

**The role of identity in access-based consumption**

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## Abstract

Previous research has shown a wide range of examples of people preferring products and brands that are associated with their identity. However, most of this research has investigated consumption in the form of acquiring ownership over a product. This thesis includes three articles that investigate whether and when identity affects choices when people engage in access-based consumption within the sharing economy.

In article 1, we investigate group-based discrimination in the sharing economy. Using a set of carefully controlled experiments ( $N = 1,599$ ), we find causal evidence for racial discrimination. When an identical Airbnb apartment is presented with a racial out-group (vs. in-group) host, people report more negative attitudes towards the apartment, lower intentions to rent it, and are 25% less likely to choose the apartment over a standard hotel room in an incentivized choice. Reduced self-congruence with apartments owned by out-group hosts statistically mediates these effects, and discrimination disappeared when the apartment was presented with an explicit trust cue.

Article 2 investigates how identity and self-relevance relates to consumer preferences for access-based consumption versus ownership. Findings from five studies ( $N = 2,398$ ), indicate that strongly fashion-identified consumers tend to prefer ownership over access in the clothing domain, but that this correlational relationship is weak, and can be affected by situational factors such as the number of consumption events.

Article 3 investigates how consumers using car-sharing services instead of traditional car ownership are perceived by others. We conducted a high-powered experiment in a general population sample ( $N = 1,194$ ), examining whether users of car-sharing services are perceived as more trustworthy than car-owners, and whether people prefer to socialize with car-sharing users versus car-owners. The results showed that car-sharing users were only perceived as

more trustworthy when their motive for sharing was pro-environmental. Moderation analyses were slightly underpowered, but suggest that socialization intentions varied according to participant's own driving behavior and environmental engagement.

In conclusion, this thesis contributes to social psychology and consumer research literatures with novel empirical evidence showing the effects of social and personal identity in access-based consumption.

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## List of articles

### Article 1:

Nødtvedt, K. B., Sjøstad, H., Skard, S. R., Thorbjørnsen, H., & Van Bavel, J. J. (2021). Racial bias in the sharing economy and the role of trust and self-congruence. *Journal of Experimental Psychology: Applied*, 27(3), 508-528. <https://doi.org/10.1037/xap0000355>

### Article 2:

Nødtvedt, K. B., Thorbjørnsen, H., Chartrand, T. L., & Fitzsimons, G. J. (2024). Access vs. ownership: Are strongly identified consumers prepared to make the switch? Working paper.

### Article 3:

Nødtvedt, K. B., Sjøstad, H., & Thorbjørnsen, H. (2023). Does sharing make it seem like you're caring? Social perception of sharing vs. owning. Working paper, pre-print available at <https://ssrn.com/abstract=4404836>.



## Introduction

Many material objects seem to mean a lot to people in ways that are completely unrelated to their practical function (Levy, 1959). Jewelry, decorations, and ceremonial clothing have been present in human societies across time, cultures, and economic classes. In the modern economy, products with almost identical properties are treated very differently by consumers based on their brand (Fournier, 1998). Thus, material objects can also have *symbolic* value.

Symbolic value refers to large span of value types, and one type of symbolic value is the one derived from identity. Expressing one's identity can be useful for people in order to build trust and belonging, facilitate cooperation, communicate status or power, or achieve other types of interpersonal goals (Van Bavel & Packer, 2021). For instance, when getting to know a new co-worker, one might emphasize common group identities like having gone to the same university or grown up in the same town in order to build trust. Consumption is one way people can go about to communicate these types of signals to others. Previous research has shown a wide range of examples of people preferring products and brands that are associated with positive group identities or positive personality traits (e.g. Berger & Heath, 2007; Escalas & Bettman, 2005; Rucker & Galinsky, 2008). However, most of this research has investigated consumption in the form of acquiring ownership over a product. Less is known about identity-based consumption involving access without ownership, such as renting, leasing or borrowing products. This represents an important gap in the literature on consumer research and social psychology. Theoretically, the question of how people relate to material objects when accessed and used without ownership is interesting and important in itself. From the perspective of psychological ownership theory (Pierce, Kostova, & Dirks, 2003), theory of psychological contamination (Rozin, Nemeroff, Wane, & Sherrod, 1989), and theorizing of liquid vs. solid forms of consumption (Bardhi & Eckhardt, 2017), one might

expect that actual ownership would be needed for central identity processes to emerge. There are, however, research findings that contrast with this view, showing that access-based services can bear positive (and potentially identity-relevant) connotations (Bardhi & Eckhardt, 2012; Gullstrand Edbring, Lehner, & Mont, 2016; Hartl, Sabitzer, Hofmann, & Penz, 2018), and that people can experience psychological ownership and attachment to objects they touch or create, even though they do not legally own them (Gruen, 2017; Norton, Mochon, & Ariely, 2012; Peck & Shu, 2009). From a practical viewpoint, the question has gained relevance as *access-based services* have become more and more popular. Access-based services refer to services that provide the consumer with temporary access of a product or good, as opposed to ownership-based consumption, where the consumers acquires permanent ownership over the product. Access-based services are often discussed as part of the so-called sharing economy, an umbrella term encompassing a range of different consumption phenomena that have arisen on and through internet-based platforms.

This thesis focuses on how different processes of identity-based psychology, such as in-group bias, preferences for self-congruence, and social perception, play out in consumption of access-based services. Each article included in the thesis addresses different questions within the topic of identity-related consumption in the access-based economy. In Article 1, we test how group memberships and negative out-group attitudes affect product attitudes and consumption choices in the context of short-term apartment rental. Article 2 investigates how people's personal identification with a product domain affects willingness to rent instead of own products within that domain. Article 3 tests how people view and relate to others who choose to either own or access a product, and whether this depends on one's own traits and habits.

In the first chapter of this introduction to my PhD dissertation, I will present the theoretical and empirical background for the three articles by reviewing the research

literatures on identity-based consumption, ownership and non-ownership modes of consumption. In chapter 2, I will explain and justify the methodological approach applied in the thesis articles, and discuss strengths and weaknesses of the methods involved. Chapter 3 of this introduction contains a summarized account of each of the three articles included in the dissertation, with a focus on their respective research questions, methods, and main results. Finally, in chapter 4, I discuss the findings of the dissertation as a whole, and the academic and applied contributions the dissertation makes to the literature on consumer research and social psychology.

