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# From i-level to g-level to s-level change: New methods for a new mindset for consumer researchers<sup>☆</sup>

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## ABSTRACT

To expedite urgently needed system-level changes, as consumer researchers, we need to better understand how individual-level interventions affect the likelihood of group-level changes over time, which ultimately can lead to system-level, societal changes. To help this mindset shift, we offer a conceptual framework, based on complexity theory, to guide this shift by focusing on the study of (1) consumers as elements in a wider system, (2) consumers as active agents of change, while also (3) accounting for the feedback loops among stakeholders in the system over time. We introduce two methods that can be applied by consumer researchers in the context of group-level change and be integrated into experimental work: coordination games and agent-based modeling. These methods can complement qualitative and conceptual consumer research that started to address the need in group- and system-level change by adding a quantitative approach and presenting ways in which experimental work can be applied.

## 1. Introduction

There is an increasing call to make consumer research of service to society, to help solve 'wicked' social problems such as the climate crisis, poverty or obesity (e.g., Winterich et al., 2023). Such problems can be traced back to individual consumer decisions; by saving energy, money and calories, individuals can, in theory, address these problems. Yet, it has become clear that in order to tackle these problems, just targeting interventions at the individual consumer – the default mindset of most consumer researchers but also policy makers – is not enough: even the most motivated individual will not be able to translate their good intentions into subsequent actions when the context (i.e., the "system") prohibits them from doing so (Bolderdijk, 2023; Chater & Loewenstein, 2023; Sharpe & Steg, 2025). At the same time, the call for system-level interventions that alter the context (e.g., taxes on sugars, bans on fossil products or subsidies on renewable energy solutions) in itself will not produce system-level change without widespread individual-level acceptance (Bingley et al., 2023): politicians may be voted out when they start implementing system-level policies that their constituents dislike.

Real system-level change often starts at the individual level but must scale up to the group level (Bingley et al., 2023; Wheatley et al., 2023): single individuals can mobilize others (Nardini et al., 2021), and thereby create a social movement that affords politicians, institutions, and firms to invest in structural, system-level change (Bolderdijk & Jans, 2021). Thus, in order to be of service to society at large, it is of utmost importance that – from the perspective of consumer researchers – efforts will be directed to the study of the way individual-level interventions can be used to help individuals create change at the group level. We need to stop seeing individuals as passive 'consumers' who can be influenced, but see them as 'change agents' who can pave the way for societal change by infecting others with their ideas and/or behaviors (Bolderdijk, 2023; Nielsen et al., 2021; Lteif et al., 2023; Winterich et al., 2024). Although consumer researchers often appreciate the study of consumer observable actions, like buying, such behaviors may say very little about true intentions or wishes nor they can necessarily tell us a lot about attitudes. In this research therefore we adopt a broad view of consumer behavior to include actions, attitudes and ideas as they can all shape group and societal changes (Cohen, Pham, & Andrade, 2018).

Prior experimental work has offered valuable insights into the

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psychological principles that individuals can leverage to inspire observers to follow their lead (e.g., being consistent; [Moscovici & Mugny, 1983](#); being hopeful; goal & growth oriented, [Lteif et al., 2023](#); using moral instead of self-interested arguments; [Bolderdijk et al., 2018](#)). However, inspiring one individual is not the same as actually changing the actions of an entire group. There is no guarantee that applying these psychological principles will help individuals to actually create change at the group level: social complexity dictates that well-meant, effective interventions at the micro (individual) level can have quite unexpected and even counterproductive outcomes at the macro (group or system) level (e.g., moral arguments inspire close others but can lead to polarization and prevent the entire groups from abandoning an old convention; [Vargo et al., 2023](#)).

To study whether individual-level interventions ultimately help or hinder individuals to change the actions of an entire group (i.e., to test whether a new behavior or idea spreads across an entire group over time), we need a new mindset. Specifically, it will be useful to adopt a social complexity mindset ([Hallsworth, 2023](#); [Rand et al., 2018](#)). As we outline below, this mindset entails applying methods that meet the following three criteria: accounting for the fact that 1) consumers are elements in a wider system (rather than studied in isolation), 2) people can actively influence others (rather than being passive, only *being* influenced by others), and 3) people's actions feedback into one's later decisions as well as other stakeholders in the system (feedback loops as part of a longitudinal perspective).

We reviewed 5 years of publications (2019–2023) in the context of the most “wicked” social problems, including sustainability, health, and poverty in *Journal of Consumer Research (JCR)* and *Journal of Consumer Psychology (JCP)* – two leading academic outlets for consumer researchers. We checked whether they applied these 3 criteria. We conclude that only a small minority of these articles do. Interestingly, the articles that do meet all three criteria have been qualitative (e.g., [Giesler & Veresiu, 2014](#), [Nardini et al., 2021](#)), but not experimental. This is striking, as experiments have been the ‘working horse’ of many consumer researchers, since they allow for causal inferences – does an intervention *cause* a change in an outcome variable? Some experimental articles met 1 or 2 of our criteria (often the first and/or second criteria; [Pundak et al., 2021](#); [Yan et al., 2021](#)), but none met all three. This analysis suggests that, at least in two leading journals in the field, we are missing valuable knowledge on how individual-level interventions can lead individuals to most effectively *cause* the actions of an entire group to change.

