J Bus Ethics (2019) 158:679–697
DOI 10.1007/s10551-017-3675-3

ORIGINAL PAPER

Understanding Collaborative Consumption: An Extension of the Theory of Planned Behavior with Value-Based Personal Norms

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Received: 20 December 2016 / Accepted: 16 August 2017 / Published online: 23 August 2017

Abstract Collaborative consumption is proposed as a potential step beyond unsustainable linear consumption patterns toward more sustainable consumption practices. Despite mounting interest in the topic, little is known about the determinants of this consumer behavior. We use an extended theory of planned behavior to examine the relative influence of consumers' personal norms and the theory's basic sociopsychological variables attitudes, subjective norms, and perceived behavioral control on collaborative consumption. Moreover, we use this framework to examine consumers' underlying value and belief structure regarding collaborative consumption. We measure these aspects for 224 consumers in a survey and then assess their self-reported collaborative consumption behavior in a second survey. Our structural model fits the data well. Collaborative consumption is more strongly—through intentions—influenced by personal norms and attitudes than by subjective norms. Personal norms to consume collaboratively are determined by consumers' altruistic, biospheric, and egoistic value orientations. Cost savings, efficient use of resources, and community with others are found to be consumers' attitudinal beliefs underlying collaborative consumption. We conclude that collaborative consumption can be pin-pointed neither as a mere form of economic exchange nor as a primarily normative form of sharing resources. Instead, collaborative consumption is determined by economic/egoistic (e.g., cost savings) and normative (e.g., altruistic and biospheric value orientations) motives. Implications for collaborative consumption research, the theory of planned behavior, and practitioners are discussed.

Keywords Collaborative consumption · Sharing economy · Theory of planned behavior · Values · Personal norms

Introduction

Collaborative consumption—that is, borrowing, renting, donating, swapping, and buying used, common, or idle resources in consumer or peer networks—has been proposed as an alternative way of consumption by several researchers (e.g., Botsman and Rogers 2011; Heinrichs 2013; Leismann et al. 2013; Prothero et al. 2011) and practitioners (e.g., World Economic Forum Young Global Leaders 2013). As an emerging socioeconomic model, collaborative consumption has the potential to alleviate problems such as economic strain, resource depletion, climate change, excessive waste, and social alienation (Botsman and Rogers 2011; Prothero et al. 2011). Potential benefits of collaborative forms of consumption are, for example, an extension of the useful life of products and a maximization of the utilization of each product in use, the promotion of durable products and of recyclable construction design, and avoidance or postponement of purchases (Leismann et al. 2013).[1] At the same time, it offers

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[1] However, researchers have also called out rebound effects and overconsumption as potential risks that might dilute or reverse collaborative consumption's economic, environmental, and social advantages (Thomas 2003, 2011; Robert et al. 2014). Thus, there is not yet a definitive answer to the question of the actual sustainability of collaborative consumption as this ultimately depends on consumers' actual behavior.

consumers a range of options to address their needs (Luchs et al. 2011).

Despite some prominent exceptions, however, acceptance, adoption, and diffusion of collaborative consumption practices are still limited (Piscicelli et al. 2015).[2] To some degree, the slow uptake can be explained by the external requirements of collaborative consumption. It often depends on the technology infrastructure and requires a critical mass of consumers that ensures a balance between demand and supply of resources (Botsman and Rogers 2011), both of which vary substantially by country, region, and community. Regardless of these context-specific determinants, researchers have identified consumers' internal motivation as the strongest inhibitor of collaborative consumption (Barnes and Mattsson 2016), which is consistent with findings from the broader field of sustainable consumption (Prothero et al. 2011). Thus, to improve the uptake of collaborative consumption on a large scale, it is necessary to understand the behavior from a consumer perspective. However, current research on determinants of collaborative consumption—that is, the sociopsychological variables and underlying values and beliefs of this behavior—remains incomplete for several reasons (Heinrichs 2013; Prothero et al. 2011).

First, although researchers have provided valuable insights into particular variables thus far, for example, for attitudes (Hamari et al. 2015) or satisfaction (Möhlmann 2015), no comprehensive behavioral models have been examined to understand the full decision-making process and the relative importance of different sociopsychological variables for engaging in collaborative consumption. For example, previous research has found sustainable consumption to be determined by distal behavioral factors like pro-environmental and pro-social values mediated by more proximal behavioral factors like attitudes, norms, and behavioral control (Stern 2000; Thøgersen 2006). Second, different views have emerged of collaborative consumption being primarily determined by economic/egoistic motives (e.g., profit motives, self-interest, pragmatism; Bardhi and Eckhardt 2012; Belk 2014a, b), primarily determined by normative motives (e.g., sustainability, improving community; Albinsson and Perera 2012), or by both (Botsman and Rogers 2011). This lack of theoretical agreement makes it difficult for practitioners in the private and public sectors to implement adequate measures to improve the uptake of collaborative consumption. Third, most studies have relied on explanations of behavioral intentions without measuring collaborative consumption behavior (e.g., Yin et al. 2016). This is problematic, as research has identified a considerable gap between intentions and behavior left to explain (Ajzen and Fishbein 2005). Finally, while there is research on individual collaborative consumption models like car sharing (Bardhi and Eckhardt 2012) or bike sharing (Yin et al. 2016) there is a lack of research on a disposition toward collaborative consumption as a categorical alternative to individual, linear consumption. In response to these gaps in the research, the aim of our study is to understand which sociopsychological variables and underlying values and beliefs determine collaborative consumption behavior.

Our contribution to the literature is threefold. First, we advance collaborative consumption research, empirically showing that it is determined by economic/egoistic (e.g., cost savings) and normative motives (e.g., altruistic and biospheric value orientations). Second, building upon Ajzen's (1991) theory of planned behavior we extend this theory with a value-based personal norm variable and evaluate its addition based on criteria suggested by Fishbein and Ajzen (2010), addressing the recent call for further development of this theory (Head and Noar 2014). Finally, we provide an overview of potential measures to improve the uptake of collaborative consumption with regard to aspects of intentions, perceived behavioral control (PBC), attitude, as well as personal and subjective norms.

In the next section, we briefly review the literature on collaborative consumption and provide a definition. Moreover, we describe the extended theory of planned behavior including the value and belief structure underlying collaborative consumption and derive hypotheses. Thereafter, we explain our research method and present the results. In the final section, we discuss implications of our results for collaborative consumption research, the theory of planned behavior, and practitioners.

Theoretical Framework and Hypotheses

Defining Collaborative Consumption

Recently, many terms and concepts have described forms of consumption related to those discussed here. Among those terms are "collaborative consumption" (Botsman and Rogers 2011; Rifkin 2014) "sharing" or "sharing economy" (Belk 2009, 2014b), "access" or "access-based consumption" (Bardhi and Eckhardt 2012; Chen 2009), "commercial sharing systems" (Lamberton and Rose 2012), "the mesh" (Gansky 2010), and "product-service systems" (Mont 2004). For the sake of consistency, we

[2] Recent estimates suggest, for example, that revenues generated from several key sectors of the sharing economy generated merely €3.6bn across Europe in 2015 (US$15 in 2014 worldwide), albeit with significant expected growth rates (PwC 2016; DHL 2017) or that in 2015 less than half of the US population had at least some familiarity with the sharing economy (PwC 2015).

refer to the term collaborative consumption in the remainder of this paper. Collaborative consumption differs from individual, linear consumption (Mont and Heiskanen 2015) and is defined by Botsman and Rogers (2011, p. 15) as "traditional sharing, bartering, lending, trading, renting, gifting, and swapping, redefined through technology and peer communities." Individual, linear consumption is based on the notion of buying new things for private use and final disposal, whereas collaborative consumption is based on the effective management of collaborative, shared use of used, common, or idle resources (i.e., products, assets, or services). Botsman and Rogers (2011) built their understanding of collaborative consumption on a distinct use of networks and technology. While following their general definition, however, we move beyond a specifically technology focused understanding, because collaborative consumption behaviors can equally occur in a non-technology-based way offline.[3] Building on Ajzen and Fishbein (1980), we thus view collaborative consumption as a behavioral category that includes five prototypical behaviors discussed in the literature (e.g., Bardhi and Eckhardt 2012; Belk 2014b; Botsman and Rogers 2011) that reflect the same underlying disposition: borrowing, renting, donating, swapping, and buying things used.

These five behaviors represent major configurations of the four primary exchange logics (Scaraboto 2015) underlying collaborative consumption (see Table 1), that is (1) collaborative, shared use, (2) acquisition mode (transfer of ownership vs. access), (3) reciprocity (reciprocal vs. non-reciprocal behaviors), and (4) compensation (monetary vs. non-monetary). All five behaviors require some degree of collaboration between consumers, peers or between an individual and a collaboration-based organization. Moreover, they all involve at least two people sharing the use of a resource over time. Renting and borrowing facilitate exchange without transfer of ownership as resources are only temporarily accessed (e.g., car sharing, shared use of living space). When donating, swapping, or buying things used, ownership is transferred while multiple consumers effectively share the use of products or assets over time. We consider some of these behaviors non-reciprocal (e.g., borrowing, donating), while others are reciprocal involving some form of monetary (e.g., renting, buying used) or non-monetary compensation (e.g., swapping). These behaviors can be found in commercial market structures (business-to-consumer and consumer-to-consumer markets) or privately (between peers) and both online and offline. Thus, our understanding of collaborative consumption can be summarized as:

> Acquiring or providing resources from or to others for collaborative, shared use among consumers or peers as opposed to acquiring or providing new resources for private use.