### **Chapter 1: Theoretical background**

The theoretical and empirical background of this dissertation comes from different streams of literature. In formulating my research questions and designing the empirical strategies for my three articles, I have combined insights, theories and findings from literature on identity and identity-related consumption with those from the consumer research literature on non-ownership/access-based consumption. Below I summarize relevant parts of these literature streams, and explain how they together motivate the research questions of the current dissertation.

#### **Identity and consumption**

An identity can be defined as a category label that people associate with their self (Reed, Forehand, Puntoni, & Warlop, 2012). Identities can be related to group memberships or affiliations (e.g. mother, Liverpool supporter, engineer), or to personal dimensions (e.g. creative, athletic, intelligent). Group-related identities, or social identities, have been extensively studied in the area of social psychology, where group identification has been found to shape interpersonal behaviors in fundamental ways. When people identify as a group member, they tend to display *in-group bias*, treating others more favorably if they belong to the same vs. a different group as oneself (Brewer, 1979; Dunham, 2018). People also tend to

rate in-group members as more trustworthy (Platow, McClintock, & Liebrand, 1990; Falk, Heine, & Takemura, 2014) and trust in-group members more than out-group members (Foddy, Platow, & Yamagishi, 2009). Under some conditions, group identification also gives rise to out-group hostility beyond mere in-group positivity. Especially seeing the out-group as a threat to one's own group seems to drive negative out-group attitudes and behaviors (Cottrell, Richards, & Nichols, 2010).

The connections between identity and consumption-related choices have been studied for many decades. Already in 1899, Thorstein Veblen coined the term “conspicuous consumption” to describe the purchase and use of luxury items as a means to convey status, wealth and power. Since then, a range of studies have shown that people prefer objects and products that symbolize desirable dimensions of their personal or group identities (e.g. Berger & Heath, 2007; Escalas & Bettman, 2005; Rucker & Galinsky, 2008), and avoid products that signal undesirable identities (Berger & Heath, 2008). The term *self-congruence* (or self-congruity) is important to explain these effects. Self-congruence denotes the degree to which a person's self-image overlaps with the image of a product (Sirgy, 1982). There is a large empirical basis for a reliable positive relationship between self-congruence and consumption decisions (Aguirre-Rodriguez, Bosnjak, & Sirgy, 2012), meaning people prefer products and brands that fit with their self-image vs. products and brands that do not. Importantly, it is not just associations with a person's *real self-image* (how you see yourself) that can create positive product attitudes; products associated with an *ideal self-image* (how you would like to see yourself) will also elicit a positive response (Escalas & Bettman, 2003; Sirgy, 1982). This is in line with the idea from social identity theory that people are motivated to both preserve and enhance their self-view (Hornsey, 2008), and with self-verification and self-enhancement motives outlined in motivational psychology (Leary, 2007).

Qualitative research has also found that people, in addition to using objects to signal identity, can experience the objects they possess as parts of their extended self (Belk, 1988). Actions like touching, controlling, creating and knowing an object seem to enhance the experience of an object being part of the self (ibid).

Existing literature within identity and consumption thus establishes that people express both who they see themselves as and who they would like to be through consumption choices, and that consumption can lead to experiences of self-congruence and self-extension through objects. But since most of this research has exclusively looked at ownership-based consumption, the question remains of whether consumption choices in the sharing economy will follow similar patterns. There are also methodological weaknesses in previous research. Most experimental studies on the topic (e.g. Berger & Heath, 2007; Berger & Heath, 2008; Escalas & Bettman, 2005; Rucker & Galinsky, 2008) were conducted with small sample sizes and non-diverse samples often consisting of US university students. This adds to the importance of collecting new data using better scientific practices, to enable a more informative and reliable test of the primary hypotheses in question.

### **Access-based consumption and the sharing economy**

In this dissertation, I mainly use the term *access-based consumption* for describing the types of services and consumption activities studied in the three dissertation articles. However, the articles also mention and use the terms *sharing* and *sharing economy*, thus it might be useful to explain how access-based consumption is related to the sharing economy.

The sharing economy is a broad and somewhat “fuzzy” term, and there has been plenty of academic discussion about its meaning. Along with terms such as *collaborative consumption* (Botsman & Rogers, 2010), *access-based-consumption* (Bardhi & Eckhardt, 2012), *gig economy* (Friedman, 2014), and *on-demand economy* (Cockayne, 2016), the

sharing economy term has been used to refer to a large and diverse set of exchange systems that have started to flourish over the last decade. A common feature of these systems is that they leverage on the ability of internet- and smartphone-mediated technology to reduce the transaction costs of distributing resources among people (Price & Belk, 2016). Apart from that, there are few characteristics that all members of the sharing economy have in common.

The sharing economy concept has been used to cover both monetary and non-monetary exchanges (e.g. Airbnb vs. Couchsurfing), exchanges with varying degrees of interpersonal interaction (e.g. staying with someone in their home vs. renting someone's tools), and peer-to-peer exchanges as well as business-to-consumer exchanges (e.g. Uber vs. Zipcar). With respect to ownership, some sharing economy definitions include both exchanges that involve a shift of ownership (for example second-hand markets) as well as no shift in ownership (rental & borrowing schemes), and some argue that only joint ownership counts as sharing (Belk, 2010). The use of the word *sharing* to describe all these new forms of exchanges has been a source of dispute (Belk, 2014; Eckhardt & Bardhi, 2016; Price & Belk, 2016). Belk (2010) argues that true sharing is a form of exchange that happens within close, caring relationships, with no concern for money or compensation. He argues, therefore, that exchanges that happen between strangers, and that might involve money or other forms of direct compensation, rather be seen as examples of *pseudo-sharing*, or *share-washing* (Belk, 2014). However, different authors conceptualize sharing in different ways. Whereas Belk argues for a quite narrow use of the term, Rudmin (2016) applies a broader understanding. He defines sharing as the simultaneous or subsequent use of some resource by different people (Rudmin, 2016, p. 198). This definition is more compatible with how the sharing term has been and is applied within the context of the sharing economy. Habibi, Kim & Laroche (2016) suggest a framework for classifying sharing economy practices on a scale from "pure sharing" to "pure exchange", which can help distinguish between communal vs. commercial

types of services and modes of consumption. In sum, the sharing economy continues to be a contested term with value-laden connotations, and it has proved a difficult task for scholars to investigate and discuss the sharing economy as a unified whole (Acquier, Daudigeos, & Pinkse, 2017).