To clarify the difference between our proposed group-level consumer research mindset and the traditional individual-level consumer research mindset and its boundaries we share the following example about research on ‘moral rebels’. Moral rebels are individuals who, out of an ethical principle, refuse to go along with the norm ([Monin et al., 2008](#)). The stream of work on moral rebels has typically used cross-sectional experiments, often demonstrating that participants are less likely to act ethically themselves when they are exposed to a rebel using a moral instead of self-interested argument ([Bolderdijk et al., 2018](#)). These cross-sectional studies suggest that moral rebels should not use moral arguments if their goal is to mobilize others and thus create group-level change. However, individual-level changes do not always logically scale up to group-level changes. Short-term negative responses to individual rebels do not preclude that moral rebels created the breeding ground for systemic change ([Bolderdijk & Jans, 2021](#)). First, the fact that some observers, in the heat of the moment, take the effort to lash out at moral rebels suggests that a nerve has been struck ([Brouwer et al., 2022](#)). Such ‘ethical dissonance’ ([Barkan et al., 2005](#)) does not only fuel derogation ([Brouwer et al., 2022](#)) and willful ignorance ([Ehrlich & Irwin, 2005](#)), but can also act as fuel for change at a later stage ([Brouwer, 2023](#)). Those latter effects take time and are often less easily detectable with an individual-level consumer research approach or with cross-sectional experiments. As a result, there have been relatively many consumer research publications documenting the negative effects of

moral rebels on social change, leading practitioners to erroneously conclude that rebels have little impact on societal change ([Bolderdijk & Jans, 2021](#)). But history, transition research ([Hebinck et al., 2022](#)) and common logic dictate that social change requires the presence of rebels – if no one would ever refuse to go along with the norm, how would norms ever change? Clearly, the impact of rebels goes beyond these short term-negative responses, but our current consumer research methods are not suited to pick up their long term impact.<sup>1</sup>

What then should the theoretical underpinnings and methods be that allow us to study system-level change within *groups* of individuals, over time? An important notion here is complexity. Theory on complexity (or dynamical complex systems, see e.g., [Heino et al., 2023](#); [Meadows, 2015](#)) suggests that changes in collective behavior (of a society) are not a simple sum of individual behaviors, but in fact nonlinear processes that can seem quite unpredictable ([Holland, 2014](#)). The main reason for this is that heterogeneous consumers learn and adapt their behavior based on interactions with others. Because of these feedback loops (among other things), the behavior change of one person can lead to unexpected changes in behavior at the system-level.

Thanks to continued advancement in methodological tools, we now have the ability to test how interventions affect not just individual-level changes but can ultimately scale up to social change. We highlight two relevant methodologies that can complement individual-level change consumer research: coordination games and agent-based modeling. Other methods may achieve the same goals, but given our own experience we highlight these two methods.

Coordination games are group-based experiments that can capture real-world social change and have been commonly used outside marketing (e.g., in sociology or economics; [Centola & Baronchelli, 2015](#)). When coordination games are informed by insights from consumer psychology (e.g., status quo bias; [Ye et al., 2021](#)) they allow researchers to model how groups of individuals gradually can switch from an old to a new convention. Agent-based modeling allows consumer researchers to simulate how interventions do not just affect individual outcomes (e.g., a targeted communication campaign), but also system-level outcomes (e.g., taxes, bans, subsidies; [Hoffmann et al., 2024](#); [Rand et al., 2018](#)). These methods allow consumer researchers to grapple with social complexity, and thus get a better understanding of whether well-meant interventions ultimately speed up or delay group-level change. Below we illustrate how consumer researchers can use these two methods to experimentally study how individual-level interventions can scale up to group-level change.

The current research offers two key contributions to consumer research. First, we propose a new mindset. Specifically, we offer a conceptual framework, based on complexity theory, that guides this shift by directing consumer researchers' attention to the study of consumers as part of a wider system, as active agents of change, and accounting for the feedback loops among stakeholders in the system over time. Second, methodologically, we introduce two relevant methods that can be applied by consumer researchers in the context of studying group-level change: coordination games and agent-based modeling. These methods will be valuable in complementing qualitative and

<sup>1</sup> Teasing apart cause and consequence in social change processes is notoriously hard. Some have even argued that our collective faith in the power of minorities is mistaken, as we tend to zoom in on successful cases and overlook unsuccessful cases where activists have not been successful in making their viewpoints go mainstream ([McAdam & Boudet, 2012](#)). While we fully agree that not every social movement is successful, the opposite seems very unlikely: societal change is unlikely to be successful without some level of bottom-up support ([Meyer, 2003](#)). Moral rebels play an important role in this process. According to [Judge et al. \(2024\)](#), social tipping points can only happen after society has passed through the subsequent stages of moral recognition and moral amplification. Both phases are kickstarted by moral rebels, who are needed to seed doubt about the self-evident nature of the status quo.

conceptual consumer research that started to address the need in group- and system-level change by adding a quantitative approach and presenting ways in which experimental work can be applied.

## 2. Consumer research and system-level change

Recognizing the limitations of focusing on individual decision-making in creating system-level social change, researchers have stressed the need for systemic changes at the social, technological, and political level (Otto et al., 2020; Stadelmann-Steffen et al., 2021). Such system-level change is an important topic in multiple fields, such as economics (Andreoni et al., 2021), biology (Loftin, 1986), sociology (Marwell & Oliver, 1993), and marketing (Giesler & Fischer, 2017; Vargo et al., 2023). However, especially in marketing, as we discuss below (when empirically reviewing the top consumer research in the pro-social and social change space), most of the existing consumer research work on systemic change is qualitative or conceptual.

A key goal for responsible marketers and policy makers promoting system-level social change is to understand how to move from mobilizing individuals to mobilizing a *collective* (i.e., group) of individuals, which in turn will help moving from the group-level to system-level change (Wheatley et al., 2023). This does *not* imply that studying individual consumer behaviors is irrelevant. In fact, group-level and system-level change will often be sparked by individual consumers and then collectives of consumers (Sheth et al., 2011), instead of enforced from the top by institutions. Further, we view the ‘system’ as one that already includes individual-level and group-level behavior as well as the dynamics among them (Meadows, 2015).

### 2.1. Consumers as conduits for group-level and system-level change

System-level change is often linked to convention change. Conventions (e.g., whether to drive on the left or right, the correct spelling of ‘donut’/‘doughnut’, using 0.01 or 0.05 as a threshold to determine statistical significance) are arbitrary rules that people conform to, to avoid the costs of deviation (e.g., it is risky to be the only one driving on the left instead of right, or to deviate from academic standards). Many unsustainable and unhealthy behaviors, in essence, are conventions and they hinge on mutual expectations and coordination, where deviation may incur costs (e.g., vegetarians being ridiculed for refusing to go along with the convention of eating meat at barbecues; Bolderdijk & Cornelissen, 2022). These conventions are likely to change once a critical mass of individuals no longer conforms and the social costs of deviation disappear (Bicchieri & Funcke, 2018; Centola et al., 2018; Nardini et al., 2021; Janas et al., 2024). Once these small groups of consumers succeed at mobilizing and pressuring enough others, build coalitions and thus reach critical mass, a self-perpetuating feedback loop may ensue, whereby institutions (governments, businesses) jump on the bandwagon and facilitate convention change via e.g., laws, taxes, new products and technological innovations (Judge et al., 2024). Research on system-level change labels this exact point in time as a ‘tipping point’ (Lenton et al., 2021).