Extending the Theory of Planned Behavior to Understand Collaborative Consumption

Our theoretical framework is based on an extended theory of planned behavior (see Fig. 1). The theory of planned behavior (Ajzen 1985, 1991) is a useful initial framework for understanding collaborative consumption for several reasons. First, the theory's basic variables capture primary determinants of behavioral performance relevant in the context of collaborative consumption. Apart from the influence of social pressure, consumers' capabilities, and the opportunities to consume collaboratively, its primary variable attitude captures consumers' evaluation of expected costs and benefits of collaborative consumption. Moreover, as a well-established model it has been shown to explain a wide range of other consumer behaviors (e.g., Bamberg et al. 2003; Kidwell and Jewell 2003; Kurland 1995; Swaim et al. 2014; Taylor and Todd 1995). Second, it is open to the inclusion of additional normative variables (Ajzen 1991). Thus, it is well suited to examine the relative influence of economic/egoistic and normative motives and comprehensively investigate consumers' underlying value and belief structure regarding collaborative consumption. Finally, practitioners find the theory a useful framework for developing behavioral change interventions (Smith et al. 2008; Xiao et al. 2011).

As we expect normative motives to be particularly important in the context of collaborative consumption and as reviews have shown that the theory's ability to account for these motives is weak (Armitage and Conner 2001; Conner and Armitage 1998; Rivis et al. 2009), we extend the theory with a value-based personal norm variable (Stern et al. 1999).

Briefly, the theory of planned behavior itself (Ajzen 1991) is an extension of the theory of reasoned action (Ajzen and Fishbein 1980) designed to explain the determinants of an individual's conscious decision to perform a behavior that is beyond complete volitional control. According to the theory of planned behavior, the performance of a behavior can be predicted by an individual's intention to perform the behavior and the perceived control over the behavior. In turn, intentions can be predicted by someone's attitudes toward behavior, subjective norms, and perceived behavioral control regarding the behavior.

[3] For example, there are several older types of companies and organizations that have long since facilitated collaborative consumption like libraries, cooperatives, flea markets and neighborhood clubs (Albinsson and Perera 2012; Ozanne and Ballentine 2010).

Table 1 Prototypical collaborative consumption behaviors

Behavior	Collaborative, shared use	Acquisition mode	Reciprocity	Compensation
Buying used	Yes	ToO[a]	Yes	Monetary
Swapping	Yes	ToO[a]	Yes	Non-monetary
Accepting[b]	Yes	ToO[a]	No	None
Borrowing	Yes	Access	No	None
Renting	Yes	Access	Yes	Monetary
Buying new for private use	No	ToO[a]	Yes	Monetary

[a] Transfer of ownership

[b] Gifts or donations

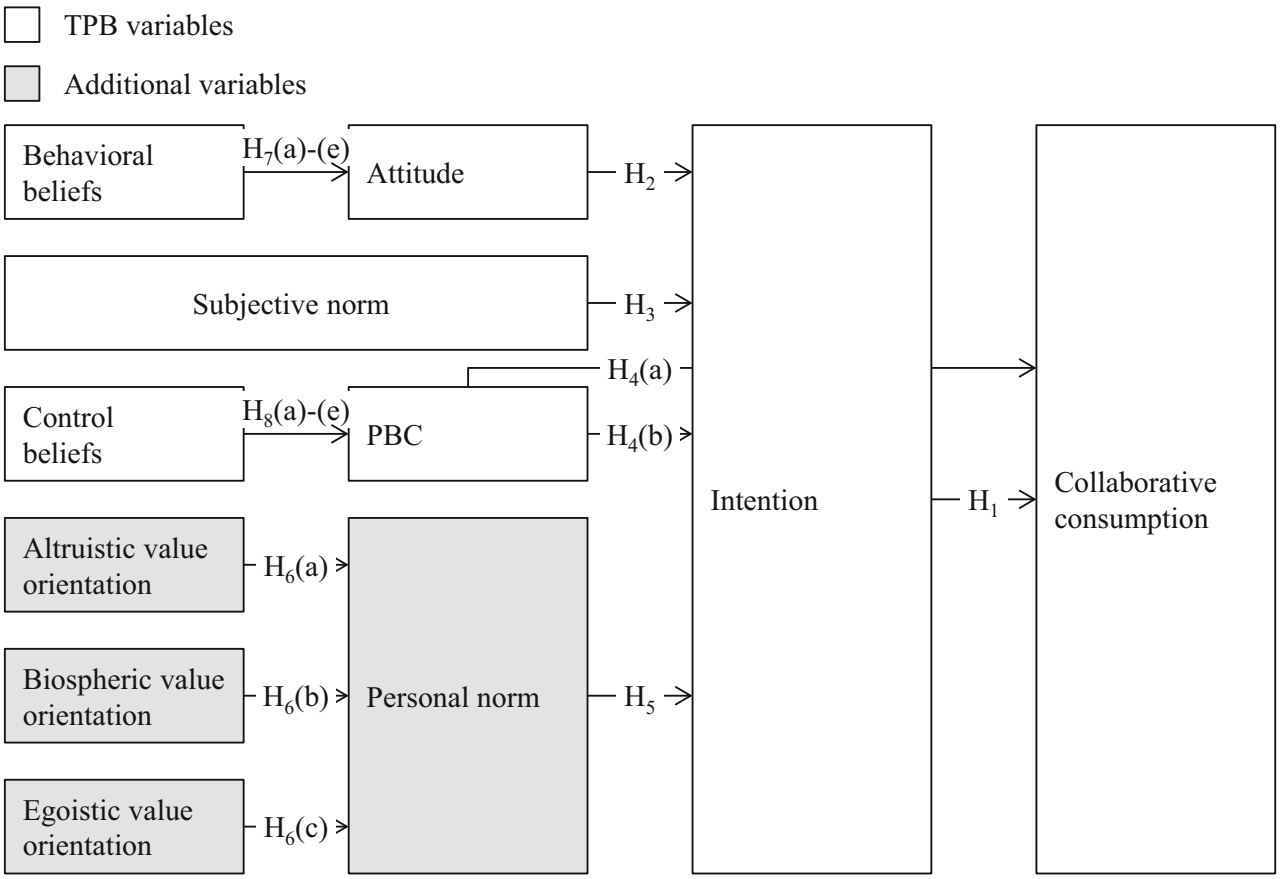

Fig. 1 Theoretical framework

Intentions represent an individual's motivation in the sense of a conscious decision to perform a behavior after careful consideration of available information. Collaborative consumption involves this conscious consideration of relevant information that might include potential benefits and costs of what is consumed, likely external consequences (e.g., the impact of emissions related to the consumption) or other personal and external requirements to perform the behavior. In addition, we expect consumers to make a conscious choice between collaborative and non-collaborative consumption options, for example, between the use of a car sharing service and the purchase of a new car (Botsman and Rogers 2011). Attitudes reflect the overall positive or negative evaluation of performing the behavior. Belk (2014b) and Botsman and Rogers (2011) acknowledge consumers are likely to produce favorable attitudes toward collaborative consumption as its economic benefits tend to be greater than the associated cost.

Subjective norms refer to the perceived social pressure of significant others to perform or not perform the behavior. Concordantly, Botsman and Rogers (2011) view collaborative consumption as a socioeconomic groundswell indicating consumers are beginning to create such expectations (or social norms) that will guide individuals' consumption behavior. Perceived behavioral control (PBC) refers to the perceived ease or difficulty of performing a behavior. As collaboration in consumer or social networks and use of technology are often involved in collaborative consumption, consumers can be assumed to lack full volitional control over collaborative consumption in most situations (John 2013). Concordantly, Belk (2014b) and Botsman and Rogers (2011) identify knowledge about information and communication technology, as well as the ability and time to organize other aspects of collaborative consumption (e.g., the time involved in arranging the swap of clothes) as important personal and external factors. PBC captures these personal and external factors beyond someone's volitional control. Based on these theoretical premises, we propose the following hypotheses:

H_1 Consumers' intention to consume collaboratively will be positively related to consumers' collaborative consumption behavior.

H_2 Consumers' attitudes toward collaborative consumption will be positively related to consumers' intention to consume collaboratively.

H_3 Consumers' subjective norms regarding collaborative consumption will be positively related to consumers' intention to consume collaboratively.

H_4 Consumers' perceived behavioral control over collaborative consumption will be positively related to (a) consumers' collaborative consumption behavior and (b) consumers' intention to consume collaboratively.

As we attempt to understand the relative influence of economic/egoistic and normative motives on collaborative consumption, this study focuses on the extension of the theory of planned behavior in a way that allows us to capture normative motives adequately. Concordantly, reviews and meta-analyses have found the theory of planned behavior's ability to account for normative motives to be weak when examining behaviors with a moral dimension, that is, in situations when someone faces a trade-off between a behavior's personal and external consequences (Armitage and Conner 2001; Conner and Armitage 1998; Rivis et al. 2009). As we expect normative motives are particularly important in the context of collaborative consumption, we included personal norms as an additional determinant of intention (Conner and Armitage 1998; Manstead 2000). Ajzen (1991, p. 199) argues that "the theory of planned behavior is, in principle, open to the inclusion of additional variables" if they can statistically significantly explain additional variance beyond the theory's basic variables. A personal norm represents an individual's own moral obligation or responsibility to perform, or not to perform a behavior, beyond perceived social pressures (Ajzen 1991). Building on norm activation research by Schwartz (1977, 1994), Stern et al. (1999) argue that personal norms are based on individual values and the motivation to protect them with appropriate behavior. Examination of subjective and personal norms is particularly interesting when it comes to behaviors that represent social change. In this case, personal norms might have stronger effects than subjective norms as society might not have internalized new norms, yet (Stern et al. 1999). Supporting this view, Botsman and Rogers (2011) suggest consumers' social and environmental concern is an important determinant of collaborative consumption. According to their view, consumers take a personal moral responsibility to protect the environment and prevent social harm through their choice of appropriate consumption. Thus, we consider it useful to examine personal norms beyond subjective norms in the context of collaborative consumption, as we expect consumers to carefully evaluate whether this new form of consumption is the "right or wrong thing to do" from an environmental and social perspective. The stronger the personal norm to consume collaboratively, the stronger the intention to do so. Therefore, we propose the following hypothesis:

H_5 Consumers' personal norms to consume collaboratively will be positively related to consumers' intention to consume collaboratively.

