I Share Because of Who I Am: Values, Identities, Norms, and Attitudes Explain Sharing Intentions

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Abstract

To promote sustainable consumption, predictors of individuals' intentions need to be understood. Focusing on the example of collaborative consumption, we look at facilitating and inhibiting factors in a preregistered correlational study (N = 378). We hypothesized the Value-Identity-Personal norm (VIP) model to explain variance in sharing intention. In addition, we expected sharing intentions to be linked to attitudes about (de-)ownership. We also hypothesized self-extension into an object to be a barrier to sharing this object. The results supported all hypotheses: The VIP model and de-ownership orientation were related to sharing intentions. Moreover, self-extension into a car was significantly higher among subsamples of car owners than car sharers. Exploratory findings show that the value-intention link predicted by the VIP can be found for biospheric as well as altruistic values if sharing intentions are assessed with items framed to match these respective values. We discuss implications for attempts to promote sustainable consumption.

Keywords: Collaborative consumption, Value-Identity-Personal norm model, self-extension, car sharing, identity

Introduction

Motivating people to consume more sustainably is an important challenge facing humanity today (Edenhofer et al., 2014). Overconsumption leads – directly and indirectly – to resource depletion, air and water pollution, massive amounts of waste and shrinking biodiversity – just to mention a few ecological consequences (Cooper, 2005; Kasser, 2002; Rockström et al., 2009; Thøgersen, 2014). In 2019 the so-called Earth Overshoot Day, that is, the date when humanity's consumption of resources exceeds the amount of resources generated by the Earth that year (Global Footprint Network, 2021), was alarmingly early on July 29 – in the 1970s the overshoot day was not before November. As this crisis endangers life on Earth so widely, the calls for changing individual's behavior towards more sustainable ways of living and consumption become more urgent.

To convince broad groups of people to change general behavioral patterns to more sustainable ones, more general or more specific psychological processes might be targeted. For instance, one could appeal to the value of sustainability as a guideline for general behavior in many different contexts (e.g., saving water, avoiding plastic, or sharing goods rather than buying them). Second, one could promote individuals' identification with sustainable values and behaviors (e.g., Crompton & Kasser, 2009) such that they integrate it in their self-identity and, on the other hand, counteract identities that promote overconsuming (e.g., as the owner of the newest car, fashion or other goods). Third, one could also create positive norms and attitudes towards specific behaviors, for example, presenting shared use of consumption goods as a positive alternative to buying a car.

The present research uses the example of collaborative consumption to examine how psychological predictors on these different levels of abstraction relate to respective intentions and behaviors. The first research question this study aims to answer is about the unique and joint contributions of general values, a value-based self-identity and context-specific beliefs in explaining intentions and behavior related to collaborative consumption. The second question draws specifically on research on owning versus sharing behavior and examines to what extent a specific object-based identity (i.e., the car as

part of an extended self) is connected to actual (car) sharing or owning. Figure 1 summarizes the research questions and hypotheses of the present study.

[Figure 1 about here]

The present study contributes to the psychological literature on pro-environmental and sustainable behavior in three major ways. First, we build our general framework (see Figure 1) on a theoretical model from this literature, the Value-Identity-Personal norm model (VIP; Ruepert et al., 2016). By applying this model for the first time in the context of collaborative consumption, specifically testing its validity to explain intentions to use sharing services, we contribute to theory testing and theory generalization. Understanding the role of factors on different levels of specificity is also important to inform strategic campaigns for sustainable consumption and pro-environmental behavior.

Second, we aim to integrate perspectives from consumer and collaborative consumption research into our framework. Particularly, we examine the link between additional behavior-specific attitudes (i.e., a positive orientation towards non-ownership, see Lindblom & Lindblom, 2017) and sharing intentions, as well as the link between object-based identities (i.e., self-extension into a car) and car sharing. Thereby, we provide insights into the value of context-specific factors in addition to more general psychological approaches for understanding specific sustainable consumption behaviors.

Third, we expand the traditional focus of the VIP model on values related to sustainability by exploring the role of framing a sharing behavior in line with participant values. This contributes to a basic theoretical understanding of the process by which abstract values guide specific behaviors. In addition, the results have implications for attempts to promote specific behaviors by appealing to values in practice.

In the following we provide a review of our research framework, the specific context in which we apply it (collaborative consumption behaviors), the examined constructs, and their hypothesized

relationships. We then present a preregistered correlative study to examine our research questions and discuss the results with regard to their implications for theoretically understanding and practically promoting sustainable consumption behaviors.

Pro-environmental intentions, sustainable consumption, and collaborative consumption

Much of the literature we build on focuses on *pro-environmental behavior*, that is, behavior intended by the actor to be good for the environment (whether this is the result or not). *Sustainable behavior*, on the other hand, refers to behavior that in its result is sustainable (whether this was the intention or not). Sustainable consumption is thus defined as consumption that does not "compromise the ecological and socioeconomic conditions of all people (currently living or on the future) to satisfy their own needs" (Geiger et al., 2018, p. 20). In the practice of past research, the examined behaviors, of course, tend to be both pro-environmental as well as sustainable. The difference is relevant here, however, as we are interested in the drivers of and barriers to sustainable consumption that may be related to pro-environmental concerns but also other values or context-specific concerns.

The framework of the present research builds on the normative pathway to pro-environmental behavior postulated by the VIP model (Ruepert et al., 2016). The VIP model suggests that pro-environmental behavioral intentions are predicted by a set of increasingly specific, sequentially ordered constructs. We apply this model to the context of collaborative consumption, which is understood as enabling access to and the sharing of goods without the necessity of ownership. This form of collaborative consumption has to be distinguished from a transfer of ownership (e.g., swapping, donating, purchasing used goods; Kim & Jin, 2020). In this study, we refer to collaborative consumption as subsuming diverse forms of sharing, such as lending tools, car sharing and even collaborative lifestyles such as flat sharing and communal gardening. All in all, collaborative consumption is believed to increase resource efficiency and reduce environmental burdens (Heinrichs & Grunenberg, 2012; Schmitt et al., 2017) and could be a partial solution to overconsumption

challenges [i]. In addition, collaborative consumption modes could also tackle socio-economic problems by increasing access to goods and activities otherwise hardly affordable for low-income households, as in the case of car sharing (Paundra et al., 2017), food sharing, public bookcases (Schmitt et al., 2017) or shared flats. A sharing concept such as communal gardening could promote social integration and public involvement, and constitutes at the same time a relatively low resource-intensive activity (Schmitt et al., 2017). We therefore consider collaborative consumption a sustainable behavior. In addition, as accessing shared objects is generally viewed to be more environmentally friendly than ownership of these objects (C. K. Baumeister, 2014), it may also be considered as intentionally pro-environmental (Hartl et al., 2018, 2020). Our general assumption is that this behavior can be explained by value guidance via the normative pathway postulated by the VIP model, in addition to identity construals as well as beliefs related to specifically owning or sharing objects.