An illustration of this process currently plays out in the context of reduced meat consumption. Vegan lifestyles were initially very uncommon and associated with social stigma (Minson & Monin, 2012). Fueled by the increasing presence and quality of meat-replacements (Burger King now offers plant-based burgers in many countries), vegan lifestyles are currently moving from niche to mainstream. A recent poll<sup>2</sup> showed that by now, a third of the UK population is interested in adopting a vegan diet and that many “admire” a plant-based diet. Such social change would never have taken off without a stubborn set of individuals who, early on – when most people still saw eating meat as

‘necessary, natural, normal, nice’ (Piazza et al., 2015) – refused to go along with the convention of eating meat.

Thus, consumers play a key role in shaping change, but it goes beyond just changing their own behavior. While more responsible consumption behaviors are indispensable, individual consumers can arguably make a bigger impact as they act to proactively change the behavior of others in their network (Gollnhofer et al., 2019; Nielsen et al., 2021; Whitmarsh et al., 2021). What is then required of consumer researchers is that they aim to study individual consumers not only as decision-makers in specific behavioral contexts (e.g., sustainability) but as *social change agents that challenge existing conventions and contribute to group-level and system-level change*.

## 3. Conceptual framework for group-level social change: Applying a collective and complex system perspective in consumer research

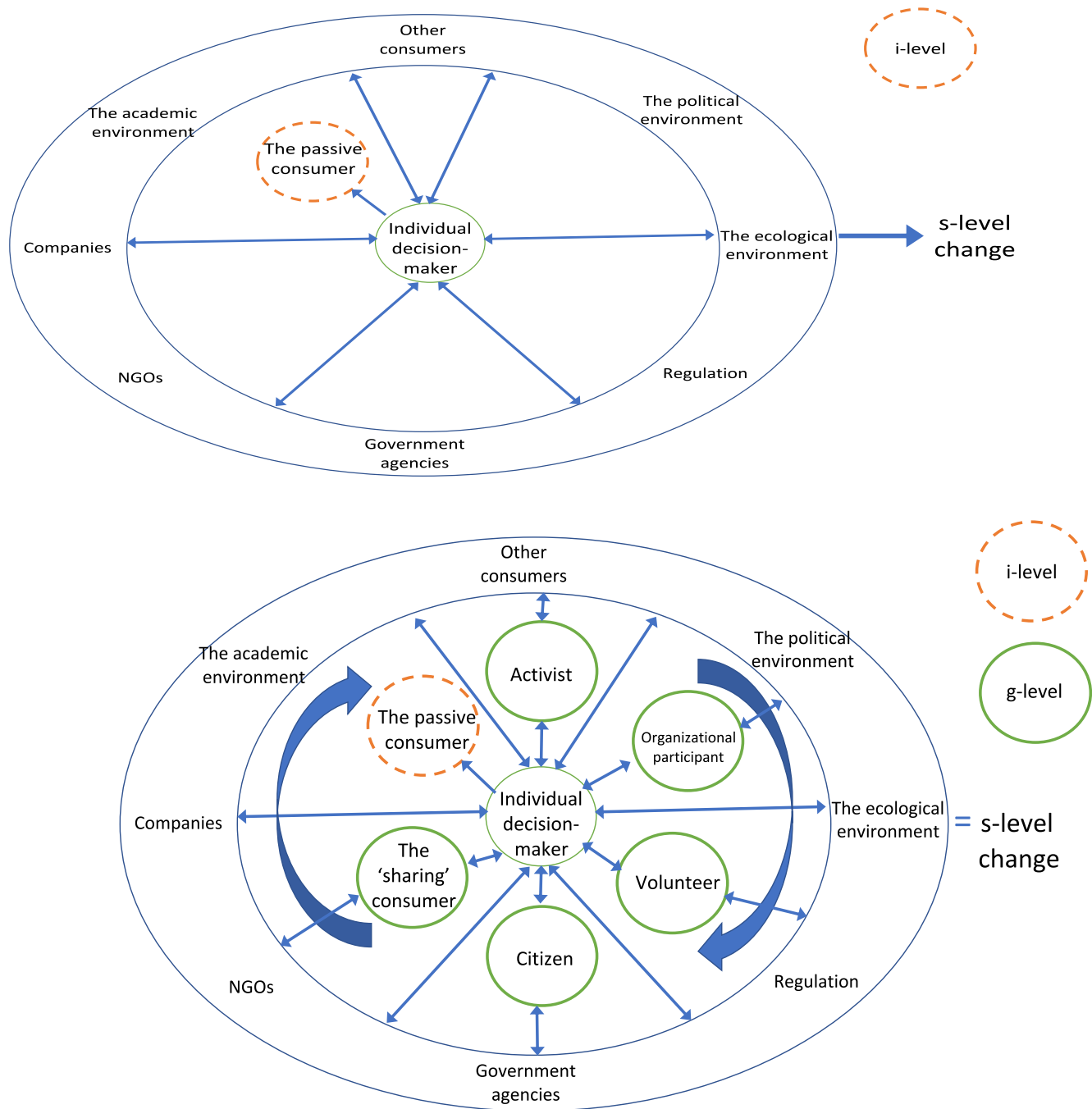
Societal change requires a change of a substantial proportion of a society’s individual members. The decision-making processes of these individual consumers do not occur in isolation; instead they are embedded within a complex web of interdependencies. This complexity comes from the inherent heterogeneity among consumers, the social network connecting them, and the overarching relationship that these consumers share with the societal system to which they belong (Rand et al., 2018).