Values and Beliefs Underlying Collaborative Consumption

Apart from the proximal behavioral factors introduced in the previous section, it is the objective of this study to uncover the structure of consumers' underlying values and beliefs regarding collaboration consumption. Building on Schwartz's (1977, 1994) norm activation and value research, Stern et al. (1999) develop a value-belief-norm theory that suggests an individual's altruistic (i.e., concern for the well-being of other humans) and biospheric (i.e., concern for the state of the environment and the well-being of other species) value orientations are positively related to the formation of a personal norm to behave in a sustainable way, while an egoistic value orientation (e.g., material wealth, success, authority) is negatively related to personal

norms.[4] Although little is known about the underlying processes that determine the influence of values on collaborative consumption, Piscicelli et al. (2015) find collaborative consumers score higher on self-transcendence (altruistic and biospheric) than on self-enhancement (egoistic) values. Building on these theoretical premises, we hypothesize:

H_6 Consumers' (a) altruistic and (b) biospheric value orientation will be positively and (c) their egoistic value orientation will be negatively related to consumers' personal norms to consume collaboratively.

Attitudes, subjective norms, and PBC are based on three kinds of salient beliefs a person has (Ajzen 1991). Attitudes are produced by beliefs about likely consequences of the behavior and their subjective evaluation (behavioral beliefs). Subjective norms are the result of beliefs about significant others' normative expectations and the motivation to comply with them (normative beliefs). Finally, PBC is formed by beliefs about the presence of internal and external factors and their power to facilitate or inhibit performance of the behavior (control beliefs). These beliefs are behavior specific; thus, they cannot be generalized a priori (Pavlou and Fygenson 2006). Therefore, prior to the main study, we conducted a qualitative elicitation study with 25 consumers to elicit salient beliefs associated with collaborative consumption as suggested by Fishbein and Ajzen (2010). With a median age of 30 years and 60% female consumers, the sample of the elicitation study was similar to the sample of the main study. We focused on behavioral and control beliefs. These beliefs were elicited by asking open questions about the advantages and disadvantages of collaborative consumption (behavioral beliefs) and personal and external factors that would facilitate or inhibit collaborative consumption (control beliefs) (Ajzen 2006). Following Fishbein and Ajzen (2010), we conducted content and frequency analyses to identify the five most common behavioral and control beliefs. We briefly introduce each belief in the following, highlight their theoretical relevance in the context of collaborative consumption, and derive additional hypotheses.

The five most common behavioral beliefs were (1) *cost savings*, (2) *environmental protection*, (3) *dependency on others' behavior*, (4) *efficient use of resources*, and (5) *community with others*. Immediate *cost savings* has been identified as a determinant of collaborative consumption in previous research. For example, Bardhi and Eckhardt (2012) find car sharing users are motivated by economic concerns. Botsman and Rogers (2011) find collaborative consumption is cheaper than the non-collaborative option in many cases. In addition, Owyang (2013) outlines collaborative consumption as driven by the objective to monetize excess or idle inventory and to increase financial flexibility. Several researchers also identified *environmental protection* as a determinant of collaborative consumption. For example, Mont and Heiskanen (2015) and Prothero et al. (2011) highlight environmental concern as a key driver for the shared use of products and assets in the context of sustainable consumption. Similarly, Botsman and Rogers (2011) suggest consumers' environmental concern is an important determinant of collaborative consumption. Hamari et al. (2015) find sustainability is a primary driver of consumers' attitudes toward collaborative consumption. *Dependency on others' behavior* refers to a potential disadvantage of collaborative consumption, in particular in situations in which ownership of resources remains with the collaboration-based organization or the resource provider. In these situations, consumers might not apply the same care to the resource as in ownership situations (e.g., high wear-and-tear of resources). *Dependency on others' behavior* can therefore be interpreted as a lack of trust between collaborative consumers. This well-known phenomenon is found in research ranging from the "tragedy of the commons" (Hardin 1968) to Botsman and Rogers (2011), who emphasize the need for trust between collaborative consumers to overcome the fear of others' adverse behavior, and Möhlmann (2015), who finds trust is a determinant of collaborative consumption in business-to-consumer and consumer-to-consumer contexts. *Efficient use of resources* can be interpreted as one means to achieve the goal of environmental protection. In an analysis of three collaborative consumption behaviors, Leismann et al. (2013) identified a general resource-saving potential as long as the resource savings are not canceled out by framework conditions (e.g., additional transportation), rebound effects, or overconsumption. *Community with others* has been identified as an outcome and a determinant of collaborative consumption (Albinsson and Perera 2012; Botsman and Rogers 2011). Following these premises, we hypothesize:

H_7 Consumers' beliefs about (a) cost savings, (b) environmental protection, (c) efficient use of resources, and (d) community with others related to collaborative consumption will be positively related to and beliefs about (e) dependency on others' behavior related to collaborative consumption will be negatively related to consumers' attitudes toward collaborative consumption.

The five most common control beliefs are (1) *ease of use*, (2) *availability of products and services*, (3) *Internet access*, (4) *high geographic density (of collaborative*

[4] Although the value-belief-norm theory suggests the effect of value orientations on personal norms to be mediated by beliefs (i.e., new ecological paradigm, awareness of consequence, ascription of responsibility), we will examine a direct effect on personal norms to maintain parsimony of our model.

consumption options), and (5) *transparent information about offerings*. *Ease of use* is well known in information systems research, a relevant stream of research given the need for collaborative consumers to often use technology, in particular the Internet, smart phones, and social networks (John 2013). For example, in Davis's (1989, p. 320) technology acceptance model, perceived ease of use—"the degree to which a person believes that using [a technology] would be free of effort"—is a primary determinant of technology usage. *Availability of products and services* emphasizes the need for collaboration-based organizations or peers to provide what is needed, when it is needed, and where it is needed. According to Botsman and Rogers (2011), a critical mass of consumers is needed to ensure this match of supply and demand. *Internet access* was identified by Barnes and Mattsson (2016) among other technological enablers (e.g., smart phones) as a necessary factor for collaborative consumption. *High geographic density of collaborative consumption options* refers to the belief that people who live in agglomerations or cities with a high number of other collaborative consumers can more easily engage in collaborative consumption. For example, Bardhi and Eckhardt (2012) find access-based collaborative consumption is more popular in urban areas due to natural space limitations. Thus, instead of trying to find parking or storage space for cars, bikes, or other resources, citizens increasingly prefer to rent or borrow the things they need temporarily. The relevance of *transparent information about offerings* as a general determinant of consumer behavior has been emphasized by Clemons (2008). According to his view, consumers reward organizations that provide more necessary information in a transparent way more than those that provide little information that is difficult to access. In a collaborative consumption context, examples of necessary information include the condition of secondhand products, the return process of accessed resources, or the structure of a pay-per-use scheme. Following these premises, we hypothesize:

H_8 Consumers' beliefs about (a) ease of use, (b) availability of products and services, (c) Internet access, (d) high geographic density, and (e) transparent information related to collaborative consumption will be positively related to consumers' perceived behavioral control over collaborative consumption.

Methods

Design and Sample

Following the qualitative elicitation study, in May 2015 we distributed the first online survey, which included a short vignette based on our definition of collaborative consumption (see the "Appendix 1"), measures based on our theoretical framework, and control measures. Four weeks after completing the survey, the participants received the second online survey to measure if, how, and what they had actually consumed collaboratively. Both surveys were anonymous. A unique participant-generated code was used to match the two data files.

The sample was drawn from two populations. The first was selected from registered members of eight collaboration-based organizations,[5] and the second was a random sample of people not registered with any collaboration-based organization. Three hundred sixty participants completed the first survey, and 249 (69%) completed the second survey. Listwise deletion in the case of missing values resulted in 224 participants for statistical analyses. They ranged from 18 to 78 years of age with a median age of 30 years, and 52% were female. The majority (90%) lived in Germany. Sixty-two percent were employed, 29% were students, and 9% were not employed or had already retired. Median income was €2000–2999. Twenty-six percent were not registered with any collaboration-based organization. Based on Chow's (1960) test statistic, the results from the sample of registered collaboration-based organization members and non-members were not statistically significantly different ($F = 1.42, p < .01$). Therefore, we report the results of the combined data from both samples ($N = 224$).

Measures

We designed both surveys following Ajzen's (2006) and Fishbein and Ajzen's (2010) recommended approaches. In the first survey (see the "Appendix 2"), we used standard theory of planned behavior measures for *Intention*, *Attitude*, *Subjective norm*, *PBC*, and the salient beliefs (Ajzen 1991; Fishbein and Ajzen 2010), as well as established and validated measures for *Altruistic*, *Biospheric*, and *Egoistic value orientation* (Schwartz 1994; Stern et al. 1999) and *Personal norm* (Stern et al. 1999). All measures were based on multiple items (at least three) to reduce measurement error. Apart from the items that measured values, all other items matched the wording of the behavioral item to ensure internal validity (Fishbein and Ajzen 2010), were measured on Likert-type 7-point response scales, and were randomized throughout the survey to reduce response biases. Value items were taken from the Schwartz (1994) value inventory and measured on Likert-type 9-point scales

[5] Including private car renting, private ride sharing, commercial bike renting, commercial product swapping/borrowing, private food donations, commercial renting of private living space (2*x*), and private job sharing.

ranging from "opposed to my values" to "of supreme importance" by asking "How important or unimportant is *X* as a guiding principle in your life?" where *X* refers to one of ten values that make up the *Altruistic*, *Biospheric*, and *Egoistic value orientation*. We also included control measures for age, gender, income, and size of hometown.