Access-based consumption refers to consumption where the consumer gains access to a product, but where the act of consumption does not involve a transfer of ownership. Access-based consumption is thus the opposite of ownership-based consumption, where the consumer acquires ownership over an object. The shift towards access-based consumption can be seen in light of a larger trend of servitization of the economy, and a shift in academic marketing literature towards a focus on value creation through interaction and co-creation rather than simple exchange (Vargo & Lusch, 2004). Services can also be defined as non-ownership consumption, since key characteristics of services involve providing consumer value through applying competence and skill, rather than through exchange of a physical good (Vargo, Maglio, & Akaka, 2008). Access-based services involve accessing products as a main feature of the service. Receiving a massage, for instance, would not typically be classified as access-based consumption, because the main feature of consumption is not gaining access to the products involved (e.g. a massage bench and massage oils), but to the competence and activities performed by a service professional.

Although the term access-based consumption is often mentioned as a phenomenon belonging to the sharing economy, access-based consumption also encompasses traditional rental, leasing and lending, which are usually not seen as sharing economy phenomena. However, platform-based technology has made different forms of rental more attractive, convenient and common. For instance, Airbnb has increased the popularity of short-term apartment rental, and Zipcar has increased the popularity of short-term car rental. With time, new access-based services have become professionalized, and sometimes incorporated

practices from traditional rental services (e.g. Airbnb being used by larger holiday rental firms), and traditional rental actors have in some cases integrated “sharing economy” practices and business models in their firms and activities (e.g. Hertz offering car-sharing in addition to their traditional rental service). Thus, it seems the distinction between new and traditional access-based services is diminishing.

Access-based consumption can also take place as non-commercial transactions, such as borrowing a book from the library, or borrowing toys or sports equipment for free.

**Drivers of access-based consumption.** There can be many different reasons why consumers engage in access-based consumption as opposed to ownership-based consumption, and reasons vary according to different types of access-based services and consumption domains. Most studies investigating consumer attitudes towards and adoption of access-based services find that utilitarian motives such as economic gains and convenience are central (Bardhi & Eckhardt, 2012; Gullstrand Edbring et al., 2016; Hamari, Sjöklint, & Ukkonen, 2015; Lamberton & Rose, 2012). For instance, people living in urban areas with low parking access may find that owning one’s own car is inconvenient and expensive, and choose car-sharing for these reasons. Some research has suggested that social, moral and environmental motives also can affect adoption of access-based services, but this seems to be linked to services with more communal and less commercial characteristics (Bucher, Fieseler, & Lutz, 2016; Gullstrand-Edbring et al., 2016). For example, Ozanne & Ballantine (2010) found that users of a non-commercial toy-library were motivated by social, communal and anti-materialistic benefits.

### **Identity and consumption modes**

So far, few studies have looked at the identity-related value consumers might or might not experience from access-based consumption. There are several reasons why one might



expect there to be differences in the way identity affects consumption when owning vs. accessing a product. Durgee & O'Connor (1995) pose several interesting questions about the relationship between consumer and product when using rental services, in a time when rental was introduced as an economical way to afford the growing number of expensive appliances on the market. In their paper, they find that renting and owning have quite distinct functions and connotations to consumers, and that people would avoid renting things that are too closely tied to their identities in fear of being seen as putting on a façade. 15 years later, the early observations of the sharing economy stated that the new sharing services and platforms had paved the way for more social and communal consumption (Botsman & Rogers, 2010). However, this message received criticism from researchers pointing out that (at least parts of) the sharing economy was, as the regular economy, dominated by self-centered motives and commercial practices (Bardhi & Eckhardt, 2012; Belk, 2014).

Instead of representing a step towards more sharing and community in consumption, Bardhi & Eckhardt (2017) interpret access-based services and the sharing economy as a part of the “liquification” of society; a tendency for people’s lives, relationships and identities to become less stable and more ephemeral. Bardhi & Eckhardt (2017) present a theoretical framework based on qualitative research findings that distinguishes between what they call liquid and solid consumption. In this framework, solid consumption is defined as enduring, ownership based and material, whereas liquid consumption is defined as ephemeral, access based and dematerialized. As an example, buying and owning a car would be an example of solid consumption, because the consumer acquires permanent ownership over a material product. Conversely, using a car-sharing service would be an example of liquid consumption, because consumption would consist of temporarily accessing a product, and would not be tied to one single physical object. Bardhi & Eckhardt (2017) suggest that consumers will value different consumption benefits within a solid vs. a liquid perspective, and that different

consumers can be expected to operate within respectively solid vs. liquid consumption. For instance, people engaging in a nomadic lifestyle will adopt a more liquid perspective on consumption, valuing access and convenience over endurance and materiality. Importantly, the liquid vs. solid consumption framework makes a clear link between identity-related value and solid consumption, and proposes that liquid consumption in general offers less symbolic value compared to solid consumption.

Different research streams support the propositions from the liquid consumption framework, for instance research on psychological ownership. The psychological experience of ownership has been associated with people's sense of self across many contexts. In one of his greater works, "Being and nothingness" (1943/1969), Sartre writes "the totality of my possessions reflects the totality of my being ... I am what I have ... What is mine is myself" (p. 591-592). Acquiring ownership over a product allows people control over the product, time to get to know it, and opportunities to personalize it. All these factors have been found to be associated with experiencing higher psychological ownership in empirical research (Pierce, Kostova, & Dirks, 2003). Compared to ownership, temporarily accessing a product limits both the time, control and opportunities to personalize an object. We would therefore expect people to experience accessed objects as less "theirs" and therefore also less tied to their identity.