Assessing the impact of an intervention requires consumer researchers to not only focus on whether the intervention is successful in generating individual behavior changes (i-level change, e.g., intervention aimed to lower an individual’s carbon footprint), but also on the potential impact on (and interactions with) others in the individual’s network (g-level change; e.g., interventions aimed to allow people to become ambassadors of change – getting them to lower others’ footprint), and on the potential changes in response to (and interacting with) other society-wide interventions (s-level change; e.g., policy level changes). Only then one can begin to understand whether and when an intervention will shift the behavior of collectives of consumers over time.

The process of societal change is too complex to analyze with standard experimental and statistical approaches and requires a perspective that allows for the interdependencies discussed above. In line with earlier work in the management and marketing strategy literature, we argue that the complexity or complex systems framework is a valuable addition to the consumer researcher’s toolkit for this purpose (Holland, 2014; Rand & Rust, 2011; Rand et al., 2018; Vargo et al., 2023). A key property of a complex system reflecting the societal change phenomenon is emergence, i.e., the concept that “the action of the whole is more than the sum of the actions of the parts” (Holland, 2014; p. 2). From a complexity perspective, it is imperative for consumer researchers to ensure that their conceptual models and research designs incorporate this concept of emergence (Giesler & Fischer, 2017). More specifically, we urge consumer researchers to extend their current work by accounting for the following aspects: 1) accounting for consumers’ embeddedness in a wider system, not in isolation, 2) viewing consumers as active change agents (influencing others, acting as citizens, activists, and volunteers), not only as passive actors who are influenced, and 3) allowing for feedback loops among consumers and other stakeholders over time, acknowledging the dynamics of interactions and not only focusing on a single point in time. We discuss each of those aspects in more detail below.

We next present in more detail the 3 dimensions of the proposed collective-complex systems framework. They are also captured in Fig. 1 that compares the traditional i-level system studied by consumer research to the proposed revised system that accounts for both i-level, g-level, s-level, and the linkages between them over time.

<sup>2</sup> <https://www.theguardian.com/lifeandstyle/2021/dec/25/no-meat-please-were-british-now-a-third-of-us-approve-of-vegan-diet>.



**Fig. 1.** I-level, g-level, and s-level systems and their dynamics. notes: i-level as opposed to s-level (top pane) vs. i-level, g-level, and s-level and interacting elements (lower pane). the top pane focuses on the traditional i-level frame where consumers are often studied in isolation, as passive agents who are influenced by multiple stakeholders(e.g., regulation, NGOs, companies). The lower pane focuses on the dynamics between i-level and g-level and multiple stakeholders, and all are viewed as elements in the wider system. The lower pane depicts the more complex reality where consumers can be studied jointly with other actors, they may be more proactive, and they can be studied – and also their dynamics – with other actors over time.

3.1. Consumers are elements in a wider system

Consumers do not operate in isolation: they are embedded in a network of consumers and part of an even larger system including other stakeholders, e.g., companies, government agencies, retailers, and nonprofits. All these elements together, as well as their interactions, form the ‘system’. Note that this definition of the ‘system’ follows the tradition of ‘system thinking’ (Meadows, 2015) but deviates from Chater and Loewenstein’s (2023) ‘system-level’ change, where ‘system’ instead refers to the context in which consumers operate (e.g., the policies consumers face, the products that are offered to them). While useful, Chater

& Loewenstein’s conceptualization may create the impression that ‘system-level’ change and ‘individual-level’ change are two mutually exclusive elements. However, consumers are *part* of the wider system: changes in consumer behavior can both influence and be influenced by the actions of other elements (e.g., policymakers and businesses) within the system, creating a cascading impact (Pyo et al., 2022; Rogers et al., 2018).

The influence of other consumers—particularly within one’s social network—has been widely discussed in the literature on social norms. This body of work has largely examined how descriptive and injunctive norms affect individual behavior (Cialdini & Goldstein, 2004; Goldstein

et al., 2008; Melnyk et al., 2022), as well as how emerging or dynamic norms can drive behavioral change (Sparkman & Walton, 2017). More recent research suggests that social norms also play a critical role in fostering broader, community-level change, such as the diffusion of pro-environmental behaviors like solar panel adoption (Bollinger et al., 2022).

Other stakeholders beyond consumers have been highlighted before by related work. These may include governmental and political actors (agencies, parties, institutions) at the national, state and local levels, regulations and policies, and their relationship with individuals and groups of consumer and citizens (Giesler & Fischer, 2017; Stadelmann et al., 2021). Other work on social movements and change highlights the importance of community-based groups and grassroot organizations, typically non-profits, that are able to engage, empower, educate and act on societal challenges. This work sheds light on the way consumer behavior is connected to a social cause and to collective action, through concepts such as shared values, identity, and meaning-making (Lteif et al., 2023; Masson & Fritsche, 2021; Nardini et al., 2021).

Overall, this means that to fully understand societal change, consumers must be studied as part of their system or network including multiple relevant stakeholders.

### 3.2. Consumers as active change agents

Consumers are typically viewed in the literature as having a rather passive role – influenced by marketers through various communication channels and messaging approaches (Nardini et al., 2021; Reese, 2020). However, as important actors in the proposed mindset shift and in creating group-level change, consumers must be also seen as individuals who can make a difference themselves as proactive change agents (e.g., in their role as consumers, employees, citizens, ambassadors, activists; Nielsen et al., 2021). There is limited but nevertheless valuable work on social mobilization with consumers as active change agents (Rogers et al., 2018). Specifically, research on social movements and consumer communities have addressed the role of consumers in pushing other consumers and stakeholders (e.g., governments and marketers) to change their behavior (Lteif et al., 2023; Nardini et al., 2021). This has been achieved for example through social media campaigns, boycotting, and anti-consumption behavior. Examples include the work by Kozinets and Handelman (2004) on anti-consumption movements in the U.S., with more recent examples studying segments of responsible consumers (Giesler & Veresiu, 2014), how collective consumer action in Germany addressed food waste (Gollnhofer et al., 2019) and the role of consumers in social movements (Lteif et al., 2023; Nardini et al., 2021).