For the assessment of self-reported behavior in the second survey (see the "Appendix 3"), we operationalized *Collaborative consumption* in line with Fishbein and Ajzen's (2010) target, action, context, time (TACT) considerations at a high level of generality in order to develop an understanding of a disposition toward collaborative consumption. Thus, we specified the target, action, and time. As a result, we measured *Collaborative consumption* with the following item: "Please estimate how many times in the last 4 weeks [time] you generally acquired something [target] through collaborative consumption [action]." To reduce response bias associated with a single behavioral item, we also asked in particular how many times people *Borrowed*, *Rented*, *Accepted a gift or donation*, *Swapped*, or *Bought used* and what type of resource was acquired. While the study specifically focuses on the acquisition phase of collaborative consumption in comparison with individual, linear consumption, we nevertheless used one additional item to ask respondents how many times in the last 4 weeks they provided something for collaborative consumption.

Statistical Analyses

We used Amos's covariance-based structural equation modeling (maximum likelihood) because it simultaneously tests all latent variables and relationships in a structural model. Thus, we could rigorously test our extended theoretical framework (Anderson and Gerbing 1988). We followed the two-step approach recommended by Anderson and Gerbing (1988). As the first step, we tested and revised the measurement model using confirmatory factor analysis. We based the revisions of the measurement model on the factor loadings from the confirmatory factor analysis and modification indices. After revising the measurement model, we tested the structural model as the second step. As all proposed hypotheses were directional, we used one-tailed testing, unless otherwise specified, to draw accurate empirical conclusions (Cho and Abe 2013). As the Chi-square test depends on sample size (Bentler and Bonnet 1980), we further used Chi-square divided by degrees of freedom (χ^2/df), the comparative fit index (CFI), and the root-mean-square error of approximation (RMSEA) to examine goodness of model fit. We considered $\chi^2/df < 2$, CFI >.90 and RMSEA <.05 to indicate good model fit (Browne and Cudeck 1993; Byrne 1989; Homburg and Baumgartner 1995).

As suggested by Ajzen (1991), we tested the relationships between the salient beliefs and the latent theory of planned behavior-variables attitude and PBC separately. While beliefs are typically aggregated into one construct and correlation of this construct with the theory's main variables is tested, we applied an approach to decompose the belief construct into individual beliefs as suggested by Bagozzi (1981) and Pavlou and Fygenson (2006). As we assume these relationships to be formative, that is, consumers' attitudes and PBC to be caused by a set of beliefs they have, we operationalized them as multiple indicators, multiple causes (MIMIC) models in Amos as recommended by Jarvis et al. (2003). Salient beliefs were formed as the products of the belief strength multiplied by the respective outcome evaluation (for behavioral beliefs) and power (for control beliefs) as proposed by Ajzen (1991).

Results

Descriptive Results

One hundred seventy-six participants (79%) reported in the second survey that they had acquired something through *Collaborative consumption* at least once in the previous 4 weeks. Means and standard deviations of all items and latent variables are presented in Table 2. The most frequently acquired resources by prototypical behavior were books via *Borrowing*, cars and living space via *Renting*, clothes/accessories via *Buying used*, food via *Accepting a gift or donation*, and clothes/accessories via *Swapping*. All correlations between the five prototypical behaviors and *Collaborative consumption* (see Table 3) are highly statistically significant and of medium size (Cohen 1992), signaling sufficient validity of the *Collaborative consumption* item. Correlation between acquiring and providing something is medium ($r = .430$, $p < .01$) indicating that collaborative consumers take on both roles frequently.

Test of the Measurement Model

We included all items for the latent variables *Intention*, *Attitude*, *Subjective norm*, *PBC*, *Personal norm*, *Altruistic*, *Biospheric*, and *Egoistic value orientation* in the initial measurement model. The initial measurement model fit the data well ($p < .001$; $\chi^2/df = 1.60$; CFI = .94; RMSEA = .05; see Table 4). To revise the initial measurement model, we excluded SN3 and PBC3 as their factor loadings were <.50 and added covariance paths between error terms as suggested by the modification indices. The revised measurement model fit the data very well ($p < .001$; $\chi^2/df = 1.42$; CFI = .96; RMSEA = .04; see Table 4). All remaining factor loadings were

Table 2 Means (M), standard deviations (SD), factor loadings (λ), and Cronbach's α ($n = 224$)

Variable/item	M^a	SD[a]	λ	α^a
Collaborative consumption	3.13	1.54		
Borrowing	1.82	1.23		
Renting	1.76	1.28		
Buying used	1.64	1.23		
Accepting gift or donation	1.45	1.18		
Swapping	1.29	1.08		
Intention	4.59	1.73		.91
INT1	4.14	1.99	.85	
INT2	4.83	1.79	.92	
INT3	4.79	1.83	.88	
Attitude	5.49	1.21		.90
ATT1	5.73	1.48	.84	
ATT2	5.79	1.28	.80	
ATT3	5.85	1.45	.85	
ATT4	5.25	1.60	.84	
ATT5	4.88	1.50	.62	
ATT6	5.46	1.52	.75	
Subjective norm	4.46	1.21		.77
SN1	4.26	1.29	.66	
SN2	4.17	1.58	.74	
SN3	*5.96*	*1.38*	*.50*	
SN4	4.95	1.53	.78	
PBC	6.19	1.11		.84
PBC1	6.14	1.21	.83	
PBC2	6.23	1.19	.87	
PBC3	*5.69*	*1.40*	*.13*	
Personal norm	2.96	1.64		.83
PN1	2.79	1.88	.84	
PN2	3.54	1.91	.67	
PN3	2.57	1.90	.85	
Altruistic value orientation	6.87	1.48		.81
Equality	7.00	1.95	.77	
Helpful	6.77	1.60	.63	
Social justice	6.50	1.93	.88	
World at peace	7.22	1.93	.63	
Biospheric value orientation	5.98	1.71		.85
Unity with nature	5.27	2.03	.70	
Environmental protection	6.31	1.83	.87	
Respect for the earth	6.38	2.06	.87	
Egoistic value orientation	5.61	1.51		.73
Successful	6.67	1.69	.85	
Wealth	5.20	1.92	.60	
Authority	*4.95*	2.00	.66	

abc Items in italics excluded ($\lambda < .50$)

[a] Based on items not excluded

statistically significant and between .62 and .92. Cronbach's α of all latent variables in the revised measurement model was between .73 and .91 indicating good reliability (Churchill 1979; see Table 2). Moreover, no validity, multicollinearity, or common method issues were found as all tests were within the recommended boundaries (average variance extracted >.50, maximum shared variance < average variance extracted, average shared variance < average variance extracted; variance inflation factors <3; Δ standardized regression weights <.20) (Fornell and Larcker 1981; O'brien 2007; Podsakoff et al. 2003).

Test of the Structural Model

To create the structural model, we added the item *Collaborative consumption* that assessed the self-reported behavior as the dependent variable to the revised measurement model. The structural model fit the data well ($p < .001$; $\chi^2/df = 1.90$; CFI = .91; RMSEA = .06; see Table 4). Apart from the relationship between *PBC* with *Intention*, all other relationships were statistically significant (see Table 5). *Intention* ($\beta = .40$, $p < .001$) and *PBC* ($\beta = .13$, $p < .05$) had statistically significant positive relationships with *Collaborative consumption* explaining 22% of its variance ($R^2 = .22$). Thus, H_1 and $H_4(a)$ are supported by the data. *Attitude* ($\beta = .33$, $p < .001$), *Subjective norm* ($\beta = .17$, $p < .05$), and *Personal norm* ($\beta = .43$, $p < .001$) had statistically significant positive relationships with *Intention* explaining 49% of its variance ($R^2 = .49$). Thus, H_2, H_3, and H_5 are supported by the data. The *Altruistic* ($\beta = .32$, $p < .001$) and *Biospheric* ($\beta = .23$, $p < .001$) *value orientations* had statistically significant positive relationships, and the *Egoistic* ($\beta = -.20$, $p < .01$) *value orientation* had a statistically significant negative relationship with *Personal norm* explaining 20% of its variance ($R^2 = .20$). Thus, $H_6(a)$, $H_6(b)$, and $H_6(c)$ are supported by the data. According to Cohen's (1992) effect size index, these effects are medium (for behavior and personal norm) and large (for intention). Based on the data, we have to reject only $H_4(b)$. Moreover, none of the control variables had a statistically significant relationship with *Collaborative consumption*.