Abstract values as guiding principles

The VIP model postulates (Ruepert et al., 2016), as do we in our framework, that values can guide individuals towards sustainable behavior. By definition, values are abstract principles that provide broad guidance on what is good or bad across different situations (Schwartz, 1992; Schwartz & Bilsky, 1990). Individuals are inclined to show behavior that fits their most important values (Bardi & Schwartz, 2003; Lee et al., 2021). Building on Schwartz's value theory, De Groot and Steg (2008) describe three values [ii] particularly relevant for pro-environmental behavior: *biospheric*, *altruistic*, and *egoistic values*. Egoistic values refer to a concern with maximizing individual resources and status (De Groot & Steg, 2007, 2008; Schwartz, 1992; Steg & de Groot, 2012). In contrast, altruistic and biospheric values focus on collective interests (Schwartz, 1992; Steg & de Groot, 2012) and can both be a source of pro-environmental behavior and behavioral intention (de Groot & Steg, 2010; Steg et al., 2011), though supposedly due to different motivational concerns. Strong biospheric values

mean a strong concern for other species and the welfare of the planet, whereas strong altruistic values mean a concern for the welfare of humanity (De Groot & Steg, 2007). For example, individuals with more pronounced altruistic values donated more to humanitarian than to environmental organizations (De Groot & Steg, 2008). Therefore, for behaviors that appear primarily pro-environmental, the most important type of value seems to be biospheric values. Indeed, several studies imply that stronger biospheric values predict more pro-environmental behaviors (de Groot & Steg, 2010; Steg et al., 2011; Steg & Vlek, 2009). Previous research also shows that collaborative consumption is driven, among other factors, by a motivation to save resources (Roos, 2017), which may be rooted in strong underlying biospheric values. In addition, collaborative consumption was initially framed as a sustainable alternative to hyper-consumption (Martin, 2016). Therefore, biospheric values are likely important in this context. To our knowledge, ours is the first study to directly examine the role of abstract values for collaborative consumption. Based on our framework, if collaborative consumption served altruistic or even egoistic values, these values might also promote such sustainable behavior. Since values are abstract, they have the potential to affect multiple sustainable behaviors in different contexts and at different times. The effect of values on specific behaviors in a specific context, like the use of a sharing service, may be only indirect, as these are best predicted by similarly context-specific norms and attitudes (on the compatibility principle, see Ajzen & Fishbein, 2005). Abstract values guide specific behaviors if the person sees the specific behavior as linked to the abstract value or if the situation is framed that way (e.g., Schuster, 2021; Schuster et al., 2020; Verplanken & Holland, 2002). According to the VIP model, biospheric values guide behaviors indirectly by shaping an individual's self-identity as a pro-environmental person, which then shapes their personal norm of what to do in a specific context (Ruepert et al., 2016).

Value-based identity construal: Environmental self-identity

Values are generally argued to be engrained in people's identities (Hitlin, 2003), but they represent an ideal rather than the actual self (van der Werff et al., 2013b). Individuals with biospheric values, for instance, need to link the values incorporated in their ideal self ("It is important to care for nature.") to a perception of the actual self they identify with ("I am a person who cares for nature and acts accordingly."). In other words, they need to develop an *environmental self-identity*. Though many people endorse biospheric values, most may not regard acting on their biospheric values as a central part of their identity (Biel et al., 2005). They could justify the dissonance between the value and their behavior, for instance, by ascribing responsibility to politicians or holding a strong belief in technological solutions for environmental challenges (van der Werff et al., 2013b). Integrating biospheric values into one's self-identity makes the responsibility for pro-environmental behavior less abstract and thus is postulated to be one step on the pathway to sustainable behavior described by the VIP model.

Accordingly, environmental self-identity has previously been shown to be a predictor of pro-environmental behaviors and sustainable consumption behavior, such as the willingness to pay for green energy (van der Werff et al., 2013b) or the intention to consume organically produced vegetables (Sparks & Shepherd, 1992). Similarly, we expect people with a stronger environmental self-identity to be more inclined towards collaborative consumption modes. Nevertheless, neither biospheric values nor environmental self-identity define specifically how they are best implemented and which environmentally-friendly behaviors (such as sharing) this entails and to what extent.

Context-specific beliefs: Personal norms and de-ownership orientation

Previous evidence on the VIP model supports that environmental self-identity influences pro-environmental behavior by strengthening *personal norms* to act in a pro-environmental way (Ruepert et al., 2016; van der Werff et al., 2013a). One study suggests that the effect of biospheric values on collaborative consumption is mediated by a personal norm (Roos, 2017). Personal norms refer to

beliefs or feelings that one is obliged to act in a certain way (Schwartz, 1973; van der Werff et al., 2013a), for example, to engage in a specific pro-environmental behavior and, therefore, to act in accordance with one's values and self-view. Such self-expectations are further connected to emotional responses that signal to the individual how their experience relates to what is important (values) and relevant (self-view) for them (R. F. Baumeister et al., 2007). Therefore, personal norms provide a concrete self-regulatory mechanism for behavioral intentions, such as collaborative consumption intentions. Specifically, not acting in line with one's personal norm may lead to (expected) feelings of guilt (Schwartz, 1970; van der Werff et al., 2013a) and cognitive dissonance, whereas acting in line with one's personal norm (and underlying ideals and self-views) can be a source of (expected) pleasant emotions, such as pride (Schwartz, 1977). This feeds a high motivation and probability to perform the behavior in question in order to avoid aversive and maximize pleasant emotions. Indeed, research has shown that people act pro-environmentally despite the lack of extrinsic incentives (e.g., Steg & de Groot, 2012), and personal norm has been shown to be a strong predictor of pro-environmental behavior (Stern et al., 1999; van der Werff & Steg, 2016). In summary, the VIP model posits that behavioral intentions are affected by personal norms, which are based in pro-environmental identities, which in turn are based in biospheric values. We hypothesize that these relationships also hold for collaborative consumption:

H_1: The VIP model predicts sharing intentions.