Research on psychological contamination is also relevant to the discussion of ownership, access and identity. Psychological contamination refers to the tendency for people to experience an object as tainted or contaminated with another person's "essence" (Rozin, Nemeroff, Wane, & Sherrod, 1989). Physical touch is the typical way people experience objects to become contaminated. As a consequence of perceived contamination, people demonstrate aversion towards objects they know have been touched or worn by others in general, and especially individuals they have negative associations to (ibid). There is also

evidence that contamination can work in a positive direction, and help explain why people are willing to pay high amounts of money to acquire objects owned by positively viewed celebrities (Newman, Diesendruck, & Bloom, 2011), but there seems to be a negativity bias making the negative effect of contamination significantly more common than the positive ones (Rozin et al., 1989). Fear of contamination from others has indeed been shown to reduce people's willingness to use access-based services (Bardhi & Eckhardt, 2012; Haze, Delcourt, & van Vaerenbergh, 2017). With regards to identity, perceived contamination could be imagined to block people from experiencing an object as "theirs".

### **Research questions in the current thesis**

Both psychological ownership theory, psychological contamination theory and the liquid vs. solid consumption framework thus predict that compared to ownership-based consumption, access-based consumption will be less affected by consumers' need to build and express their identity, because access-based consumption is less fit to communicate identity-related signals compared to object ownership. However, this notion has not previously been empirically tested. There are also findings suggesting that identity may play a role in access-based consumption. Some types of access-based services seem to bear positive connotations such as "modern", "urban", "environmentally friendly" and "flexible" (Bardhi & Eckhardt, 2012; Gullstrand-Edbring et al., 2016; Hartl, Sabitzer, Hofman, & Penz, 2018), implying that these services might be able to convey symbolic value after all. Experimental research has also shown that people can experience psychological ownership and attachment to objects they touch or create, even though they do not legally own them (Norton, Mochon, & Ariely, 2012; Peck & Shu, 2009), but these results must be interpreted in light of the studies' relatively low sample sizes. One qualitative study of a car-sharing service showed that users did experience bonding towards the products, even though they did not own them (Gruen, 2017). These findings serve as a contrast to the theoretical prediction that access-based

consumption cannot provide symbolic and identity-related value, and raise the question of whether there could be contexts where access-based services could provide identity-related value, and what potential boundary conditions exist for this to take place. This leads us to the overall research question of the current thesis, which can be summarized as: “How do consumer’s identities affect how they respond to access-based consumption?”

Article 1 addresses the thesis research question from a social identity perspective. Previous research has found that social identity affects people’s attitudes towards products intended for purchase. Escalas & Bettman (2005) found that people prefer products that are associated with an in-group identity, and dis-prefer products associated with an out-group identity. Ethnic discrimination has also been found in the used car market (Zusman, 2013), the housing market (Ahmed & Hammarstedt, 2008), and the labor market (Bertrand & Mullainathan, 2004). The research question for Article 1 was therefore whether people would display in-group favoritism towards a product when offered through an access-based service, and which psychological mechanisms might contribute to explain this bias.

Article 2 addresses the thesis research question with a focus on personal identity. Previous research has found that consumers who identify strongly with a product domain tend to prefer and value the self-diagnostic potential of products within that domain (Leung, Paolacci, & Puntoni, 2018; Leung, Cito, Paolacci, & Puntoni, 2022). Based on theory of liquid vs. solid consumption (Bardhi & Eckhardt, 2017) and psychological ownership (Pierce, Kostova, & Dirks, 2003) we expected ownership to offer more self-diagnostic potential than access-based consumption. This led to the research question: “Do consumers who identify strongly with a product domain prefer ownership (vs. access) for products in that domain?”

Article 3 addresses the thesis research question by investigating how users of an access-based service are perceived, highlighting the potential social functions of this kind of

consumer behavior, and whether the underlying motive for using access-based services makes a difference. Access-based consumption can in some cases (such as for car-sharing) be perceived and conceptualized as a pro-environmental behavior. Previous research has found that people perceive those engaging in pro-environmental behaviors as more ethical and moral (Mazar & Zhong, 2010; Kennedy & Horne, 2020), as harboring several positive personality traits (Skippon, Kinnear, Lloyd, & Stannard, 2016), and as more cooperative and trustworthy (Vesely, Klöckner, & Brick, 2020). On the other hand, there is also evidence of negative perceptions of environmentalists (Bashir, Lockwood, Chasteen, Nadolny, & Noyes, 2013). Article 3 therefore sought to answer the following research questions: “Does using a car-sharing service affect trustworthiness perceptions and socialization intentions? And if so, does the positive perception effect from using a car-sharing service depend on the underlying motive for this behavior?”

Together, the articles included in the current thesis form an empirical investigation into the area of identity and access-based consumption, addressing questions unanswered in existing consumer research and social psychology literatures.

## **Chapter 2: Methodological approach**

The goal of the current thesis is to shed light on consumer attitudes, experiences and behaviors when engaging in access-based consumption, a topic that has not been extensively studied in previous research. This led me to adopt an empirical research strategy, aiming to collect new data. There was, however, sufficient previous research to build on to formulate concrete hypotheses and predictions. Therefore, my research strategy followed a confirmatory rather than an exploratory approach. Common to all three articles in the thesis is the use of experimental methodology, seeking to test causal hypotheses between variables of theoretical and practical interest. Article 2 also applies non-experimental survey methodology. In this case, the survey methodology was useful in order to establish a baseline measure of the

correlational relationship of interest, before exploring how our experimental manipulations affected this relationship in subsequent studies.

As each article includes a more detailed presentation of the methods, manipulations and materials used, I will here present more general reflections on issues of validity and reliability, as well as the methods applied in the dissertation, including their strengths and weaknesses. I will also reflect on the development of an “Open Science” approach to research in the social sciences (e.g., Munafò et al., 2017), and describe how I have applied open science practices in my dissertation.