Test of the MIMIC Models

Results from the analyses of MIMIC models are presented in Table 6. We found no multicollinearity between the formative beliefs with all variance inflation factors <3. Three statistically significant positive relationships were

Table 3 Pearson's correlation coefficient (two-tailed) ($n = 224$)

Variable	1	2	3	4	5	6	7	8	9
1. Collaborative c.	–								
2. Intention	.45**	–							
3. Attitude	.35**	.54**	–						
4. Subjective norm	.33**	.44**	.41**	–					
5. PBC	.27**	.38**	.49**	.36**	–				
6. Personal norm	.31**	.59**	.38**	.31**	.17**	–			
7. Altruistic VO	.21**	.25**	.31**	.23**	.21**	.38**	–		
8. Biospheric VO	.17**	.24**	.26**	.19**	.09^{ns}	.37**	.69**	–	
9. Egoistic VO	.03^{ns}	−.07^{ns}	−.03^{ns}	−.09^{ns}	.12^{ns}	−.20**	−.03^{ns}	−.09^{ns}	–
Cost savings	.28**	.33**	.45**	.38**	.40**	.18**	.26**	.26**	−.01^{ns}
Environmental prot.	.18**	.32**	.34**	.25**	.18**	.38**	.44**	.45**	−.01^{ns}
Efficient use of res.	.14**	.25**	.40**	.32**	.25**	.35**	.42**	.42**	−.06^{ns}
Community with o.	.03^{ns}	.29**	.33**	.23**	.01^{ns}	.33**	.30**	.21**	−.18**
Dependency[a]	.02^{ns}	.07^{ns}	.03^{ns}	.05^{ns}	−.10^{ns}	.26**	−.04^{ns}	−.03^{ns}	−.02^{ns}
Borrowing	.48**								
Renting	.45**								
Buying used	.43**								
Accepting[b]	.42**								
Swapping	.32**								
Provision	.43**								

ns not significant ($p \geq .05$)

* $p < .05$

** $p < .01$

[a] On others' behavior

[b] Gift or donation

Table 4 Goodness of fit of the measurement and structural models ($n = 224$)

Model	χ^2	*df*	*p*	χ^2/df	CFI	RMSEA
Initial measurement model	559.61	349	<.001	1.60	.94	.05
Revised measurement model	444.65	313	<.001	1.42	.96	.04
Structural model	662.45	348	<.001	1.90	.91	.06

Df degrees of freedom, *CFI* comparative fit index, *RMSEA* root-mean-square error of approximation

found between the behavioral beliefs *Cost savings* ($\beta = .33$, $p < .001$), *Efficient use of resources* ($\beta = .18$, $p < .05$), as well as *Community with others* ($\beta = .15$, $p < .05$) and *Attitude* explaining 30% of its variance ($R^2 = .30$). Thus, $H_7(a)$, $H_7(c)$, and $H_7(d)$ are supported by the data. In addition, *PBC* had two statistically significant positive relationships with the control beliefs *Internet access* ($\beta = .16$, $p < .5$) and *High geographic density* ($\beta = .16$, $p < .05$) explaining 28% of its variance ($R^2 = .28$). Thus, $H_8(c)$ and $H_8(d)$ are supported by the data. According to Cohen's (1992) effect size index, these effects are large. Based on the data, we have to reject $H_7(b)$, $H_7(e)$, $H_8(a)$, $H_8(b)$, and $H_8(e)$.

Robustness Check of Proposed Model

In order to check the robustness of our proposed model, we examined three relationships in our model in more depth. We conducted bivariate correlation testing and linear regression including analysis of multicollinearity using variance inflation factors (VIF) to determine the independence of variables in our model.

The first is the relationship between the egoistic value orientation and the behavioral belief cost savings as they are seemingly related. It is particularly insightful to examine this relationship, because in our model an egoistic value orientation is—via personal norms—negatively

Table 5 Standardized regression weights (β), standard errors (SE), p values, and R^2 from the structural model ($n = 224$)

H[a]	Dependent	Independent	β	SE	p	R^2
	Collaborative consumption	Age	−.01	.01	ns	.22
	Collaborative consumption	Gender	−.01	.18	ns	
	Collaborative consumption	Income	.06	.04	ns	
	Collaborative consumption	Size of hometown	.01	.07	ns	
H_1	Collaborative consumption	Intention	.40	.07	***	
H_4(a)	Collaborative consumption	PBC	.13	.10	*	
H_2	Intention	Attitude	.33	.14	***	.49
H_3	Intention	Subjective norm	.17	.10	*	
H_4(b)	Intention	PBC	.10	.12	ns	
H_5	Intention	Personal norm	.43	.07	***	
H_6(a)	Personal norm	Altruistic value orientation	.32	.12	***	.20
H_6(b)	Personal norm	Biospheric value orientation	.23	.08	***	
H_6(c)	Personal norm	Egoistic value orientation	−.20	.09	**	

[a] Hypothesis

* $p < .05$; ** $p < .01$; *** $p < .001$, *ns* not significant ($p \geq .05$)

Table 6 Standardized regression weights (β), standard errors (SE), p values, and R^2 from the MIMIC models ($n = 224$)

H[a]	Dependent	Independent (formative belief)	β	SE	p	R^2
H_7(a)	Attitude	Cost savings	.33	.01	***	.30
H_7(b)	Attitude	Environmental protection	.05	.01	ns	
H_7(c)	Attitude	Efficient use of resources	.18	.01	*	
H_7(d)	Attitude	Community with others	.15	.01	*	
H_7(e)	Attitude	Dependency on others' behavior	−.04	.01	ns	
H_8(a)	PBC	Ease of use	.13	.01	ns	.28
H_8(b)	PBC	Availability of products and services	.13	.01	ns	
H_8(c)	PBC	Internet access	.16	.01	*	
H_8(d)	PBC	High geographic density	.16	.01	*	
H_8(e)	PBC	Transparent information about offerings	.05	.01	ns	

[a] Hypothesis, * $p < .05$; ** $p < .01$; *** $p < .001$, *ns* not significant ($p \geq .05$)

Table 7 Linear regression analysis ($n = 224$)

Independent	Dependent			
	Attitude	Personal norm	Collaborative consumption	VIF values
Egoistic value orientation	$-.03^{ns}$	−.20**	$.03^{ns}$	1.0
Cost savings	.45***	.18**	.27***	1.0
R^2	.20***	.07***	.08***	

* $p < .05$; ** $p < .01$; *** $p < .001$; *ns* not significant ($p \geq .05$)

related to collaborative consumption, whereas cost savings are—via attitudes—positively related to collaborative consumption. However, Table 3 shows that both variables are not correlated ($r = -.01^{ns}$). Moreover, conducting linear regression, we find that an egoistic value orientation ($\beta = -.20$, $p < .01$) and cost savings ($\beta = .18$, $p < .01$) independently explain personal norms (VIF = 1.0), while an egoistic value orientation other than cost savings has no significant relationship with both attitude and collaborative consumption (see Table 7). Similarly, we also examined the relationship between altruistic value orientation and community with others as they are seemingly related. Here, we find a positive correlation ($r = .30$, $p < .01$; Table 3); however, linear regression shows that they independently explain variables in our model (VIF = 1.1; Table 8). Finally, while subjective and personal norms are positively

Table 8 Linear regression analysis ($n = 224$)

Independent	Dependent			
	Attitude	Personal norm	Collaborative consumption	VIF values
Altruistic value orientation	.23***	.31***	$-.04^{ns}$	1.1
Community with others	.26***	.24***	.22**	1.1
R^2	.16***	.20***	.05**	

* $p < .05$; ** $p < .01$; *** $p < .001$; *ns* not significant ($p \geq .05$)

Table 9 Linear regression analysis ($n = 224$)

Independent	Dependent		
	Intention	Collaborative consumption	VIF values
Subjective norm	.18***	.19**	1.2
Personal norm	.42***	.17*	1.2
R^2	.49***	.19***	

* $p < .05$; ** $p < .01$; *** $p < .001$; *ns* not significant ($p \geq .05$)

correlated, too ($r = .31$, $p < .01$; Table 3), they also independently explain variables in our model (VIF = 1.2; Table 9).

Discussion and Conclusion

The objective of this study was to understand which sociopsychological variables and underlying values and beliefs determine collaborative consumption behavior. Our structural model based on the extended theory of planned behavior fits the data well, explaining a medium amount of variance in self-reported collaborative consumption behavior and a large amount of variance in consumers' intention to consume collaboratively. Thus, we provide empirical evidence that consumers' intention to consume collaboratively and their behavior is determined by economic/egoistic (e.g., cost savings) and normative motives (e.g., altruistic and biospheric value orientations). Furthermore, we highlight the applicability of the extended theory of planned behavior in the context of consumer behavior. With regard to our intended contributions, we will now discuss the findings in light of (1) implications for collaborative consumption research, (2) an extension of the theory of planned behavior with a value-based personal norm variable, and (3) potential measures to improve the uptake of collaborative consumption.

Implications for Collaborative Consumption Research

We advance the research on collaborative consumption by empirically illustrating its determinants. Previously, primarily conceptual arguments have been made for collaborative consumption being mostly coined either by economic/egoistic motives (e.g., Bardhi and Eckhardt 2012; Belk 2014a, b), by normative motives (e.g., Albinsson and Perera 2012), or by both (Botsman and Rogers 2011). Our findings now empirically support the argument that collaborative consumption occupies a middle ground on the continuum from being primarily determined by economic/egoistic motives on one end to being primarily determined by normative motives on the other). Economic/egoistic (i.e., cost savings) and normative motives (i.e., efficient use of resources) are reflected by consumers' behavioral beliefs underlying their attitudes toward collaborative consumption. This supports the relevance of economic benefits associated with collaborative consumption, identified by Bardhi and Eckhardt (2012), Belk (2014a, b), and Owyang (2013). At the same time, however, our findings suggest collaborative consumption is driven by the urge for social community and the goal to achieve more resource-saving, sustainable consumption, as identified by Albinsson and Perera (2012), Botsman and Rogers (2011), and Hamari et al. (2015). It follows that collaborative consumption can be pin-pointed neither as a mere form of economic exchange nor as a primarily normative form of sharing resources. This finding is consistent with findings from the broader field of sustainable consumption, where researchers (e.g., Ölander and Thogersen 1995) find consumers make trade-offs between personal cost and benefits (e.g., cost and taste of organic food) and external consequences (e.g., CO_2 emissions).