Moreover, this normative pathway from abstract to concrete, specific behavioral intentions will also be affected by attitudes that reflect direct evaluations of the behavior, such as whether one prefers it over other options. In the context of collaborative consumption, *de-ownership orientation* is such a context-specific attitude as it "reflects the importance that an individual places on sharing products and services rather than buying or owning them" (Lindblom & Lindblom, 2017, p. 432). Previous research finds positive relationships between individuals' positive attitude towards non-ownership and an intention to consume collaboratively (Lawson, 2011; Lindblom & Lindblom, 2017).

Therefore, we integrate de-ownership into our research model as an attitude that could help explain this specific sustainable behavior directly and apart from the normative pro-environmental factors. We hypothesize:

H_2: De-ownership orientation predicts sharing intentions.

Object-based identity construal: The example of self-extension into a car

As the VIP model focuses on value-driven pro-environmental behavior, it only considers value-based identity as a relevant factor in explaining such behavior. However, identities are not only derived from abstract values but also from specific behaviors or objects that a person sees as reflecting him or herself. The consumption of goods, for example, not only serves the satisfaction of basic needs but also has symbolic functions, such as affirming and expressing one's identity (Soron, 2010; Stihler, 2000). Soron argues, for example, that individuals' willingness to shift to alternative and potentially more sustainable forms of mobility may be "strongly influenced by their psycho-cultural attachment to cars and the sense of freedom, empowerment and personal identity they derive from the everyday experience of driving" (2010, p. 177). Particularly, owned goods can be part of an extended self and the loss of an object that was part of the extended self can be reflected in the feeling of loss of a part of one's self (Belk, 1988). In contrast, there tends to be little identification between consumers and their rented objects (Bardhi & Eckhardt, 2012), suggesting a stronger self-extension into an object by owners than by sharers. Therefore, we expect this object-based identity construal to be a potential barrier to collaborative modes of usage and consumption of objects. For example, someone with a strong self-extension into a car might be deterred from giving up ownership and participating in car sharing by good memories associated with their car (i.e., emotional attachment, see Jackson, 2013) personalized design of the car, signaling status or being assigned to a certain social group (e.g., luxury, sporty or cute). In this logic, sharing constitutes a threat to one's identity.

Importantly, previous research finds that the negative relationship between self-extension and sharing is object-specific: it is stronger for cars, for example, than for books (Wolf & Schuster, 2019). Therefore, the relationship of self-extension with collaborative consumption can only be investigated with regard to sharing a specific object. Given the high relevance of car sharing and its potentially high environmental impact (Schmitt et al., 2017), in this study we focus on self-extension into a car. For instance, a car in Germany is used on average only one hour per day (German Federal Agency for the Environment, 2017), hence much idle capacity could be avoided by car sharing. Cars are still the dominant means of transport in Germany, with 57% of all trips made with a car (Nobis & Kuhnimhof, 2018), making the investigation of emerging forms of alternative modes of car use, such as car sharing, especially relevant for the German population. If self-extension was a barrier to the use of car sharing, it should be weaker among individuals who exclusively use car sharing than those who exclusively use a car they own. Insights into owner's self-extension could help to develop collaborative consumption modes that provide opportunities to maintain that part of their identity. We test our hypothesis in a subsample of actual collaborative consumers (car sharers not owners) and non-collaborative consumers (car owners not sharers) and predict:

H_3: Mean levels of self-extension into a car are higher for car owners than for car sharers.

Study overview

In the present correlational study, we aim to examine the relationship of various psychological constructs derived from the theoretical and empirical literature on pro-environmental behavior and from consumer research on sharing intentions and sharing behaviors. These constructs – biospheric and altruistic values, environmental self-identity and self-extension, personal norm for sharing and de-ownership orientation – are not meant to be a complete list of relevant predictors. For instance, we do not look at economic incentives for collaborative consumption, which are certainly relevant along with values, identities, and attitudes. Instead, we are interested in the way in which more or less

abstract beliefs about what is important, about the self, and about sharing are linked and contribute to explaining why individuals want to use collaborative consumption options or not.

The study was preregistered on the open science framework (https://osf.io/7hyr6). We preregistered each predicted relationship separately, as they stem from different lines of previous research and, with regard to H3, require different methodological approaches. To answer the first research question, we used a correlative approach to look at participants' intentions to participate in sharing concepts of various goods excluding car sharing. Here, we analyzed the complete sample that includes participants from Germany with varying levels of sharing experience. To answer the second research question, we used a subsample collected by intentional oversampling of individuals with experience in car sharing, creating an even distribution between exclusive car sharers and exclusive car owners within our sample. There is no theoretical reason to assume that the oversampling of individuals who use car sharing will substantially affect the relationship between the values, environmental identity, norms, and the using of other sharing services that is the focus of the first research question.

Method

Sample and Design

The study design is correlational. We preregistered a minimum sample size of $N = 327$ respondents [iii]. Participants were recruited in Germany via mailing lists, social media, and the university's participant pool. Specific recruiting efforts were taken to reach individuals registered with car sharing providers by asking providers to distribute the survey link to their clients. This targeted sampling procedure allowed us to compare large enough subgroups of car owners and car sharers for the second research question. In this study, car sharers of diverse public forms of sharing a car were included, that is, B2C car sharing (i.e., accessing a car owned by a company), P2P car sharing (i.e., renting a privately-owned car), ride sharing, and car renting. Following the preregistration, only respondents who owned a car were included, frequently (i.e., at least once a year) rented a car, or participated in

public car or ride sharing. The oversampling procedure should not affect the sample's sharing intentions measure in the focus of the first research question, as the variable sharing intentions does not include (the intention to participate in) car sharing.