Individual behavior change may impact the behavior of others in at least two ways (Ameri et al., 2019). First, behavior change may be visible to others and thus have an impact via observational learning (Cai et al., 2009). This influence mechanism does not necessarily require a consciously chosen active role of a consumer in the case of visible behaviors (e.g., installing solar panels on the roof), but it does in the case of invisible behaviors (e.g., buying green energy or eating less meat). Second, consumers may tell others about the behavior change and can create impact via word-of-mouth (Berger, 2014). If consumers change their behavior but do not display or discuss this change with others, i.e., take a passive role, group-level change, and in turn, system-level change, is very unlikely. Silver and Small (2024), for instance, find that people who donate to charity are unwilling to post it on social media, since they fear reputational costs. But by refusing to share their good deeds, they miss out on inspiring others to donate.

Overall, this means that to fully understand societal change, consumer researchers also need to conceptualize the active role of consumers, e.g., consumers talking about or showing their changes in behavior to others in their network and thus have this active behavior as a key outcome in researchers' studies.

### 3.3. Feedback loops over time

Feedback loops are defined by Rand, Rust, and Kim (2018; p. 13) as “sequences that form loops of recirculating signals and resources generated in the system”. Feedback loops are a critical element for understanding societal change: once a positive feedback loop is triggered, change can become self-propelling and hard to reverse (Huber et al., 2020; Lenton et al., 2021). When a critical number of neighbors has bought an electric vehicle, for instance, a municipality may decide to place another public charging station in a street, which in turn lowers the barrier for other neighbors to also buy an electric vehicle. Similarly, providing information about how other's behavior is changing over time (*dynamic norms*) can trigger positive feedback loops. When people hear that an increasing number of people reduces their meat consumption, they are more likely to reduce their own meat consumption too (Sparkman & Walton, 2017), thereby further strengthening the impression that reduced meat consumption is trending (Huber et al., 2020). The actions of individuals or groups feed back into the system and in turn affect societal diffusion.

Feedback loops can help explain the behavior of social systems. Negative (or balancing) feedback loops prevent system change, and keep systems in their current state. Positive feedback loops, for instance, can help explain the typical non-linear pattern of social change: it can seem as if nothing changes until suddenly change sets in and becomes explosive (Ye et al., 2021). In order to understand how social change unfolds, longitudinal designs are needed. Most consumer research, however, is focused on studying the short-term impact of behaviors, typically adopting cross-sectional experimental designs and surveys (Blanchard et al., 2022; Rindfleisch et al., 2008). It is harder to assess if an effect caused by an intervention found in a survey at a certain point in time or in a lab experiment will spread further (throughout society) over time, although this has immense value from a system-level perspective.

To be able to study feedback loops in group-level changes, the study of societal changes over time, across a network, requires longitudinal and network designs. Such designs are able to provide the empirical foundation for the analysis of trajectory models. These models aggregate the dynamics of hundreds of individual longitudinal trajectories into a small number of distinct patterns that could capture the essential characteristics of longitudinal phenomena. This is a critical aspect of tracking system-level change (Nagin, 2009).

## 4. New methods for a new mindset

Consumer researchers now have access to tools that allow them to directly track, influence, and predict how behaviors spread across networks over time, and thus also how interventions and behavioral principles can be leveraged to generate group-level and convention change that might result in a system-level change. While there are many ways to do this, we zoom in on two such methods and then illustrate both with examples from our own work.

### 4.1. Coordination games

One often-used model to study convention change is *coordination games* (Andreoni et al., 2021). Here, groups of participants (either offline or online) are (financially) incentivized to coordinate: they know they receive a larger monetary payment if participants reach mutual agreement. For instance, in the name-giving paradigm by Centola and Baronchelli (2015), participants were asked to assign names to pictures of faces and paired to one other player each round. During each round, participants cast their votes (e.g., “Mary” or “Emma”), and afterwards hear what name the other player nominated. After each round, they get the chance to vote again. Given they are incentivized to reach agreement with other players, participants tend to conform to what they believe to be the majority opinion. Typically, within a few rounds, a ‘winner’ emerges (e.g., participants agreeing “Mary” is the appropriate name for

a face that is depicted), where most players vote for the same option – the convention has emerged.

The decisions by players in coordination games often mimic the patterns that we know from real-life social change. Thus, coordination games can provide a good model to study societal tipping point dynamics, and thus answer new research questions. Centola et al. (2018) have introduced confederates in a coordination game that after the initial convention emerged, subsequently took on the role of ‘rebels’ who consistently voted against the majority opinion: unlike the real players, confederates would consistently offer a different name than (e.g., “Emma”) in the name giving paradigm. When only 20 % of the players consisted of confederates, the old convention (e.g., “Mary”) typically stayed in place.

However, when 25 % of the players consisted of confederates, the existing convention was abandoned almost invariably. Thus, in coordination games, just like in real life examples (e.g., the diffusion and influence of the #Black Lives Matter campaign) researchers often find specific ‘thresholds’ (Janas et al., 2024): once a specific percentage of the group decides to switch to the alternative action, the chances of the complete group also adopting that action increases dramatically. These insights are highly relevant for activist groups or marketers that are trying to make sustainable practices more mainstream. Moreover, by deciding who sees whose choices, researchers can study how the composition of a ‘network’ impacts spreading rates: do players see the choices of all fellow players (i.e., an all-to-all network; Ye et al., 2021), or just the choices of their adjacent neighbors (e.g., Centola, 2013), and, how does this affect the targeting strategy of the intervention?

The main benefit of coordination games over analyses of secondary datasets (e.g., analyzing social media data retrospectively) is that coordination games allow researchers to empirically examine and isolate the causal influence of interventions and thus study ways how micro-level interventions at the individual-level (e.g., persuasive messages) or behavioral principles (e.g., consistency) can impact macro-level outcomes (e.g., tipping points at the group and later system-level). Ehret et al. (2022) have used coordination games to study how identities can prevent societies from reaching tipping points. Ye et al. (2021) have used a combination of coordination games and social simulations (see next section), to demonstrate that two basic behavioral principles (i.e., being consistent and being susceptible to trends) can account for an often-observed pattern in societal change: practices can remain stable for decades, and then suddenly shift. Similarly, we encourage consumer researchers to use coordination games as a model to study how interventions (e.g., persuasive messages) and other behavioral principles (e.g., fluency) affect not just the decisions of individual consumers at one time point, but also how such interventions and principles, over time and across groups, affect convention change.