Consumers' intentions to consume collaboratively were more strongly influenced by personal norms and attitudes than by subjective norms. PBC was not a statistically significant determinant of intentions. On a more nuanced level, dependency on others' behavior did not emerge as a

statistically significant behavioral belief suggesting consumers even accept potential disadvantages or risks that have been associated with this form of consumption. This finding indicates that the consumers in our sample may have trusted others to take good care of the resources they acquired, an important prerequisite for collaborative consumption (Botsman and Rogers 2011; Möhlmann 2015). Moreover, our findings further suggest the process of self-transcending (i.e., altruistic and biospheric) values determining collaborative consumption to be mediated by personal norms. In particular, consumers' personal norms to consume collaboratively were statistically significantly determined by their altruistic and biospheric value orientations, as suggested by Stern et al. (1999) which further advances insights from Piscicelli et al. (2015). However, the more consumers in our sample were concerned with personal wealth and success (i.e., their egoistic value orientation), the less likely they formed such personal norms (Stern et al. 1999). Consumers' subjective norms—that is, the perceived social pressure to consume collaboratively—is a statistically significant, although somewhat weaker, determinant of the intention to consume collaboratively. This supports Botsman and Roger's (2011) observation that consumers begin to develop related social norms to favor collaborative over individual mass consumption in the form of a socioeconomic groundswell.

Beyond the debate on economic/egoistic motives versus normative motives, our findings provide some interesting insights. Surprisingly, the relationship between PBC and intention to consume collaboratively was not statistically significant, although the relationship between PBC and collaborative consumption behavior was. According to meta-analytic research, the relationships of PBC with intention and behavior cannot be considered homogeneous across studies (Notani 1998). However, contrary to our results, Notani (1998) found the PBC–intention relationship (82.4% of tested relationships) is more consistent than the PBC–behavior relationship (48.6% of tested relationships) in general. As the reliability of our PBC variable is high ($\alpha = .84$), operationalization does not seem to explain our results. Instead, a potential explanation could be derived from the different reasons PBC is expected to influence intention and behavior. Although PBC has motivational implications for intention similarly to attitude, subjective, and personal norm, PBC is used as a proxy for actual control in the prediction of behavior. It follows that the high PBC of the consumers in our sample ($M = 6.19$) has no additional motivational influence on the intention to consume collaboratively beyond the other variables in the extended framework. However, in the prediction of collaborative consumption behavior, PBC and intention are statistically significant determinants. Accordingly, PBC plays a role when it comes to actual collaborative consumption as suggested by Botsman and Rogers (2011) and Belk (2014b). Based on the underlying control beliefs, we conclude the external factors Internet access and high geographic density of collaborative consumption options determine whether consumers are actually able to engage in collaborative consumption in the moment of behavior. Moreover, this result suggests collaborative consumption involves a conscious decision-making process resulting in the formation of an intention prior to performing the behavior.

The robustness checks we performed point toward our model being an adequate representation of collaborative consumption's determinants. Most interestingly, the egoistic value orientation which is negatively related to collaborative consumption via personal norms and cost savings which are positively related to collaborative consumption via attitudes, are empirically independent determinants, emphasizing the mixed motive nature of collaborative consumption. This is potentially due to the fact that egoistic value orientation is defined as someone's guiding principle in life based on the three broad values material wealth, success, and authority, while the behavioral belief cost savings might be associated with more immediate efficiency gains. It seems reasonable that consumers aiming to achieve such immediate gains by consuming collaboratively do not necessarily see themselves as egoistic or strive for material possession, success, and authority in their life in general.

Advancement of the Theory of Planned Behavior with a Value-Based Personal Norm Variable

As a contribution on the theoretical level, we extend Ajzen's (1991) theory of planned behavior with a (value-based) personal norm variable, addressing the recent call for further development of this theory (Head and Noar 2014). Our extended model fits the data well explaining a medium amount of variance in self-reported behavior and a large amount of variance in intention. According to Fishbein and Ajzen (2010, p. 273), other variables should be "added to the theory with caution and only after careful [theoretical] deliberation and empirical exploration." They suggest five criteria any additional variable to the theory should meet that we evaluate in the following (Fishbein and Ajzen 2010).

First, the additional variable should be behavior-specific and conform to the principle of compatibility. In particular, the additional variable should be able to be defined and measured in terms of the TACT elements that describe the behavior (Fishbein and Ajzen 2010). Our personal norm items are collaborative consumption specific and worded in the same way as the other variables from the theory of planned behavior considering the TACT elements as

suggested by Fishbein and Ajzen (2010). Thus, the first criterion is met. Second, the additional variable should be a causal determinant of either intention or behavior (Fishbein and Ajzen 2010). We have argued theoretically that the stronger the personal norm—that is, someone's own moral obligation—to perform a behavior, the stronger the intention to actually perform the behavior. In other words, a change in the additional variable is expected to produce a change in intention. Our empirical findings confirm this theoretical reasoning. Other researchers provide similar empirical support. For example, Stern et al. (1999) find that changes in personal norms statistically significantly explain changes in the intention to make sacrifices in order to protect the environment. Thus, the second criterion is met. Third, the additional variable should be conceptually independent of the theories existing variables (Fishbein and Ajzen 2010). Although personal norms are very different from attitudes and PBC, they account for normative motives in the decision process to perform a behavior similarly to subjective norms. However, subjective and personal norms can be conceptually distinguished based on the source of the normative influence. Subjective norms refer to the perceived social pressure of significant others to perform a behavior (extrinsic motivation); personal norms refer to someone's own moral obligation or responsibility to perform or not perform a behavior (intrinsic motivation). Based on this evaluation, the third criterion is met. Fourth, the additional variable should consistently improve the prediction of intentions and/or behavior beyond the theory's existing variables (Fishbein and Ajzen 2010). In our study, personal norms had a statistically significant positive relationship with intention ($\beta = .43$, $p < .001$), accounting for most of the variance ($R^2 = .49$) compared with the theory's existing variables attitudes ($\beta = .33$, $p < .001$) and subjective norms ($\beta = .17$, $p < .05$). Thus, within the context of our study, this criterion is met. Finally, the additional variable should be potentially applicable to a wide range of behaviors (Fishbein and Ajzen 2010). As our study deals with a single behavioral category, we cannot draw conclusions about the applicability to other behaviors. However, further evidence for the applicability is provided by meta-analyses. For example, Rivis et al. (2009) find norms have statistically significant positive relationship with intention increasing its explained variance by a further 3% after the theory's basic variables have been taken into account.

In conclusion, we provide strong arguments for the addition of a personal norm variable to the theory of planned behavior. However, as our evaluation is limited by the context of our study, we have two suggestions. First, we suggest further research to examine whether personal norms can consistently predict intention to perform a wide range of behaviors in order to evaluate Fishbein and Ajzen's (2010) last two criteria. Second, we suggest further research to examine in particular whether personal norms should be added to behavior-specific versions of the theory of planned behavior as suggested by Head and Noar (2014). The addition could be more meaningful when examining behaviors with a moral dimension (e.g., collaborative consumption, sustainable consumption) than behaviors without a moral dimension.

Potential Measures to Improve the Uptake of Collaborative Consumption

Our results enable actors from the private and public sector to implement adequate measures to improve the uptake of collaborative consumption, as we contribute to a more comprehensive understanding of this novel consumer behavior. In particular, our empirical results support Botsman and Rogers (2011) in their arguments to reflect not only consumers' economic/egoistic motives but also their normative motives to consume collaboratively. Foremost, a focus should be on measures to influence the moral obligation of consumers to consume "the right way" and consumers' attitudes toward collaborative consumption. From a strategic perspective, actors should build on the range of economic/egoistic and normative motives when defining and communicating their mission, vision, and organizational culture to enable collaborative consumers to identify with the organization. From an operational perspective, actors should emphasize economic (e.g., cost savings) and normative (e.g., efficient use of resources) motives, as well as address consumers' moral obligation when acquiring collaborative consumers through information and advertisement. To retain collaborative consumers, collaboration-based organizations could create user interfaces and experiences that inform about economic (e.g., additional income) and normative (e.g., reduced CO_2 emissions) motives.

Moving again beyond the dichotomy of economic/egoistic and normative motives, the direct as well as more distant determinants of collaborative consumption in our model provide some valuable anchors for action. Of the direct determinants of collaborative consumption, intentions and PBC both influence collaborative consumption behavior. To foster this alternative way of consumption, consumers could thus be supported in creating intentions to consume collaboratively and convert them into behavior by influencing consumers' PBC. The former could be achieved, for example, through incentives and trial options which could lower the cognitive barriers of potential users. To influence the latter, a look at the preceding determinants in our model provides helpful insights. The findings illustrate that PBC is determined by Internet access and high geographic density of collaborative consumption options.

Further improving high-speed Internet coverage where necessary and creating more options for collaborative consumption in cities as well as in rural areas could thus be worthwhile to consider when aiming to influence consumers' PBC over collaborative consumption. Information transparency, availability of products and services and the ease of use, however, do not seem to be significant hurdles so that further efforts in these aspects do not seem to be effectively placed.

When turning to the factors influencing intentions to consume collaboratively, results show intentions are more strongly influenced by personal norms and attitudes than by subjective norms. Thus, a focus on measures to influence the moral obligation of consumers to consume "the right way" and consumers' attitudes toward collaborative consumption is reasonable while appeals to expectations of significant others may be less effective.