### **Validity and reliability**

Achieving valid and reliable findings is at the heart of any research endeavor, and different research methods and procedures are often measured by whether they provide the necessary validity and reliability to place trust in the findings. Measures and procedures must be reliable in producing similar results across different time points and samples, and measures must be assessed in terms of their internal reliability. In all studies in the current dissertation research, we have made sure all measurement scales have satisfied conventional levels of Cronbach’s alpha, as a measure of internal reliability. We have also applied self-report response scales of seven, nine or eleven points, allowing for sufficient variation in responses, and always allowing participants a neutral midpoint response option. This should help avoid situations where participants feel like they are forced into a choice option (e.g. having to choose a positive or negative response, when they are actually indifferent), which might also improve the measure’s reliability (e.g., Adelson & McCoach, 2010).

When it comes to validity, it is common to distinguish between the validity of measurements and manipulations of a study (construct validity), and the validity of causal inferences drawn from the study (encompassing both internal and external validity). Construct

validity is especially important in psychological research, since the constructs of interest are often not directly observable or accessible for direct manipulation. It is therefore a key question whether measurements (observed behaviors, hypothetical choices, self-reported items/scales etc.) represent the underlying variable the researcher is attempting to measure. Construct validity has been an important concern when constructing dependent measures and measures of mediating and moderating variables for the studies in this thesis. For most of the variables included in our studies, we were not able to identify measurement scales from previous literature that could be directly applied to capture the phenomena of interest, and we therefore needed to create new measures. Often, we could draw on existing measures and make slight adjustments (e.g. for the measure of trustworthiness in article 1, the measure of identity relevance in article 2, and the measure of socialization intentions in article 3). In this way, we tried to create questions that were as conceptually close to the variable as possible, with high face validity, while also being close to existing and validated measures of similar constructs. Some central measures were pretested, such as the identity relevance scale in article 2.

For experimental manipulations, it is essential that manipulations create change in the actual independent variable of interest, and not something else. Although researchers can use different techniques to ensure construct validity, from face validity and criterion validity of measures to manipulation and confounding checks, there will often remain reasons for debating construct validity of psychological research. In the experiments included in this thesis, we have aimed to design stringent manipulations that vary as little as possible except for the independent variable of interest. In the experiments with fictitious Airbnb ads in article 1, all text and photos related to the apartments were identical across experimental conditions, and only the specific text related to the host's group membership was varied. In article 2, the only difference between conditions in study 3 and 4 was in the number of events they were

asked to imagine going to. In article 3, we varied only whether the individual presented in the scenario owned a car vs. used a car-sharing service, and whether motives for car-sharing were environmental, economic, or unstated.

When it comes to validity of causal inference, it is common to speak of internal and external validity, with internal validity referring to the validity of causal conclusions drawn within the study, and external validity referring to the validity of the causal relationship when applied to other settings or populations than the ones applied in the study itself (Campbell, 1957). One might draw causal conclusions from different types of data, collected and analyzed with different methods, but the confidence one can place in these conclusions will vary according to whether the method applied can help rule out alternative explanations for the observed relationship. This often raises a dilemma for researchers, as greater control of the research setting might increase the internal validity, but might at the same time decrease the external validity. In the current dissertation research, one might argue that the experiments with the most stringent manipulations (in article 2 and 3) have the highest degree of internal validity, with more limited external validity, whereas the experiments from article 1 with richer stimuli from a consumer choice setting (Airbnb) have higher external validity as well by creating a test situation that is very similar to the real-world situation one wants to better understand. In all the experiments, we have tried to balance the need for experimental control with the desire to make the choice scenarios realistic and relatable for participants, with article 1 being the article with the largest focus on external validity. We have also aimed to increase the external validity by including a diverse set of samples from different countries (Norway and the US), including two nationally representative Norwegian samples in article 1.

### **Determining causality: Experiments**

Scientific experiments are often labelled the gold standard of scientific research, because of their unique advantages when it comes to drawing causal inferences from the data



they produce. The basis of an experiment is creating a controlled variation in the independent variable (the variable assumed to be the causal variable), and measure the response in the dependent variable while keeping all other factors constant (the variable assumed to be causally affected by the independent variable, Shadish, Cook, & Campbell, 2002). It is essential that assignment to experimental conditions is *random*, so that there is no pre-existing systematic difference between participants in the different conditions that could potentially explain differences in measured outcomes.

Experiments are well suited when investigating specific causal hypotheses derived from theory and prior knowledge. In order to design an experiment, both independent and dependent variables must be clearly conceptualized and operationalized. This is often a key challenge in designing psychological experiments, as many psychological variables are not directly observable.

Although the experimental methods can provide strong evidence of a causal claim, this depends on the experiment being well designed and conducted. If the experimental manipulation is not precise, one risks manipulating other variables in addition to or instead of the independent variable, introducing potential confounding variables. If participants are not truly randomly assigned to conditions, e.g. because one condition is conducted in the morning and another one in the afternoon, there is a risk of individual differences among participants being systematically different across the experimental conditions. If the measures of the dependent variable are not properly designed, they could be unreliable or fail to measure the intended construct. These types of flaws would hinder a clear interpretation of the results.

Another drawback of experimental research is the degree of control the researcher enforces on the subject of study. In many cases, experimental manipulations and measures are radically simplified operationalizations of the real-world phenomenon one aims to study. This

is to a certain degree necessary in order to achieve the high levels of internal validity sought from an experiment, but it might at the same time limit the external validity of the study.

In designing the experiments for the articles in the current thesis, we have aimed to construct experimental manipulations and measures that capture the psychological phenomena of interest. In several cases, we used pre-testing in separate samples before finalizing manipulations and measures for the main experiments. In all three articles, the experiments have involved presenting participants with hypothetical scenarios, and although this cannot be expected to completely mirror a real-world scenario, scenarios were designed in ways that would be as realistic and relevant to participants as possible. In article 1, we also applied an incentivized design in one of the experiments, where participants were presented with a real choice. This allowed us to explore whether findings would differ between the purely hypothetical scenarios and the incentivized choice scenario, which is usually an open question that is rarely examined empirically (Doliński, 2018), and added to the external validity of the conclusions. However, conclusions from all the studies in this thesis must be interpreted in light of the chosen methodologies and their strengths and limitations.