Of the N = 441 respondents who completed the survey, n = 63 were excluded due to violating the criteria of using a car frequently (n = 27), a failed attention check (n = 14) or a high proportion of missing values (n = 22) [iv]. To handle the few remaining missing values and hold the sample size constant across analyses, the mean substitution method was applied (Tabachnick & Fidell, 2014). This procedure did not change the analyses or conclusions substantially. The final sample consisted of N = 378 respondents (67% female) between 17 and 75 years old (M = 28.59, SD = 11.93). The majority were students (63%) and/or had a university degree (32%), had low incomes (56% with <€1000/month), and were living in mid-sized (47%) or big cities (26%). In summary, the sample reflected the demographic characteristics of the most relevant target group for car (and potentially other) sharing services (young, urban, educated) rather than the average of the German population (Gossen, 2012; Nobis & Kuhnimhof, 2018; Riegler et al., 2016).

Procedure and Measures

No ethics approval was required. All procedures followed the APA's ethics code (American Psychological Association, 2017). Respondents could participate in a lottery by the external provider Thesius and receive student participant credits. After giving informed consent, respondents indicated their type of car usage (owning a car and/or participation in B2C car sharing / P2P car sharing / ride sharing / car renting) and then answered items in the following order: frequency and motives for sharing as well as most frequently used mobility alternative to sharing a car (only for people participating in sharing), self-extension into a car, self-extension into access, de-ownership orientation and material values, values, life satisfaction, environmental self-identity, sharing intentions, sharing behaviors, personal norm, willingness to share one's own car, and

sociodemographic data [v]. Unless otherwise indicated, the variables were measured on a 6-point scale ranging from 1 (*totally disagree)* to 6 (*totally agree*). All scales originally formulated in English were translated into German and independently back-translated to ensure consistency of meaning.

Self-extension into a car

To measure self-extension into a car, respondents had to position themselves between four contrary pairs of statements (Wolf & Schuster, 2019; adapted from Ball & Tasaki, 1992; Schultz et al., 1989; e.g., "If I were describing myself, a car would likely be something I would mention." versus "Neither I nor others see a connection between myself and a car"; $\alpha = .85$). The items were adapted from previous research). To make the items applicable to both car owners and car sharers, the scale items were formulated to avoid the possessive pronoun (*my* car) or combine it with an article in an item (e.g., "I have no problem with returning or replacing a/my car").

Values

Values were assessed using an adapted short version of Schwartz (1992) value scale (De Groot & Steg, 2008). Respondents answered 13 items assigned to three value types: altruistic (e.g., "working for the welfare of others"; $\alpha = .71$), biospheric (e.g., "preventing pollution and protecting natural resources"; $\alpha = .85$), and egoistic (e.g., "having control over others"; $\alpha = .70$). The importance of each item as a guiding principle in life was rated on a 7-point scale ranging from -1 (*opposed to my values*), 0 (*not at all important*) to 6 (*extremely important*).

Environmental self-identity and personal norm

Environmental self-identity was measured with three items (e.g., "Acting in an environmentally friendly way is an important part of who I am"; $\alpha = .90$) adapted from van der Werff et al., (2013b). The scale applied in van der Werff & Steg (2016) to measure personal norms was adapted to the

context of sharing (e.g., “I feel morally obliged to use sharing services.”) and expanded with a self-developed item (“It makes me unsatisfied to not use sharing services.”).

Sharing intentions

The sharing concepts operationalized within the variable sharing intentions were chosen in accordance with Schmitt and colleagues’ (2017) analysis of resource efficiency and diffusion of different access-based concepts. Their analysis suggests that shared flats and tool lending exhibit a relatively large potential for resource efficiency. Communal gardens and regional barter clubs were identified as holding a positive diffusion potential. Food sharing was added because of its potential to address the huge problem of food waste in Germany (Noleppa & Cartsburg, 2015). Respondents rated their (sharing) intentions to (continue to) participate in five sharing concepts: rental of everyday objects (e.g., tools) / communal gardens / food sharing (later excluded [vi]) / shared flats / sharing between neighbors. The items presented each concept and a slogan with which it was advertised. The slogan framed the respective sharing concept as a) environmentally beneficial (e.g., “Sharing between neighbors – for the environment with your neighbors”) or b) socially beneficial (e.g., “Sharing between neighbors – because neighborhood means community”). Participants saw both framings at the same time, thus, each sharing concept had to be rated twice. The scale contained 10 items in total, five for each framing. The internal consistency of the 10-item scale was $\alpha = .82$. The internal consistencies of the framed subscales were $\alpha = .64$ (socially framed) and $\alpha = .69$ (environmentally framed). Respondents were also asked whether they had already participated in these forms of sharing. The number of used sharing concepts serves as an indicator of *sharing behaviors* [ix].

De-ownership orientation

To measure de-ownership orientation, respondents were asked to answer three items developed by Lindblom and Lindblom (2017; e.g., “In my opinion lending and renting are good alternatives for buying and owning”; $\alpha = .70$).

Additional exploratory measures

The measurement of additional variables is described in the following sections. Analyses conducted with these scales were exploratory and are available, together with their respective theoretical background, in the online supplement.

Car sharers were asked to indicate their *frequency of usage* of car sharing. Response options regarding the ordinal variable ranged from 1 (*(nearly) every week*), over 2 (*(nearly) every month*), 3 (*every few months*), to 4 (*once or twice a year*).

To investigate the sustainability potential of access-based car usage a question concerning preferred alternatives to sharing was included. The aim was to detect whether people use cars more frequently than more ecologically sustainable alternatives. Explicitly, sharers were asked by a one-choice question format to choose a mobility alternative to sharing a car that they would use most frequently from a list of six alternatives. These had been previously categorized as either sustainable (i.e., walking, biking, public transport, private carsharing or riding a scooter) or unsustainable alternatives (i.e., using own car, riding a motorbike) [vii].

To test a potential alternative source of identity for car drivers than the self-extension into their own car, another measure was included that could be compatible with car sharing. We call this novel exploratory construct *self-extension into access*, referring to integrating the usage of a car, rather than the object itself, into one’s self-view. The items were adapted from the scale self-extension into a car by replacing the word *car* with *possibility of using a car* or with *car driving* ($\alpha = .82$). The items of the self-extension into access scale in relation to the ones mentioned above were as follows: “If I were

describing myself, car driving would likely be something I would mention" versus "Neither I nor others see a connection between myself and car driving."