Limitations and Further Research

Despite the study's contributions, it has several limitations that provide potential for further research. First, we examined collaborative consumption as an aggregated behavioral category. This allows for comparison with other aggregated forms of consumption, such as buying new things for private use and final disposal. In line with our approach, Fishbein and Ajzen (2010) argue that examining behaviors at a higher level of generality avoids the risk of little theoretical or practical significance associated with narrow definitions of behavior. However, it would be interesting to systematically examine whether the relevance and strength of the determinants vary depending on the particular collaborative consumption behavior and context despite a disposition toward collaborative consumption as a behavioral category. Thus, future research could use our model to systematically compare borrowing, renting, donating, swapping, and buying things used. Second, our measures are based on self-reports. We can rule out common method bias and attempt to reduce measurement error by using at least three items for each measure and the degree of biased reporting of behavior by including items on particular behaviors and acquired resources. However, future research could build on observed behavior or experimental designs to verify our results. Third, the participants were primarily German speakers who live in highly industrialized countries (e.g., Germany). When attempting to change unsustainable practices to more collaborative consumption practices on a global scale, conditions in other countries and cultures must be examined to cross-verify our results. Thus, future studies could employ the framework established here with samples from other countries particularly accounting for cultural differences. Finally, we relied on elicitation to determine consumers' underlying beliefs regarding collaborative consumption as suggested by Fishbein and Ajzen (2010). Further research could build on these beliefs to identify related concepts already established in the literature—as we did in the case of ease of use in the technology acceptance model (Davis 1989)—to further develop a comprehensive theoretical framework of collaborative consumption.

Compliance with Ethical Standards

Conflict of interest Both authors declare that they have no conflict of interest.

Ethical Approval This article does not contain any studies with human participants or animals performed by any of the authors.

Informed Consent Informed consent was obtained from all individual participants included in the study.

Appendix 1: Vignette (Part of Survey I)

Nowadays, many people use products and services in collaboration with others or in communities. Often, these communities and the shared use of products and services are enabled by modern technologies, such as mobile Internet, social networks, and GPS

Examples of collaborative consumption include the shared use of cars and bikes, swapping clothes, and renting living or working space

Collaborative consumption in this survey is defined as:

To acquire a resource (e.g., a car, a bike, clothes, living or working space, a skill, or anything you want) from someone by …

… renting it or

… borrowing it or

… swapping it or

… accepting it as a gift or donation or

… buying it used

This is in contrast to exclusively buying a new resource for private use

Appendix 2: Survey I

Variable	Item[a]
Intention	I intend to consume collaboratively within the next month (Extremely unlikely/likely; INT1)
	I plan to consume collaboratively within the next month (Strongly disagree/agree; INT2)
	I will try to consume collaboratively within the next month (Definitely false/true; INT3)
Attitude	For me consuming collaboratively within the next month would be …
	… (Harmful/beneficial; ATT1)
	… (Bad/good; ATT2)
	… (Worthless/valuable; ATT3)
	… (Unpleasant/pleasant; ATT4)
	… (Dull/exciting; ATT5)
	… (Unenjoyable/enjoyable; ATT6)
Subjective norm	Most people who are important to me think that I … (Should not/should consume collaboratively within the next month; SN1)
	The people in my life whose opinion I value would … (Disapprove/approve of consuming collaboratively within the next month; SN2)
	Most people who are important to me consume collaboratively (Completely false/true; SN3)
	Many people like me consume collaboratively (Strongly disagree/agree; SN4)
PBC	If I wanted to, I could consume collaboratively within the next month (Definitely false/true; PBC1)
	For me consuming collaboratively within the next month would be … (Impossible/possible; PBC2)
	How much control do you have over consuming collaboratively within the next month (No control/full control; PBC3)
Personal norm	How strongly do you feel a personal obligation to consume collaboratively within the next month (Strongly not obliged/strongly obliged; PN1)
	I expect from myself to consume collaboratively within the next month (Absolutely false/true; PN2)
	Personally, I have a moral obligation to consume collaboratively within the next month (Strongly disagree/agree; PN3)
Altruistic value orientation	How important or unimportant is equality (equal opportunity for all) as a guiding principle in your life (opposed to my values/of supreme importance)
	… helpful (working for the welfare of others)
	… social justice (correcting injustice, care for the weak)
	… a world at peace (free of war and conflict)
Biospheric value orientation	… unity with nature (fitting into nature)
	… protecting the environment (preserving nature)
	… respecting earth (harmony with other species)
Egoistic value orientation	… successful (achieving goals)
	… wealth (material possessions, money)
	… authority (the right to lead or command)
Variable	Item[a]
	Consuming collaboratively within the next month …
Cost savings	… would lead to cost savings (Extremely unlikely/likely)
	Cost savings for me are … (Bad/good)
Environmental protection	… would lead to environmental protection (Extremely unlikely/likely)
	Environmental protection for me is … (Bad/good)
Dependency on others' behavior	… would lead to dependency on others' behavior (Extremely unlikely/likely)
	Dependency on others' behavior for me is … (Bad/good)
Efficient use of resources	… would lead to efficient use of resources (Extremely unlikely/likely)
	Efficient use of resources for me is … (Bad/good)

continued

Variable	Item[a]
Community with others	… would lead to community with others (Extremely unlikely/likely)
	Community with others for me is … (Bad/good)
	In the coming month, I expect …
Ease of use	… to experience ease of use of collaborative c. (Extremely unlikely/likely)
	Ease of use would make it … (Much more difficult/much more easy)
Availability of products and services	… to have availability of products and services (Extremely unlikely/likely)
	Availability of products and services would make it … (Much more difficult/much more easy)
Internet access	… to have Internet access (Extremely unlikely/likely)
	Internet access would make it … (Much more difficult/much more easy)
High geographic density	… to experience high geographic density of collaborative consumption options (Extremely unlikely/likely)
	High geographic density of collaborative consumption options would make it … (Much more difficult/much more easy)
Transparent information about collaborative offerings	… to have transparent information about collaborative offerings (Extremely unlikely/likely)
	Transparent information about collaborative offerings would make it … (Much more difficult/much more easy)
Age	Please state the year of your birth
Gender	Please state your gender (Female/male)
Income	Please state your monthly net income (<500/500–999/1000–1999/2000–2999/3000–3999/4000–4999/ $\geq$ 5000/n/a)
Size of hometown	Where are you living (metropolis, >1 mil./large town, >100,000/medium town, 20,000–100,000/small town, 5000–20,000/rural, <5000 inhabitants)

[a] All items were measured on Likert-type 7-point response scales, except items on altruistic, biospheric, and egoistic value orientation that were measured on Likert-type 9-point response scales, and control items

Appendix 3: Survey II

Variable	Item[a]
Collaborative consumption	Please estimate how many times in the last 4 weeks you generally acquired something through collaborative consumption (Never/daily)
Collaborative consumption (provision)	Please estimate how many times in the last 4 weeks you generally provided something through collaborative consumption (Never/daily)
	How many times have you particularly consumed something collaboratively in the last 4 weeks by …
Renting	… renting something (Never/daily)
Borrowing	… borrowing something (Never/daily)
Swapping	… swapping something (Never/daily)
Accepting gift or donation	… accepting a gift or donation (Never/daily)
Buying used	… buying something used (Never/daily)
Resources	If you have consumed something collaboratively in the last 4 weeks by (prototypical behavior), what was it primarily (Car, bicycle, living space, office space, clothing/accessory, food, skill, book, DVD, tool, toy, sport equipment, camera, other)

[a] All items were measured on Likert-type 7-point response scales, except the item on resources

References

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckman (Eds.), *Action-control: From cognition to behavior* (pp. 11–39). Heidelberg: Springer.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50,* 179–211.

Ajzen, I. (2006). In Bielefeld, U. (Ed.), *Constructing a TPB questionnaire: Conceptual and methodological considerations*. Retrieved January 05, 2015, from http://www.uni-bielefeld.de/ikg/zick/ajzen%20construction%20a%20tpb%20questionnaire.pdf.

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall.

Ajzen, I., & Fishbein, M. (2005). The influence of attitudes on behavior. In D. Albarracín, B. T. Johnson, & M. P. Zanna (Eds.), *The handbook of attitudes* (pp. 173–221). Mahwah, NJ: Lawrence Erlbaum Associates.

Albinsson, P. A., & Perera, Y. (2012). Alternative marketplaces in the 21st century: Building community through sharing events. *Journal of Consumer Behavior, 11,* 303–315.

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 103*(3), 411–423.

Armitage, C., & Conner, M. (2001). Efficacy of the theory of planned behavior: A meta-analytic review. *British Journal of Social Psychology, 40,* 471–499.

Bagozzi, R. P. (1981). Attitudes, intentions, and behavior: A test of some key hypotheses. *Journal of Personality and Social Psychology, 41*(4), 607–627.

Bamberg, S., Ajzen, I., & Schmidt, P. (2003). Choice of travel mode in the theory of planned behavior: The roles of past behavior, habit, and reasoned action. *Basic and Applied Social Psychology, 25*(3), 175–187.

Bardhi, F., & Eckhardt, G. M. (2012). Access-based consumption: The case of car sharing. *Journal of Consumer Research, 39,* 881–898.

Barnes, S. J., & Mattsson, J. (2016). Understanding current and future issues in collaborative consumption: A four-stage Delphi study. *Technological Forecasting and Social Change, 104,* 200–211.

Belk, R. (2009). Sharing. *Journal of Consumer Research, 36,* 715–734.

Belk, R. (2014a). Sharing versus pseudo-sharing in web 2.0. *Anthropologist, 18*(1), 7–23.

Belk, R. (2014b). You are what you can access: Sharing and collaborative consumption online. *Journal of Business Research, 67,* 1595–1600.

Bentler, P. M., & Bonnet, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin, 88,* 588–606.

Botsman, R., & Rogers, R. (2011). *What's mine is yours: How collaborative consumption is changing the way we live*. London: Collins.

Browne, K. A., & Cudeck, J. S. (1993). Alternative ways of assessing equation model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136–162). Newbury Park: Sage.

Byrne, B. M. (1989). *A primer of LISREL: Basic application and programming for confirmatory factor analytic model*. New York: Springer.