### **An Open Science approach to data collection and analysis**

The last decade there has been a growing focus on improving research practices, especially in the area of social psychology. Several critical articles have pointed out systematic flaws in existing research and publishing practices, such as using small sample sizes (Stanley, Carter, & Doucouliagos, 2018), “p-hacking” and other forms of undisclosed flexibility in data analysis that increases the risk of making a type 1 error, more commonly referred to as “false positives” (Simmons, Nelson, & Simonsohn, 2011), the tendency to only publish studies yielding significant results in favor of the proposed hypotheses (Ferguson & Heene, 2012), and the overrepresentation of samples from Western, educated, industrialized, rich and democratic societies (Henrich, Heine, & Norenzayan, 2010). In response, researchers

have suggested new standards for designing, conducting and publishing research (Munafò et al., 2017). The Open Science initiative within psychological research has resulted in journals rewarding open science practices such as pre-registration, open data and replication studies, and there have even appeared separate journals dedicated to publishing studies with null results to counter publication bias.

The development of my thesis has taken place in parallel with the development of Open Science practices. When planning and conducting my dissertation research over these years, I have tried my best to be an early adopter of the new best-practices – which includes much larger sample sizes than in the past to increase statistical power, use of pre-registration in advance of data collection, and publication with open data and study materials. The main goal of these practices is to make empirical research in social science more transparent, informative, and replicable (Munafò et al., 2017).

Specifically, four out of nine studies included in my thesis were pre-registered, making the analyses and inferential choices more transparent, and limiting the potential of post-hoc hypothesizing and unintentional p-hacking. For all experimental studies included in the thesis, power analysis was conducted in order to assess the statistical power of given sample sizes, and in all studies we applied sample sizes that would be able to detect small to mid-range effect sizes. In recruiting participants, we have made sure to include diverse samples in all articles, and in article 1 even nationally representative samples for two of the studies. However, all data was collected in Western countries (Norway and the US), limiting the cross-cultural generalizability of the findings. For all articles, data and materials are published online. In addition to contributing to the development of a more open, transparent and reproducible social and consumer psychology, these choices strengthen the quality of the data, and allow us to place more confidence in the results – both when any given hypothesis received supported, and when it did not.

It should be noted that there are differences in the use of open science practices across the three articles. This is partly due to how my familiarity with open science practices has increased over time. Therefore, article 3, which is the most recent article, contains the most systematic use of open science practices of the thesis articles. However, some features could have been improved in both this article and the others. For instance, I have relied on a format of pre-registration that does not specify all details of measurement and analyses. Also, power analyses focused on main effects, and were conducted with too little regard for interaction effects (especially in article 1 and 2, and to some extent also article 3). So although the sample sizes exceed what has previously been common in the field, some statistical tests (especially interaction tests) in the current thesis are performed without a satisfactory level of statistical power, which means that the results must therefore be interpreted with more caution than the analyses of main effects, which are adequately powered.

### **Chapter 3: Summary of articles**

#### **Article 1: “Racial bias in the sharing economy: The role of trust and self-congruence”**

As mentioned in Chapter 1, ethnic discrimination has been observed in several access-based services within the sharing economy. Field data from both Airbnb and Uber users have shown that minorities are treated more negatively than White users, both as providers and consumers within these peer-to-peer services (Edelman & Luca, 2014; Ge et al., 2020). However, one question that has remained unanswered has been what underlies this discrimination. This was the main focus of article 1.

In developing our hypotheses for article 1, we integrated insights from social psychology with consumer psychology. Firstly, we predicted that attitudes towards and willingness to rent an Airbnb apartment would vary according to the presented host’s group membership (in-group vs. out-group). This was based on the ubiquitous finding within social identity research that people display a positive bias towards members of their own in-group

(Dunham, 2018). Secondly, also based on prior research in social psychology, we predicted that this bias would be more emphasized for participants with a right-wing political view and/or a perception of the out-group as threatening. Thirdly, we predicted that the mechanism through which group membership would influence attitudes and willingness to rent would be dependent on host trustworthiness as well as self-congruence with the Airbnb apartment. The self-congruence prediction was based on the large literature on self-congruence effects in consumer research, and represents a novel idea in the context of discrimination research.

To test our predictions, we conducted a set of between-subjects experiments ( $N = 1599$ ), including one pre-registered experiment with a nationally representative sample from Norway. The results showed that people displayed racial discrimination in their attitudes, intentions and choices with regards to renting an Airbnb apartment from an in-group vs. out-group Airbnb host. When an identical Airbnb apartment was presented with an out-group (vs. in-group) host, people reported more negative attitudes towards the apartment and lower intentions to rent it. In an incentivized choice, participants were 25% less likely to choose the Airbnb apartment over a standard hotel room if the host was an out-group member (vs. in-group member). In sum, the article provides causal evidence that hosts' group membership matters to consumer decisions, something that had previously been indicated through correlational studies.

When examining the mechanisms of discrimination, we found that self-congruence was the most reliable statistical mediator across the three studies in the article. People thus seem to use host identity to judge whether the Airbnb apartment overlaps with their own identity or not. The presence of an out-group host seemingly leads people to feel like the Airbnb apartment is less "them", a judgement that in turn is correlated with more negative attitudes and intentions to rent. The mediational effects through host trustworthiness were less stable across studies, and were more affected by participants' political views and out-group

threat perceptions. Interestingly, we found evidence of *reverse discrimination*, with left-leaning participants and participants seeing the out-group as non-threatening, judging the out-group host as more trustworthy than the in-group host. However, this reverse discrimination was not reflected when faced with a real choice, and thus could be interpreted as evidence that people will signal their attitudes and political identities when asked about hypothetical scenarios, but not when it might have actual costly implications for themselves.

In article 1, we also tested different strategies for mitigating discrimination in the Airbnb contexts. Contrary to our predictions, we did not see a reduction in discrimination when including in-group similarities in the description of the out-group host. What did manage to eliminate discrimination was including an explicit trust cue in the form of a top (five-star) rating to the presentation of the Airbnb host and apartment.

### **Article 2: “Access vs. ownership: Are strongly identified consumers prepared to make the switch?”**

Traditionally, ownership has been seen as the ideal mode of consumption, offering benefits such as permanent possession and unlimited control over a given product. Access-based consumption in the form of lending, renting or leasing has been seen as less ideal, with its temporary nature and limited control. It has also been assumed that symbolic value, such as the ability of a product to signal one’s identity, is a type of value offered by ownership-based consumption, not access-based consumption (Bardhi & Eckhardt, 2017). However, the fashion industry seems to be a sector where access-based consumption is being adopted by individuals highly identified with clothes. Article 2 therefore sought to examine whether and under which circumstances highly identified consumers would prefer access to ownership, in the context of fashion.