#### 4.2. Agent-based modeling

Consumers influence each other (e.g., the more neighbors purchase electric vehicles, the more likely others purchase too). Collectives of consumers (i.e., the group), in turn, influence the decisions of institutions – a phase where system-level is starting to occur (e.g., companies are more likely to place charging stations if they perceive sufficient demand for electric vehicles). The decision of institutions, finally, feeds back into consumer decisions (e.g., through tax breaks, governments can stimulate the purchase of electric vehicles). When it comes to convention change at the group or system level, complex patterns can emerge that defy ‘easy logical analysis’ (Grahek et al., 2021). By combining such separate insights into a mathematical model that describes how consumers and institutions (‘agents’) update their decisions over time, researchers can *simulate* complex interactions between agents and thus accomplish what our limited human brain cannot: show how interventions at the individual consumer level, over time, affect group-level, and system-level outcomes.

Such ‘agent-based’ social simulations (e.g., Kangur et al., 2017) can

lead to important, counterintuitive insights that can be of direct practical relevance for marketers aiming to expedite tipping points. Using a basic agent-based model, Bicchieri and Funcke (2018), for instance, have demonstrated that the spatial position and visibility of a trendsetter can determine whether a norm is abandoned by the rest of the network or not. Rossman and Fisher (2021) have found that the spatial position of trendsetters becomes less relevant when there are external influences (e.g., mass media and advertising) that also influence adoption rates. Kaaronen and Strelkovskii (2020) have used an agent-based model to show how small changes in the environment (offering infrastructure for cycling) can facilitate the rapid, nonlinear uptake of cycling. Nowak and Vallacher (2018) have used an agent-based model to show that during rapid societal change (e.g., the recent boost in public support for gay marriage among US citizens), individuals with firmly held conventional standpoints are likely to cluster into spatially isolated ‘pockets’. Such clustering may hinder reaching a tipping point and thus hamper social change.

Agent-based models are particularly suitable for simulating how an individual-level insight obtained by a traditional experiment (e.g., consumers tend to see actions as being more morally praiseworthy when they are executed by majority members) over time, through social contagion, affect group-level outcomes (whether a norm remain stable in a group of consumers; Lindström et al., 2018). In sum, social simulations allow consumers researchers to make a more educated guess to an all-important question: does an intervention aimed to promote a socially desirable behavior in a subgroup increase (or ironically decrease) the likelihood of this behavior spreading across the entire social network?

## 5. Empirical work

We start our empirical effort with a preliminary study exploring how often consumer researchers publishing in the top two consumer research journals have applied a *collective-complex systems* mindset and methods in their work. Specifically, we analyzed recent publications in JCR and JCP. We then present two illustrative examples of the way the proposed framework can be applied using the two methods for the new mindset shift – coordination games and agent-based modeling.

### 5.1. Preliminary study

We reviewed all published JCR and JCP research articles between 2019 and 2023, resulting in 259 JCR articles and 196 JCP articles. Data were collected during September 2023 and included all articles appearing in an issue including research reports and review articles but excluding editorials, research dialogues, and retracted articles. The decision to focus on a recent time period is based on the assumption that earlier work in marketing and consumer research has not been traditionally engaged, nor it has been committed, to studying social and system-level change, making the collective-complex systems perspective much less relevant (Chandy et al., 2021).

We first assessed whether articles addressed central wicked social problems in need of a system-level change. For this we applied the UN’s Sustainability Development Goals (<https://sdgs.un.org/goals>) and identified if articles addressed topics such as good health & well-being, sustainability (including multiple sub-categories such as responsible consumption and production, affordable and clean energy, or climate action), no poverty, reduced inequalities, and quality education. We included in this group of articles also those few that were especially interested in social change/consumer activism more broadly. In addition, we separately identified articles studying pro-social marketing – typically work on donations.

For each socially-motivated article we then explored if and to what extent our framework was applied by the authors compared to the traditional individual-level change perspective. Specifically, we explored if (1) consumers were viewed as elements in a wider system

(coded as '1') vs. studied in isolation (coded as '0'); (2) consumers were viewed as active change agents (influencing others, activists, citizens, volunteers; coded as '1') vs. viewed as passive consumers (coded as '0'); (3) feedback loops were studied over time (social influence on consumers that in turn influence other stakeholders; coded as '1') vs. not (coded as '0'); also identifying whether the study applied a longitudinal design (tracking change over time; coded as '1') vs. the study applied a cross-sectional design (one-time, static; coded as '0').

With JCR, we found that out of 259 articles, 227 were not involving any socially-motivated context. With the remaining 38 articles: 7 were 'pro-social' (i.e., donations) – all adopting the traditional individual-level perspective, 14 were interested in social and system-level change but still adopted an individual-level perspective, and 11 were interested in social and system-level change while adopting all or some of the collective-complex system framework.

With JCP, we found that out of 196 articles, 152 were not involving any socially-motivated context. With the remaining 44 articles: 16 were 'pro-social' (i.e., donations) with an individual-level perspective, 16 were interested in social and system-level change but still adopted an individual-level perspective, and 12 were interested in social and system-level change while adopting all or some of the collective-complex system framework.

Example articles from the group of those interested in social and system-level change that adopted elements of the collective-complex systems framework, which is at the center of the proposed mindset and method shift, include JCR publications studying consumer watchdog organizations as drivers of social change (Nøjgaard, 2023) or how collective consumer action in Germany have addressed food waste (Gollnhofer et al., 2019) as well as JCP publications studying the formation of social movements (Nardini et al., 2021) or resource scarcity in the context of poverty (Blocker et al., 2023).

Surprisingly, most of the relatively rare publications that have adopted elements of the collective-complex systems framework – overall, only about of 5 % of the articles in JCR and JCP in the studied period – are conceptual or qualitative in nature. Some quantitative exceptions involve studies in which consumers were viewed not only as individual decision-makers but as elements in a wider system (for example, recognized as being part of a social class; Yan et al., 2021); not only as passive actors but as change agents (for example, creating a norm change with toxic online environments; Pundak et al., 2021); and were not only studied using a static and cross-sectional approach but the study included observing changes and feedback loops over time (for example, in the adoption of a plant-based diet; Bublitz et al., 2023).