Chen, Y. (2009). Possession and access: Consumer desires and value perceptions regarding contemporary art collection and exhibit visits. *Journal of Consumer Research, 35,* 925–940.

Cho, H.-C., & Abe, S. (2013). Is two-tailed testing for directional research hypotheses tests legitimate? *Journal of Business Research, 66,* 1261–1266.

Chow, G. (1960). The standard F test for the equality of two sets of coefficients in linear regression models. *Econometrica, 28,* 591–605.

Churchill, G. A. (1979). A paradigm for developing better measures of marketing constructs. *Journal of Marketing Research, 16,* 64–73.

Clemons, E. (2008). How information changes consumer behavior and how consumer behavior determines corporate strategy. *Journal of Management Information Systems, 25*(2), 13–40.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112,* 155–159.

Conner, M., & Armitage, C. J. (1998). Extending the theory of planned behavior: A review and avenues for further research. *Journal of Applied Social Psychology, 28*(15), 1429–1464.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quaterly, 13,* 319–340.

DHL. (2017). Sharing economy logistics. DHL trend reseach, May 2017. http://www.dhl.com/content/dam/downloads/g0/about_us/logistics_insights/DHLTrend_Report_Sharing_Economy.pdf. Retrieved August 1, 2017.

Fishbein, M., & Ajzen, I. (2010). *Predicting and changing behavior: The reasoned action approach*. New York: Taylor & Francis.

Fornell, C., & Larcker, D. F. (1981). Evaluation of structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18,* 39–50.

Gansky, L. (2010). *The mesh: Why the future of business is sharing*. New York: Portfolio Penguin.

Hamari, J., Sjöklint, M., & Ukkonen, A. (2015). The sharing economy: Why people participate in collaborative consumption. *Journal of the Association for Information Science and Technology, 69*(9), 2047–2059.

Hardin, G. (1968). The tragedy of the commons. *Science, 163,* 1243–1248.

Head, K. J., & Noar, S. M. (2014). Facilitating progress in health behaviour theory development and modification: The reasoned action approach as a case study. *Health Psychology Review, 8*(1), 34–52.

Heinrichs, H. (2013). Sharing economy: A potential new pathway to sustainability. *GAIA, 22*(4), 228–231.

Homburg, C., & Baumgartner, H. (1995). Bewertung von Kausalmodelen. *Marketing ZFP, 17*(3), 162–176.

Jarvis, C. B., MacKenzie, S. B., & Podsakoff, P. M. (2003). A critical review of construct indicators and measurement model misspecification in marketing and consumer research. *Journal of Consumer Research, 30*(2), 199–218.

John, N. A. (2013). Sharing, collaborative consumption and Web 2.0. Media@LSE Electronic Working Papers (Vol. 26, pp. 1–19).

Kidwell, B., & Jewell, R. D. (2003). The moderated influence of internal control: An examination across health-related behaviors. *Journal of Consumer Psychology, 13*(4), 377–386.

Kurland, N. B. (1995). Ethical intentions and the theories of reasoned action and planned behavior. *Journal of Applied Social Psychology, 25,* 297–313.

Lamberton, C. P., & Rose, R. L. (2012). When is ours better than mine? A framework for understanding and altering participation in commercial sharing systems. *Journal of Marketing, 76*(4), 109–125.

Leismann, K., Schmitt, M., Rohn, H., & Baedeker, C. (2013). Collaborative consumption: Towards a resource-saving consumption culture. *Resources, 2,* 184–203.

Luchs, M., Naylor, R. W., Rose, R. L., Catlin, J. R., Gau, R., Kapitan, S., et al. (2011). Toward a sustainable marketplace: Expanding options and benefits for consumers. *Journal of Research for Consumers, 19,* 1–12.

Manstead, A. S. (2000). The role of moral norm in the attitude–behavior relationship. In D. J. Terry & M. A. Hogg (Eds.), *Attitudes, behavior, and social context: The role of norms and group membership* (pp. 11–30). Mahwah, NJ: Lawrence Erlbaum.

Möhlmann, M. (2015). Collaborative consumption: Determinants of satisfaction and the likelihood of using a sharing economy option again. *Journal of Consumer Behaviour, 14,* 193–207.

Mont, O. (2004). Institutionalisation of sustainable consumption patterns based on shared use. *Ecologial Economics, 50,* 135–153.

Mont, O., & Heiskanen, E. (2015). Breaking the stalemate of sustainable consumption with industrial ecology and a circular economy. In L. A. Reisch & J. Thøgersen (Eds.), *Handbook of research on sustainable consumption* (pp. 33–47). Northampton: Edward Elgar.

Notani, A. S. (1998). Moderators of perceived behavioral control's predictiveness in the theory of planned behavior. *Journal of Consumer Psychology, 7*(3), 247–271.

O'brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality & Quantity, 41*(5), 673–690.

Ölander, F., & Thogersen, J. (1995). Understanding of consumer behavior as a prerequesite for environmental protection. *Journal of Consumer Policy, 18,* 345–385.

Owyang, J. (2013). *The Collaborative Economy*. New York: Altimeter Group.

Ozanne, L. K., & Ballentine, P. W. (2010). Sharing as a form of anti-consumption? An examination of toy library users. *Journal of Consumer Behaviour, 9*(6), 485–498.

Pavlou, P. A., & Fygenson, M. (2006). Understanding and predicting electronic commerce adoption: An extension of the theory of planned behavior. *MIS Quarterly, 30*(1), 115–143.

Piscicelli, L., Cooper, T., & Fisher, T. (2015). The role of values in collaborative consumption: Insights from a product-service system for lending and borrowing in the UK. *Journal of Cleaner Production, 97,* 21–29. doi:10.1016/j.jclepro.2014.07.032.

Podsakoff, P. M., MacKenzie, S. B., Podsakoff, N. P., & Lee, J.-Y. (2003). Common method bias in behavioral research. *Journal of Applied Psychology, 88,* 879–903.

Prothero, A., Dobscha, S., Freund, J., Kilbourne, W. E., Luchs, M. G., Ozanne, L. K., et al. (2011). Sustainable consumption: Opportunities for consumer research and public policy. *Journal of Public Policy & Marketing, 30*(1), 31–38.

PwC. (2015). The sharing economy. Consumer intelligence series. https://www.pwc.com/us/en/technology/publications/assets/pwc-consumer-intelligence-series-the-sharing-economy.pdf. Retrieved August 1, 2017.

PwC. (2016). The sharing economy grows up. How the UK has embraced the sharing economy. http://www.pwc.co.uk/issues/megatrends/collisions/sharingeconomy/outlook-for-the-sharing-economy-in-the-uk-2016.html. Retrieved August 1, 2017.

Rifkin, J. (2014). *The zero marginal cost society: The internet of things, the collaborative commons, and the eclipse of capitalism*. New York: Palgrave Macmillan Trade.

Rivis, A., Sheeran, P., & Armitage, C. (2009). Expanding the affective and normative components of the theory of planned behavior: A meta-analysis of anticipated affect and moral norms. *Journal of Applied Social Psychology, 39*(12), 2985–3019.

Robert, I., Binninger, A.-S., Ourahmoune, N. (2014). La consommation collaborative, le versant encore équivoque de l'économie de la fonctionnalité. *Développement durable et territoires, 5*(1). https://developpementdurable.revues.org/pdf/10222. Retrieved August 13, 2017.

Scaraboto, D. (2015). Selling, sharing, and everything in between: The hybrid economies of collaborative networks. *Journal of Consumer Research, 42,* 152–176.

Schwartz, S. H. (1977). Normative influences on altruism. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 10, pp. 221–279). New York: Academic Press.

Schwartz, S. H. (1994). Are there universal aspects in the structure and contents of human values? *Journal of Social Issues, 50*(4), 19–46.

Smith, J. R., Terry, D. J., Manstead, A. S., Louis, W. R., Kotterman, D., & Wolfs, J. (2008). The attitude-behavior relationship in consumer conduct: The role of norms, past behavior, and self-identity. *The Journal of Social Psychology, 148*(3), 311–333.

Stern, P. C. (2000). Toward a coherent theory of enviornmentally significant behavior. *Journal of Social Issues, 56*(3), 407–424.

Stern, P., Dietz, T., Abel, T., Guagnano, G., & Kalof, L. (1999). A value-belief-norm theory of support for social movements: The case of environmentalism. *Research in Human Ecology, 6*(2), 81–97.

Swaim, J. A., Maloni, M. J., Napshin, S. A., & Henley, A. B. (2014). Influences on student intention and behavior toward environmental sustainability. *Journal of Business Ethics, 124,* 465–484.

Taylor, S., & Todd, P. (1995). Understanding household garbage reduction behavior: A test of an integrated model. *Journal of Public Policy & Marketing, 14*(2), 192–204.

Thøgersen, J. (2006). Understanding repetitive travel mode choices in a stable context: A panel study approach. *Transportation Research Part A, 40*(8), 621–638.

Thomas, V. (2003). Demand and dematerilization impacts pf second-hand markets. *Journal of Industrial Ecology, 7*(2), 65–78.

Thomas, V. (2011). The environmental potential of reuse: An application to used books. *Integrated Research System for Sustainability Science, 6,* 109–116.

World Economic Forum Young Globald Leaders. (2013). Sharing economy working group: Position paper. The Forum of Young Global Leaders.

Xiao, J. J., Tang, C., Serido, J., & Shim, S. (2011). Antecedents and consequences of risky credit behavior among college students. *Journal of Public Policy & Marketing, 30*(2), 239–245.

Yin, J., Qian, L., & Singhapakdi, A. (2016). Sharing sustainability: How values and ethics matter in consumers' adoption of public bicycle-sharing scheme. *Journal of Business Ethics*. doi:10.1007/210551-016-3043-8.