Previous research has found that consumers who identify strongly with a product domain tend to prefer and value the self-diagnostic potential of products within that domain (Leung, Paolacci, & Puntoni, 2018; Leung, Cito, Paolacci, & Puntoni, 2022). In article 2, we built on this research, as well as the liquid vs. solid consumption framework, and findings of the common motives of access-based consumption, in constructing our first hypothesis; namely that highly fashion-identified consumers would prefer ownership to access-based consumption within the fashion domain. However, we also expected that this tendency could be affected by a moderating variable; variety seeking. This prediction built on the idea that identity is not always signaled by owning the same product over time, but might in some cases be signaled through variety-seeking behavior. For example, an Apple fan might display their identity as an Apple aficionado by always acquiring the latest iPhone model, thus sacrificing their enduring relationship to the older model. In the context of fashion, previous research has also shown that materialistic consumers can be attracted to access-based consumption by the desire for uniqueness (Akbar, Mai, & Hoffmann, 2016). We therefore expected that increasing the need for variety in highly identified consumers would make them more positive towards accessing vs. owning clothes.

In order to test whether participants' degree of identification was related to their preference for access vs. ownership, we first conducted a survey study (N = 137). Participants' degree of identification with the fashion domain was measured through survey questions tapping four dimensions of domain self-relevance derived from Sirgy (1985): the real private self (e.g. "Being interested in fashion is important to who I am."), the ideal private self (e.g. "I would like to be a kind of person who is into fashion."), the real public self (e.g. "People who know me think of me as a fashion-person.") and the ideal public self (e.g. "I would like others to think of me of someone who is into fashion."). We then presented participants with a hypothetical scenario where they needed to acquire something to wear for

a formal event. Participants were asked whether they would prefer to buy an outfit for the event, or rent an outfit for “a sum well below the retail price”.

The results showed that there was a significant positive relationship between participants’ level of identification and their preference to buy (vs. rent) formal wear. More strongly identified participants were more likely to prefer buying (vs. renting) clothes, and vice versa for less identified participants.

In order to test our prediction that need for variety would moderate the tendency for strongly identified consumers to prefer ownership (vs. access), we conducted one correlational study and three controlled between-subjects experiments. Two of the experiments were pre-registered. In one experiment (Study 2A), we attempted to manipulate need for variety with an essay writing task. A manipulation check showed that our manipulation failed. In a correlational study (Study 2B), we measured trait variety seeking, and tested whether this variable statistically moderated the relationship between identity relevance and buying vs. renting preferences. Results showed that there was no significant moderation effect. In two final experiments (Study 3 and 4), we manipulated the situational need for variety through varying the number of events in the hypothetical scenario. One group of participants were presented with the same scenario as in Study 1, where they were asked to imagine going to one single event. The other group of participants were presented with a scenario where they were asked to imagine going to several events (three in Study 2, five in Study 3). We expected that people would experience a greater need for variety when imagining going to multiple events.

Results from Study 3 and 4 showed that the number of events significantly affected the relationship between identification and preferences for buying vs. renting. For participants in the one-event condition, there was a positive relationship between identification and



preferring to buy (vs. rent) an outfit. For participants in the multiple events-condition, the relationship was either non-significant (Study 3) or significantly negative (Study 4). This was in line with our hypothesis. However, our manipulation confounded situational need for variety with the potential re-use value of a purchased product, and further research is therefore needed to reach a final conclusion.

**Article 3: “Does sharing make it seem like you’re caring? Social perception of sharing vs. owning.”**

Similarly to article 2, article 3 investigates the symbolic value potential of access-based consumption, but from a different angle. We know that consumers care about what using a product or service communicates about them, but no previous research has examined how users of access-based services are perceived, and whether they are perceived differently than product owners in the same consumption domain. Therefore, article 3 explores the social signals emitted from access-based consumption as opposed to ownership, using a large-scale experiment with a general population sample from Norway (N = 1194). We chose the context of car-sharing as an example of an access-based service, since this is a type of service with significant growth potential, and where it is therefore relevant to investigate the social perception of users in order to assess the attractiveness of such services to current non-users. Car-sharing is also a type of service that has been shown to be used for various reasons (e.g. economy, convenience, environmental friendliness). Since motives might shape how behaviors are judged by others, car-sharing as a context allowed us to examine whether the service users would be perceived differently according to their motive for using the service.

Our hypotheses in article 3 were built on both consumer research and research within social and moral psychology. Firstly, we predicted that a car-sharing user would be perceived as more trustworthy than a car-owner. This prediction was based on previous research in moral psychology, showing that people engaging in pro-environmental behaviors are seen as

more trustworthy, and research in the consumer behavior literature showing that some access-based services, there among car-sharing, are perceived as environmentally friendly. Secondly, we predicted that explicitly stating the motives behind car-sharing would affect social perceptions of users. Specifically, we expected that if the motive for car-sharing was a self-centered one, such as saving money, judgements would not be more positive than for car-owners. If the motive for car-sharing was pro-environmental, judgements would be more positive than for a car-owner, because a pro-environmental motive is a type of other-oriented or self-transcendent motive. Thirdly, we expected homogeneity to play a role in social perceptions. Specifically, we predicted that people who themselves were more active car-users would be more positive towards a car-owner, and that users scoring high on environmentalism would respond more positively towards the car-sharing user.

In the experiment, we presented participants with a fictitious individual that either owned his own car, or used a car-sharing service. We also varied whether the motivation for using a car-sharing service was not mentioned (basic car-sharing condition), economical (economical car-sharing condition) or environmental (environmental car-sharing condition). The results showed that participants rated the car-sharing user with a pro-environmental motive as more trustworthy than the car-owner. The car-sharing user with no explicit motive was not seen as more trustworthy than a car-owner, a finding illustrating the importance of motives in people's social judgements of others. As expected, the car-sharing user with an economical motive was rated as equally trustworthy as a car-owner.

