduce these values through their actions and practices[51,52]. Following from this, values and norms typically vary between social contexts, the roles people play, and the implied expectations people face[53]. What may seem to be inconsistent individual behavior often becomes understandable when social contexts and institutions are considered. Social and institutional contexts influence not only *what* values we express, but also *how* they are expressed. As an example, values will be both differently ordered and expressed if people operate in the context of market transactions or in the dialogical setting of a community [54].

This intertwined relationship between values and social structures illuminates and undergirds the core difficulty of separating values from other phenomena associated with behavior. There is an interdependence in many of these constructs that most theories do not recognize or do not explicitly discuss[1]: institutions and other structures that surround us are created to emphasize certain values, and also allow manifestation of values. This relates to the point above about epistemology; approaching values-behavior links in an interdisciplinary (and therefore epistemologically diverse) way helps to illuminate the complexity of the relationships between values, institutions, and behavior. Understanding diverse and complex values may help reveal values' multifaceted role(s) in transformative change.

4.5 Values, behavior, and transformative change

Science–policy initiatives supported by the United Nations, and approved by over 140 national governments, have identified the need for transformative change to human society if we are to attain sustainable ways of being on Earth[19]. These initiatives have also identified multiple levers and leverage points that can help us achieve transformative change[19,55]. One of these leverage points is to release latent values of responsibility[19,56]; another is to incorporate a wider array of values (especially those beyond economic value) into policy[55]. Effective work with these leverage points will require engagement with other fields to encompass the full range of meanings and manifestations of value. It will require understanding that values as principles matter, yet also recognizing the importance of structures in manifesting values–i.e., that structures guide expression of some values and constrain expression of others. If we want attention to values to contribute to transformative change towards just and sustainable futures, we must embrace and work with the broader and more subtle ways that values interact with behavior[57]. Dialectical, interactive approaches like that depicted in Figure 3c can expand our understanding of the relationships between values and behavior and help to identify what initiatives interested in transformative change should likely consider. Though this obviously adds complexity, one way to avoid overwhelming confusion would be to target certain aspects of that complex system, but to also actively acknowledge, in the structure of a project, the many ways that focus connects to the larger system of values-related constructs[41].

5. Suggested future research and practice

The most salient future research direction that emerges from this study is to understand empirical, rather than theoretical, research on values–behavior links. Theories are often based on, or attempt to explain, empirical data, but they are fundamentally conceptual; they often extend beyond evidence and reflect broader assumptions. A powerful follow-up to this study would collate empirical studies that address relationships between values and behavior (broadly construed, to include action, practices, and other related terms that are often treated differently in the literature).

We see three interrelated avenues for how our results might inform work toward transformative change (both research and practice). First, our overview of the nuanced value landscape offers conceptual clarity on the value-related aspects of transformation efforts. This more nuanced view could, for instance, help projects consider which value-related constructs are most relevant in a given context. It may also help to conceptually situate a project’s focal constructs with respect to other value-related concepts. The clarification of project-relevant constructs - including where they fit in the larger values landscape - can bring specificity and tractability to a sometimes overwhelming conceptual space. Second, our nuanced view of the values landscape can help projects confront the thorny interplay of descriptive and normative research in transformative change. More specifically, a focus on elucidating values (which many projects, particularly in the environmental valuation space, aim to do) is more explanatory/descriptive, whereas a focus on what is just and appropriate is largely normative [58]. Yet these distinctions are often left unclear. Our results, because they break down different elements of the value landscape, can help people clarify when they are describing different value-related constructs, vs. prescribing how they should be. Third, for projects that aim to mobilize people’s values for sustainability transformations, including projects that aim to change peoples’ values [57] or leverage plural values [59], our results can help to better define which value-related constructs the project intends to influence. This offers a much wider “menu” of options for value-focused interventions: entry points that are likely more tractable than the general goal of “changing values.” We are eager to see where research and practice communities take this work, as it is likely through the many value-related concepts we identify that values will impact transformative change.

Our analysis assumes a relative fluidity between values, value-adjacent constructs, and the rest of the world; as noted above, this complicates the task of neatly separating values to allow us to study them. We hope that the categorizations we provide might help future research to specify which aspects of the value-related spectrum they wish to include, and how – in order to advance a collective effort to better understand the complex roles that values play in human action. An important part of this effort will be to clarify relationships between various value-related concepts (e.g., how exactly do rankings and priorities relate to principles?), and also between value-related concepts and other factors (e.g., how do rankings and priorities relate to physical infrastructure in peoples’ communities)?

6. Conclusion

Many people intuitively believe that a main reason to understand values is because they are intertwined with what people do. Analysis of theories of behavior indicates that

values are associated with behavior in important ways, but that these associations exist amidst many other factors. This study emphasizes the importance of considering not only how those additional factors (e.g. personality, knowledge, physical contexts) are associated with behavior, but also the different ways that values and behavior are linked—perhaps most notably, how values embedded in institutions impact behavior. Better understanding the intricate relationships between values, institutions, and human behavior is likely crucial to our ability to achieve the transformative change needed to achieve sustainable futures.

Acknowledgements

This study grew from the Intergovernmental Platform on Biodiversity and Ecosystem Services Values Assessment (formally, the IPBES Methodological assessment regarding the diverse conceptualization of multiple values of nature and its benefits, including biodiversity and ecosystem functions and services[55]). Policymakers are the Assessment's primary audience, and the review presented here responds to policymakers' frequent requests for information on values–behavior links. Lauren Prox is a 2021 Robert Wood Johnson Foundation Health Policy Research Scholar.

Data availability: The Supplementary Material includes a full list of theories analyzed and the acronyms used in Figure 2. Full citations for all theories in the analysis and the full database of constructs identified are available at <https://osf.io/k3w9c/>.

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