All respondents were asked to respond to scales of *life satisfaction* and *material values*. Respondents stated their general life satisfaction on a reliable and valid one-item 11-point scale (Beierlein and colleagues, 2014). The item reads as follows: "How satisfied are you at the moment, altogether, with your life?" Scale points were numerically labeled and ranged from 0 (not at all satisfied) to 10 (fully satisfied). In previous research, the scale showed medium-sized stability (r_{tt} = .67) through retest methods (Beierlein et al., 2014). A verbal description of the extrema was given only in the description of the task.

Materialistic attitudes were measured through a validated short version of the Material Values Scale (*MVS*) developed in Richins (2004), for example, "It sometimes bothers me quite a bit that I can't afford to buy all the things I'd like." Note that while the authors refer to this scale with the term value, we would consider it an attitude, as it specifically refers to oneself buying and owning things rather than to viewing an abstract construct as important. The German items developed in Müller and colleagues (2013) were used (α = .87) [viii]. Respondents had to respond on a 6-point scale ranging from 1 (*totally disagree*) to 6 (*totally agree*). Exploratory findings on these measures are reported in the supplement.

Results

The results are presented in order of the hypotheses. The results on a fourth preregistered hypothesis are reported only in the supplement because even though the hypothesis was technically confirmed, the results are difficult to interpret due to the low construct validity of self-extension into access. The Bonferroni corrected alpha level for the main analyses was set to α = .0125. The 5% level was retained for exploratory analyses.

Drivers of sharing intentions and sharing behaviors

H_1 was tested using the PROCESS Macro Model 6 (Hayes, 2013) with a bootstrap sample of 10,000. Biospheric values, environmental self-identity, and personal norm were entered as predictors of sharing intentions in this sequential mediation model. Biospheric values show a significant indirect effect on sharing intentions via environmental self-identity and personal norm (Fig. 2). This confirms that the predictions of the VIP model with regard to the identity and norm-regulating function of values hold in the context of collaborative consumption (H_1). Moreover, the direct effect of values on intentions is significant, which means that the guiding role of values on intentions is partially mediated by identity and norms but also explains intentions incrementally. The whole model explains 41% of the variance in sharing intentions (Table 1). A similar exploratory mediation model (see lower part of Table 1 and Figure S3 in the supplement) with sharing behaviors as the outcome shows the same pattern, except that the role of values for behaviors is fully mediated by identity and norm (no significant direct effect). This means that values not only explain pro-environmental intentions but also behaviors to the extent that they come with a respective identity and personal norm.

Supporting H_2, a linear regression of sharing intentions on de-ownership orientation shows a significant medium-sized effect, $\beta = .43$, $p < .001$, 99% CI [0.31, 0.55], $R^2 = .19$. An exploratory linear regression including de-ownership orientation as an additional predictor for sharing intentions beyond biospheric values, environmental self-identity, and personal norm, shows that this variable explains incremental variance in sharing intentions, $\Delta R^2 = .02$, $p < .001$, resulting in an overall explained variance of the model of $R^2 = 43\%$. When using the same integrated model to explain sharing behaviors, the de-ownership orientation also explains incremental variance above and beyond the predictors of the VIP model, $\Delta R^2 = .04$, $p < .001$. The variance uniquely explained by de-ownership orientation hence reflects the role of attitudes related to sharing that are not related to pro-environmental concerns.

[Figure 2 about here]

[Table 1 about here]

To explore the relevance of different values for sharing intentions, we analyzed the socially and environmentally framed sharing intentions subscales separately and regressed each on biospheric as well as altruistic values. We also controlled for the (value-neutral) personal norm as the most immediate predictor in the VIP model. The results indicated that, incremental to the effect of personal norm, $\beta_{s/e}$ = .37/.43, $p_{s/e}$ < .001, biospheric values only significantly explain intentions for environmentally framed sharing, $\beta_{s/e}$ = .10/.28, $p_{s/e}$ = .052/< .001, and altruistic values only significantly explain intentions for socially framed sharing, $\beta_{s/e}$ = .16/.08, $p_{s/e}$ = .001/ .069. The results show that biospheric values better explain environmentally framed sharing intentions, whereas altruistic values are better in explaining socially framed sharing intentions. Results are displayed in Table 2.

[Table 2 about here]

Barriers to sharing intentions: Group differences between owners and sharers

Of the N = 378 participants, n = 128 were exclusively car *owners*, n = 106 participants owned a car and additionally participated in sharing (referred to as *sharing owners*), and n = 144 participants solely belonged to the group of *sharers*. Within the sample of sharers, there were n = 57 ride sharers, n = 53 car sharers, and n = 34 car renters. For the analysis regarding H_3 we excluded sharing owners to ensure the validity of the scale self-extension into a car as the answers of sharing owners were not clearly attributable to their owned car or to a car accessed. We compared car owners (n = 128) with car sharers (n = 144) with a Mann-Whitney U test. As predicted, self-extension into a car is substantially higher for owners, z = - 8.52, p < .001, r = 0.52. As an additional test, a logistic regression of the group (sharer vs. owner) on self-extension into a car is significant and self-extension explains a substantial part of the group membership, $R^2_{\text{Cox \& Snell}}$ = .26; $R^2_{\text{Nagelkerke}}$ = .35. The results are in line with the underlying assumption that self-extension of one's identity into an object is a barrier for collaborative consumption modes regarding this specific object.

Discussion

The present study supports our first preregistered hypothesis that biospheric values explain sharing intentions to a large degree by shaping a pro-environmental identity and thereby a personal norm to engage in sharing. Exploratory analyses show the same indirect guidance by values for sharing behavior. The findings thus confirm previous research on the VIP model's relevance for pro-environmental behaviors (e.g., van der Werff & Steg, 2016) and show for the first time that this pathway can be applied to the context collaborative consumption. Whereas the VIP model specifically aims to predict pro-environmental behavior, from the perspective of our framework the same specific behavior (or intention) may be guided by any value that is perceived as relevant. For people to be guided towards collaborative consumption by their biospheric values requires that they consider participating in sharing as pro-environmental. However, the social aspects of sharing behaviors may be more salient in some contexts than the environmental aspect. In this case, sharing may seem more relevant to people with altruistic values. This is supported by an exploratory finding that biospheric values best explain intentions to use sharing concepts advertised with regard to their environmental aspects whereas altruistic values best explain intentions to use sharing concepts advertised with regard to their social aspects, above and beyond the personal norm to use sharing. These findings promote a more nuanced understanding of the relevance of different types of values for sustainable behaviors than the previous studies reporting on the superiority of biospheric values (De Groot & Steg, 2008; Steg et al., 2011). Instead, they point to the importance of a value-framing fit, a consideration that is highly relevant for promoting collaborative consumption by appealing to specific values.