## 5.2. Two illustrations

To illustrate how our framework can inform consumer research scholars, we now discuss two examples of our own research. Note that in both examples, the research does not study consumers in isolation but as actors that are part of a wider system. Further, it did not use cross-sectional designs that focused on individual change as the dependent variable but, in line with our framework, see individual participants as agents of change who, via communicating (Hoffmann et al., 2024) or engaging in visible actions (Mlakar et al., 2024), can influence other consumers / stakeholders in their wider system, thereby creating a self-perpetuating feedback loop, and change the decisions of a collection of individuals over time – i.e., create group-level and convention change that will drive system-level change.

*a) Does being consistent make rebels more effective in triggering group-level change?*

Group-level and social conventions change and then system-level change occurs once a minority is able to convince a sufficiently large number of other people to follow their lead. Once this threshold is reached, a feedback loop sets in: change becomes self-perpetuating, and non-linear change can unfold. A key question for consumer researchers is thus, how can minorities act to maximize the chance of others

following their lead?

According to insights obtained from cross-sectional studies (Moscovici et al., 1969), minorities are more persuasive when they are consistent: they never deviate from their principles and on every occasion go against the majority standpoint. A meta-analysis (Wood et al., 1994) has corroborated this initial idea; when minorities are unwavering in their commitment to the minority standpoint, they come across as more confident and uncompromising, thus forcing majority members to revisit their earlier standpoint. Note that in these cross-sectional studies, researchers have typically studied the effects of consistency on attitude change among majority members (Prislin, 2022), and never considered whether minority consistency actually translated to group-level and then system-level change. That is, whether the entire group, over time, is more likely to adopt to the new convention if minority members are consistent.

Using a multi-round coordination game, a recent study has tested whether consistent minorities, in line with the predictions from cross-sectional experiments, are also more successful in triggering tipping points and initiating system-level change than inconsistent minorities (Mlakar et al., 2024). Groups of participants, across 25 rounds, individually voted whether product A (eta) or B (tau) would be launched. The group setting aligns with the embeddedness of consumers in a system and the multiple rounds with the longitudinal design. After each round, they received feedback on the percentage of fellow players that voted for either A or B. Participants were financially incentivized to coordinate: the monetary payment they received for completing the experiment was higher if the entire group, within the 25 rounds, was able to reach a unanimous decision to either vote for A or B. After a few rounds, participants figure out that either A or B is the most popular option, and thus they switch to the majority side; a social convention emerges. Right before there is unanimous agreement and the game would end, however, the authors introduce minorities: they start voting against the majority preference. Importantly, this study varies whether these minorities are consistently voting against the majority preference or once in a while take the majority's sides. It was especially interesting to study whether minorities would be more effective in overthrowing conventions when they consistently go against the majority preferences. This setting thus allowed to also test Moscovici's original prediction (that never was tested before) if being consistent can *cause* social tipping points.

In sum, while previous cross-sectional studies have suggested that minorities are more effective in creating social tipping points when they are consistent, this hypothesis has not actually been tested given that there was no method to test the causal effects of minority consistency on social tipping and group-level change. Using a multi-round group coordination game, it has been shown that consistency acts as double-edged sword: consistent minorities trigger social tipping by coming across as confident, but the same consistency can also come across as being stubborn, thus reducing social tipping as some fellow players reciprocate the minorities' stubbornness by sticking to the status quo.

*b) Can climate silence cause lock-in effects?*

Prior cross-sectional studies have suggested that consumers, even if they care about environmental issues, are uncomfortable discussing climate change with others (Geiger & Swim, 2016), and do not feel sufficiently licensed to confront others' environmentally-unfriendly actions (Steentjes et al., 2017). Within the US, there seems to be climate silence; among those interested in the climate crisis or think the issue is important, the majority 'hardly' or 'never' discuss the issue with their family and friends (Maibach et al., 2016).

Importantly, this climate silence has been argued to contribute to a 'spiral of silence': when people don't hear others talking about climate change, they are unlikely to talk about it themselves. On a collective level, this feedback loop could lead to pluralistic ignorance (people systematically underestimating how much others care about the environment), which makes consumers less likely to engage in pro-environmental actions themselves. Thus, prior cross-sectional studies

have identified a potential feedback loop that could help to explain why, despite the fact that surveys suggest people care, pro-environmental actions are lagging behind. However, this hypothesis has not been formally tested. As such, it is unclear how big the role of climate silence is. Furthermore, the dominant cross-sectional approach does not allow for testing interventions to break the ‘spiral of silence.’ So, a longitudinal design is required.

Using an agent-based model (ABM) to simulate individual behaviors in a simulated society/network/ecosystem, a recent study (Hoffmann et al., 2024) has explored the downstream, non-linear collective consequences of this ‘climate silence’, testing several interventions to counter it. First, using surveys, the study showed that, also in the context of a Dutch neighborhood, there is ‘pluralistic ignorance’ (Geiger & Swim, 2016). It also found that this ignorance matters: neighbors are less likely to act sustainably when they (erroneously) assume that their fellow neighbors don’t approve of sustainable actions. The authors have used the statistical parameters from this study as input for an agent-based model. The model showed that climate silence can indeed be sufficient to create a self-perpetuating vicious cycle, whereby the collective of agents stay stuck in an environmentally-unfriendly state, despite having more pro-environmental private preferences. Using the ABM, the authors also tested something that is difficult to measure with cross-sectional lab studies and field studies: what are the indirect, system-level consequences of specific interventions? Their agent-based simulations suggest that by increasing visibility (e.g., having agents discuss their pro-environmental beliefs with others, using a symbol to visualize their commitment to the environment) policy makers may be able to turn a vicious cycle into a virtuous one, thus creating a more environmentally sustainable system state.