The findings on the second hypothesis provide additional insights into factors related to collaborative consumption as a sustainable (but not necessarily pro-environmental) behavior. Specifically, they confirm that de-ownership orientation, a positive attitude towards sharing that is not explicitly based in environmental concern, contributes to higher intentions to engage in this sustainable behavior. This is in line with previous findings of the relationship between collaborative consumption intentions and

positives attitudes towards non-ownership (Lindblom & Lindblom, 2017). Integrating all factors in one model shows, however, that the largest part of this contribution is shared with the factors from the VIP model and only 2% of variance in sharing intentions and 4% in sharing behavior is explained incrementally by this de-ownership orientation.

Our first research question may be answered, therefore, with the finding that self-reported specific collaborative consumption intentions and behaviors are facilitated and to a substantial part explained by an indirect effect (and with regard to intentions, also a direct effect) of abstract values and to a smaller part by context-specific attitudes. While the findings highlight the relative importance of the pro-environmental aspect of collaborative consumptions for participants, other values may also facilitate intentions for sustainable sharing behavior if this behavior is presented as matching the value.

To answer the second research question, we analyzed the relationship between self-extension into a car and car sharing. The results show that this object-based aspect of identity is less pronounced among car sharers than car owners and explains to a substantial part whether a person is in the group of sharers vs. owners. This finding is in line with the idea that self-extension holds people back from giving up ownership, confirming previous evidence (C. K. Baumeister, 2014). Future research is needed to examine the causal pathways of this finding. To reduce the inhibitory effect of identity bound to specific objects, research could further examine alternative ways of external identification in modes of collaborative consumption. Identities may be relatively stable, but individuals can also grow and change in their identity when it no longer suits their lifestyle (Petriglieri, 2011). Our findings on self-extension into the car would not only be in line with an interpretation of it as a barrier to car sharing but also with a possible reduction of this part of identity as a consequence of car sharing experiences. The evidence for a shift towards identifying with access (Belk, 2014) to a car needs corroboration with experimental designs and refined measurements (see discussion in the supplemental file). Irrespective of the causal pathway, the relationship between self-extension and

car sharing implies that relevant identities for sustainable behaviors, particularly for collaborative consumption, may not only involve abstract values but also concrete objects or behaviors.

Limitations

The main limitation of this study consists in the correlational design and the composition of the sample. Even though our predictions are based on theoretical assumptions of causal or sequential processes, our results only provide correlational evidence. Therefore, the underlying causality remains inconclusive, and alternative explanations, such as an effect of intentions and behavior on values, identities, and attitudes cannot be dismissed. At least with regard to values, it seems likely that they may be more an antecedent than a consequence, given that they tend to be highly stable over time (Schuster et al., 2019). To conclusively determine the causality of these relationships, however, experimental and longitudinal designs are needed.

Furthermore, the sample is not a representative cross-section of (German) society but – due to the focus of the second research question – is limited to car users. In addition, the sample is relatively well-educated, low-income, and relatively young, given the large proportion of students in our sample. These characteristics need to be considered when interpreting the findings. For example, it seems possible that compared to a more diverse sample, young, well-educated individuals with low incomes may be more inclined to be deliberate about their consumer decisions and focus more on value-based considerations. Thus, the role of values might be smaller among less educated individuals or wealthier individuals, who might have different personal norms for implementing their values, such as buying more expensive sustainably produced goods. Nevertheless, the pathway from abstract values to concrete behaviors will most likely be quite similar whenever important values come into play. The oversampling of car sharers is also a characteristic of this sample that needs to be considered. There is no reason to assume that the process by which values affect intentions to share goods other than cars is fundamentally different among car sharers or car users in general. However,

as reported in the online supplemental file, car sharers tend to have a stronger environmental self-identity, a stronger personal norm to use sharing concepts, and more positive attitudes towards non-ownership. Future research is needed to determine whether a positive experience with one form of sharing (here, car sharing) leads to higher general sharing intentions. The exploration of spillover effects – that is, that participation in one sharing behavior may increase the probability of participating in another form of sharing (Thøgersen & Ölander, 2003) – could be an enriching field of research. There is also previous evidence that cultural factors affect the relationship between values and behavior (Elster & Gelfand, 2020). Based on this, the role of values for collaborative consumption may be smaller than in this study in cultures with tighter norms than Germany.

Implications for Promoting Sustainable Behaviors

To draw conclusions for the promotion of sustainable behaviors, further research is needed that tests the practical implications of these findings. Our results imply that sharing – a behavior with potentially high positive impact on sustainable consumption – could be facilitated by promoting either corresponding values, self-identity, or context-specific beliefs (like the attitude towards non-ownership or personal norms to share). Considering the strong relationship between a respective personal norm and sharing intentions, campaigns to promote a specific behavior could concentrate on normative considerations. Social norm interventions might be fruitful, as some social norms are internalized as personal norms. Recent research shows that dynamic norms that communicate upcoming trends – such as “More and more people are giving up owning and starting to share goods” – are effective in nudging people towards pro-environmental behavior in general (Loschelder et al., 2019; Sparkman, Howe, et al., 2020; Sparkman, Weitz, et al., 2020; Sparkman & Walton, 2017). This type of norm has been also shown to facilitate changes of identity as people want to become part of the implied societal change (Sparkman & Walton, 2019).

Individuals' self-identity could be another good starting point for the promotion of collaborative consumption, and sustainable behaviors more broadly, as it appears to be susceptible to change but also relatively stable due to its connection to values (van der Werff et al., 2013b). Increasing the salience of individuals' past pro-environmental behavior could support their environmental self-identity (Lacasse, 2016). Future applied research is needed to focus more specifically on changing identities – not only general pro-environmental identities but also object-specific aspects of identity. Even though the (supplemental) results regarding self-extension into the car and into access to a car are ambivalent and need to be treated cautiously, they imply that campaigns to promote sharing of objects like cars may have to convince individuals to give up, figuratively speaking, a part of themselves. It may be important to substitute the identification with an object with a different and attractive identity, maybe as a member of a specific sharing platform that involves peers with similar values.

Influencing abstract values to promote a specific pro-environmental behavior might have mostly indirect effects on behavior, based on the present findings, and may also be harder to achieve given the high stability of values in adults (Schuster et al., 2019). However, given that values transcend situational contexts, this approach may have the broadest and most enduring effect.

Finally, the present findings imply that by framing sharing intentions in social terms, target groups with strong altruistic values could be addressed and potentially motivated better. This is likely to expand to further frames and values than those examined in this study. In line with a multidimensional understanding of sustainable consumption (Geiger et al., 2018), it might be worthwhile to create and test a more integrative conceptualization of the VIP model beyond the environmental aspect of sustainability.

Conclusion

Our findings show that theoretical assumptions about how values guide behaviors via identity processes can explain large parts of variance in people's intentions to engage in collaborative consumption, with the personal norm to share as the theoretically most immediate and statistically most important factor. Biospheric values seem to shape related identities and norms, but their specific relevance for sharing intentions depends on whether the sharing behaviors are (framed as) relevant for the individual values of the person. Besides, more positive attitudes towards non-ownership are related to higher sharing intentions. In addition, self-extension into a specific object (here, a car) is negatively related to participation in sharing this object. This is in line with the view of self-extension as a barrier to sharing but also could mean self-extension decreases with sharing experiences. In conclusion, the study looked at drivers of and barriers to sharing intentions, which – combined with findings from future studies – may be addressed in campaigns to promote collaborative consumption.

Data Availability Statement

The data and materials are available under https://osf.io/ndh84/, and the preregistration are available under https://osf.io/7hyr6.

Online Supplement

For the interested reader, the online supplement includes descriptive statistics, intercorrelations, further group differences between sharers and owners, analyses on self-extension into access, additional results regarding the fourth hypothesis, analyses of the discriminant validity of self-extension into a car and self-extension into access, as well as an exploration of the sustainability potential of car sharing.

ENDNOTES

[i] The development of the positive environmental impact of collaborative consumption is a complex process and depends on additional factors. Research shows inconsistent and differentiated results on the sustainability effects of collaborative consumption (e.g., Schmitt et al., 2017). For more details concerning the context of car sharing and our contribution to this topic, the reader is referred to the online supplement in the OSF project folder (chapter 6).

[ii] For better readability, we do not differentiate between values and value orientations (Vaske & Donnelly, 1999) and refer to value orientations (biospheric, altruistic, egoistic) as values.

[iii] We performed a power analysis with G*Power (Faul et al., 2009), assuming a power of $1 - \beta = .95$ to detect a small effect (referring to Lindblom and Lindblom's (2017) research: $f^2 = .05$) at $\alpha = .0125$.

[iv] Respondents had to answer to at least 75% of the items of each scale relevant to the main analyses.

[v] The additional survey questions on *motives for sharing* and *willingness to share one's own car*, which were purely explorative, can be found in the questionnaire file in the osf project.

[vi] Food sharing was excluded because it was identified as decreasing Cronbach's alpha of the self-constructed scale.

[vii] The alternative was categorized as sustainable if the average greenhouse gas emission was lower than 60g/km. Additionally, alternatives implying the usage by more than one person were categorized as sustainable because the total emissions per person are comparably low. The data used for the categorization were derived from Dünnebeil and colleagues (2004) and the German Federal Agency for the Environment (2018).

[viii] We excluded one item of the MVS scale ("I try to keep my life simple as far as possessions are concerned") because it was identified to decrease Cronbach's alpha and had a low selectivity.

[ix] We included the participation in car sharing in the measurement of the variable of actual sharing behavior, in addition to the participation in the sharing concepts presented in the variable sharing

intentions (rental of everyday objects (e.g., tools) / communal gardens / food sharing (later excluded) / shared flats / sharing between neighbors). That means when a person indicated they use car sharing the value of sharing behavior was raised by a factor of one. The measurement of sharing intentions, however, did not include the concept car sharing.

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TABLES

Table 1. Predictive power of the VIP variables.

	Mediator Variable Models					
	Identity			Norm		
	β	99% *CI*	*R²*	*β*	99% *CI*	*R²*
Values	.60**	[0.50; 0.70]	.36**	.28**	[0.13; 0.42]	.21**
Identity				.24**	[0.09; 0.39]	
	Dependent Variable Models					
	Sharing intentions			Sharing behaviors		
	β	99% *CI*	*R²*	*β*	99% *CI*	*R²*
Values	.17*	[0.04; 0.26]		-.07	[-0.31; 0.13]	
Identity	.17*	[0.04; 0.26]	.41**	.33**	[0.26; 0.69]	.19**
Norm	.44**	[0.28; 0.47]		.23**	[0.14; 0.52]	
Total effect of values without mediators	.46**	[0.30; 0.50]	.21**	.23**	[0.15; 0.52]	.05**
	Conditional Indirect Effects					
	Sharing intentions			Sharing behaviors		
	Coeff.	99% *CI*	*SE*	*Coeff.*	99% *CI*	*SE*
Values → Identity	.11	[0.02; 0.19]	0.03	.20	[0.10; 0.32]	0.04
Values → Norm	.12	[0.05; 0.20]	0.03	.06	[0.02; 0.12]	0.20
Values → Identity → Norm	.06	[0.02; 0.11]	0.02	.03	[0.01; 0.07]	0.11
Total indirect effect	.29	[0.19; 0.40]	0.04	.30	[0.19; 0.42]	0.05

Note. Values = Biospheric values; Identity = Environmental self-identity; Norm = Personal norm; CI = Confidence interval; *p = .001; **p <.001 (two-tailed)

Table 2. Value-framing match.