## 6. Acknowledging the methods’ limitations

Like any method, coordination games and agent-based models have several limitations. Despite the benefits of coordination games, their controlled and simplified representation of reality also has several limitations. First, as in all experimental approaches, the high internal validity comes at the cost of lower external validity. Second, the coordination game results show to what extent participants coordinate, but the underlying mechanism is not immediately clear. However, researchers could vary the conditions of the game and/or the individual players and assess the moderating impact of those conditions on the level of coordination (e.g., whether players are identifiable or not (Mlakar et al., 2024)). Third, in the basic setup, coordination games implicitly presume symmetric relationships among players. To accommodate asymmetries or power structures, researchers could vary the network structure and/or the strengths of specific dyadic relationships. Finally, coordination games, and more specifically group coordination games, are a suitable research method if coordination “pays off” in some way and non-coordination is costly, i.e., the cost of deviation. Taking into account these costs of non-coordination, in the sense that choosing a certain product may be less socially acceptable and may lead to social exclusion, makes that these consumption decisions are similar to coordination contexts such as language use and idea propagation; they are all examples of conventions.

Per ABM, despite the strengths of this method, agent-based models also have several weaknesses. First, an agent-based model is built up from the individual level which implies that the results are sensitive to the assumptions and parameters on that level; this may limit the generalizability of the results. Second, basic agent-based models may face the risk of circularity; the model will produce what you put in a rather straightforward manner, confirming prior expectations. However, more extensive models allowing for consumer heterogeneity, uncertainty, and properly defined feedback mechanisms make that the input does not linearly add up to the output in an a priori established manner. On the contrary, it is the complexity of these systems that make that the outcome is impossible to predict; this is referred to as

emergence. It is exactly for this reason that agent-based models are a valuable addition to the researcher’s toolbox.

## 7. Future research directions

The current research aims to provide value for consumer researchers that want to study group-level and system-level changes that are intertwined with individual-level changes. It provides a framework guided by complexity theory and two methods that can be applied. We are hopeful that this discussion is also valuable in triggering future research directions, some of which we detail next.

### 7.1. Studying the interplay between bottom-up and top-down influence

Note that system-level change may be driven by a complex network of dynamics and actors. Bottom-up initiatives (e.g., petitions for a ban on smoking inside bars) can pave the way for top-down (i.e., smoking bans) advocacy. The role of vanguard consumers in making systemic policy changes more politically viable is an important area that could be expanded in experimental consumer research. For instance, what are the characteristics of the vanguard consumers who initiate the push to create systematic and policy changes? What makes them the most suitable to make change and specifically make change that is a more politically viable option? And how different they are from moral rebels? (Brouwer et al., 2022; Brouwer, 2023).

However, the opposite, top-down influence is possible too: governmental rules can be read as institutional signals (Sunstein, 1996; Syropoulos et al., 2023) and shift people’s perception of what is the socially acceptable norm, and thus altering their behavior (van Doorn et al., 2024). Moreover, policies can offer people a social license. The ban on smoking indoors, for instance, was not enforced, but still had a major influence: people who previously bit their tongue now feel legitimized to confront people who still smoked indoors after the law was passed (Nyborg et al., 2016). Future consumer research can explore these dynamics in experiments.

In addition, what are specific contexts that allow individuals to drive group-level change? One understudied context is with organizations. Individuals, as employees, managers, investors, or suppliers, can create organizational change that may then lead to norm and political change. How effective this context is should be explored as well as other contexts such as community and social media settings.

Although our research focused on group-level change, we don’t argue that group-level change is the sole driver of societal change, but rather that groups are an important part of the system, which is currently overlooked by consumer researchers. This point is currently overlooked by (experimental) consumer researchers, who by default tend to zoom in more precisely on the underlying individual-level behaviors. When consumers organize in groups, they can have an amplified influence on policy. For instance, having peer support can shield activists from the pushback they may receive from breaking a social convention and outing themselves as an ‘ambassador of change’. Group contact can reinvigorate minority groups to keep speaking out against a social practices they find questionable (Prosser et al., 2025). We therefore believe more research on g-level interventions is warranted, also further exploring how group dynamics respond to i-level interventions.

### 7.2. Beyond ‘behavior’

When we think of consumer ‘behavior’, most readers will think of observable actions, such as buying. But our purchase behaviors may say very little about our true intentions or wishes – people may buy flight tickets go get from A to B because there is no competitive train connection (Bolderdijk, 2023; Sharpe & Steg, 2025) and thus may not be that meaningful to study. Thus, it is possible there already has been a transition in awareness/attitudes before a shift in actions is visible (Judge et al., 2024). For instance, among many young western

consumers, there already has been a shift: there are many who try to cut back meat consumption, but fail (i.e., their behavior has not shifted) because the context hasn't shifted: eating meat is still much more convenient and hassle-free. With the term consumer 'behavior' we often fixate on purchases (e.g., market share) and thereby may overlook there is already change underway.

This implies that as a community of consumer researchers, we should start viewing attitudes, emotions (e.g., the emergence of 'flight shame') and cognitions not merely as antecedents to 'behavior', but as meaningful attributes that may signal a demand for public policy. Also, given the crucial role of public discourse and conversations in breaking climate silence, and paving the way for society-wide change, consumer researchers can study interventions that can help change ambassadors to 'speak up' (Silver & Small, 2024).

## 8. Conclusion

How, as a society, can we create meaningful progress leading to system-level social change in the context of our biggest, most pressing societal problems? And as consumer researchers, how can we study and support this process?

The current research proposes that it might be valuable for consumer researchers to complement the traditional individual-level perspective with a new mindset and methods. To understand and effectively address the needed society-wide changes (s-level), consumer researchers could complement the study of individual consumers (i-level) with studying how the decisions of collectives of consumers (g-level), that are embedded in wider system and act as agents of change, can change over time. This work introduces a conceptual framework, inspired by complexity theory, which we label as the collective-complex systems framework. The mindset shift and new framework also guide needed methodological adaptations. We present two relevant methods that can be applied by consumer researchers in the context of group-level change studies: coordination-games and agent-based modeling. The two empirical illustrations provide compelling evidence of our proposed framework. We hope our work inspires consumer researchers to consider adding novel mindsets and methods to their toolkit, so that they can maximize their societal impact.

## CRedit authorship contribution statement

**Amir Grinstein:** Writing – review & editing, Writing – original draft, Visualization, Project administration, Formal analysis. **Jan Willem Bolderdijk:** Writing – review & editing, Writing – original draft, Methodology, Conceptualization. **Hans Risselada:** Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Conceptualization.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Data availability

Data will be made available on request.

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