	Model 1 DV: SI environ.		Model 2 DV: SI social	
	β	99 % CI	*β*	99 % CI
Personal norm	.427**	[0.31; 0.54]	.372**	[0.25;0.51]
Biospheric values	.278**	[0.16; 0.40]	.099	[-0.03; 0.24]
Altruistic values	.080	[-0.03; 0.19]	.164*	[0.04; 0.30]
R^2	.41**		.26**	

Note. DV = Dependent variable; SI environ. = intentions to participate in environmentally framed sharing concepts; SI social = intentions to participate in socially framed sharing concepts; *p = .001; **p <.001

FIGURES

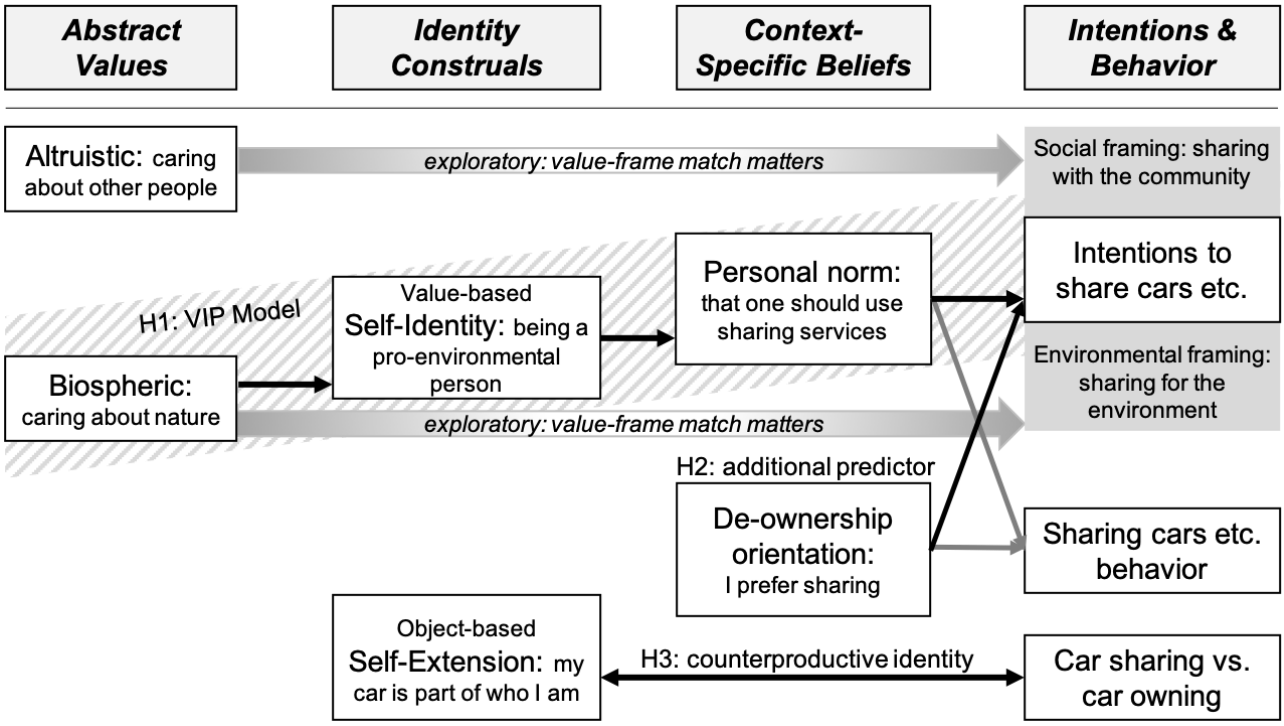

Figure 1. Summary of the research model and hypotheses. We assume that sharing behavior and intentions can be explained by beliefs on different levels of abstraction. Besides specific attitudes, abstract self-transcendence values may promote sharing intentions and behavior. This requires a process in which the value is integrated into the identity construal and translated into sharing specific attitudes, which may be facilitated by a framing of the behavior as value-relevant. On the other hand, identity construals based on a concrete object are likely a barrier to sharing it. Black arrows represent preregistered hypotheses and grey arrows exploratory research questions.

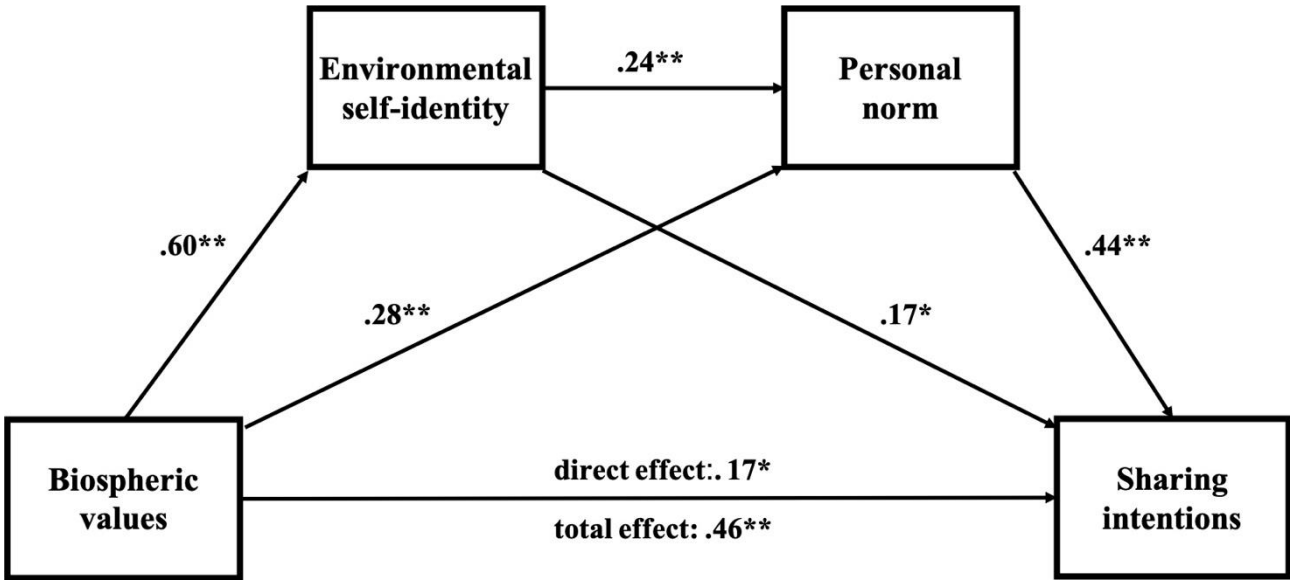

Figure 2. Explaining sharing intentions with the factors of the VIP model. Indirect effect of biospheric values on sharing intentions: β = .29, 99% CI [0.19, 0.39]; *p = .001; **p < .001 (two-tailed). The effects refer to regression coefficients of the respected paths estimated with the PROCESS macro for bootstrapped mediation modeling (Model 6).