Finally, our findings showed that homogeneity between participants and the individual they were asked to judge seemed to play a role when it came to socialization intentions (but not trustworthiness judgements). People who themselves drove a car more frequently reported higher intentions to socialize with the car-owner than the car-sharing user, and people scoring high on environmentalism reported higher intentions to socialize with the car-sharing user

than the car-owner. These moderation results must however be interpreted in light of the moderation analyses being slightly underpowered (about 70% statistical power to detect the observed effects).

#### **Chapter 4: General discussion**

The current thesis contributes with knowledge about how consumers respond to access-based services within the growing sharing economy, and especially how consumption behavior is affected by consumer identities when accessing instead of owning. In the following, I will present both academic and applied contributions of the thesis as a whole, as well as limitations and possibilities for future research.

##### **Academic contribution**

As discussed in the introduction, prior literature has presented different views on access vs. ownership, and the relationship between identity and these two different forms of consumption. In general, access-based consumption is seen as less identity-relevant than ownership (Durgee & O'Connor, 1995; Bardhi & Eckhardt, 2017), but this conclusion is based on few empirical studies explicitly investigating this question (Bardhi & Eckhardt, 2012 being an important exception). The articles in my thesis all present novel empirical data shedding light on this topic. The results contribute with important nuances to previous findings and theorizing by demonstrating some boundary conditions where access can indeed have identity-related value or be identity-relevant in other ways.

In article 1, we focus on a negative identity-related effect in consumption, namely group-based discrimination. Our findings that people discriminate against out-group hosts on Airbnb show that group identities matter also in this access-based context, which contrasts with the liquid vs. solid consumption framework. We also show that a possible mechanism for the discrimination in apartment evaluations and rental intentions is through reduced self-

congruence with the out-group host's apartment, since the host group manipulation had a causal effect on self-congruence. Self-congruence was also correlationally related to apartment attitudes, rental intentions and willingness to pay. This means that even for objects that the consumer is only renting for a limited time period, self-congruence plays a role. This effect might not be transferable to all access-based services. For items that are rented for very short periods, such as renting a tool for a day or a car for a few hours, self-congruence concerns might be of less importance. Previous research has found that access-based services that provide an experience of stability and endurance through the service design facilitates more attachment to the consumption object (Gruen, 2017). Bardhi & Eckhardt (2017) also point to this finding as an example of how the challenges for access-based consumption to provide connection and attachment can be overcome in some contexts. Article 1 shows how access-based consumption also might face challenges because of identity-related effects.

Article 2 also contributes to nuancing the view that access-based consumption cannot provide identity-relevant value to consumers. Our findings indicate that introducing a higher need for variety could make access more attractive to consumers with a strong identification with the fashion domain. This is in line with a previous finding that materialistic consumers can become more interested in access vs. ownership when their need for uniqueness is high (Akbar et al., 2016). The fashion context might, however, be somewhat of a special case. Fashion is a consumption domain where ownership is not necessarily valued because of endurance. The so-called fast fashion business models have been built on consumers changing their wardrobe more and more often. One might argue that in this context, ownership has been "liquidified". Nonetheless, our findings in article 2 still point to ownership being preferred among strong fashion identifiers, but that this preference can be affected by a situational push for more variety. An important limitation for article 2 is that our manipulation of situational

need for variety (varying the number of consumption events) also varied the potential re-use value of a purchased item, which could have had a confounding effect.

In article 3, we show that pro-environmentally motivated car-sharing emits a positive social signal in the sense of spurring higher trustworthiness judgements of a car-sharing user. This contributes to showing that access-based consumption can in some cases signal positive characteristics, in contrast with the view that access-based consumption offers little sign value (Bardhi & Eckhardt, 2012). These findings also dovetail with previous research in moral psychology that show the importance of motives over behavior in making morally relevant judgements (Carlson, Bigman, Gray, Ferguson, & Crockett, 2022).

Another way this thesis contributes to academic conversations about identity and consumption is by creating bridges between literatures in social psychology and consumer research. In article 1, we combine insights from social psychology about social identity and group-based discrimination with insights about self-congruence and identity effects from the consumer research literature. In article 3, insights from consumer behavior research on access-based consumption and car-sharing is integrated with findings from social and moral psychology about social perception.

Finally, both article 1 and article 3 demonstrate the value of including different types of dependent variables when studying social phenomena. In article 1, we find a difference in participants' responses on hypothetical measures vs. an incentivized choice measure. Participants with a left-leaning political orientation and/or a low perception of out-group threat reported more positive attitudes and willingness to pay to rent the out-group host's Airbnb apartment in a hypothetical setting, but displayed the same discrimination as others when it came to an incentivized choice. In article 3, we observed interesting distinctions in results for the two dependent variables: trustworthiness judgements and socialization

intentions. In judging trustworthiness, what seemed to matter the most for participants were the motives for car-sharing. People rated a car-sharing user as more trustworthy than a car-owner when they knew the car-sharing use was pro-environmentally motivated. This motivation, however, did not affect socialization intentions. Instead, results showed that when judging how interested one would be in socializing with a target individual, shared characteristics and values seemed more important. Although we might only speculate in the exact mechanisms behind these differences, the different outcomes in themselves prove the value of actually measuring different dependent variables, not taking for granted that related variables will always display the same effects.

### **Applied contributions**

This thesis also contributes with knowledge applicable to various practical settings. Article 1 shows how Airbnb platform design allows consumers to discriminate against racial minority hosts, and tests which interventions could counter this tendency. Our finding that a top rating eliminated discrimination means that if companies like Airbnb want to reduce the impact of profile pictures and names signaling a host's racial background, they should emphasize ratings on the platform. This finding is likely applicable to both peer-to-peer platforms and other arenas of interpersonal transactions requiring trust among users. Our findings in article 1 might also be of interest to policy makers aiming to reduce group-based discrimination in society in general.

In article 2, we demonstrate how marketers of access-based services for clothes could attract strongly identified consumers, namely by emphasizing the value of variety, and that access can offer more variety than ownership. On the flipside, our findings also speak to how marketers of ownership-based companies could communicate in order to appeal to consumers with different levels of fashion identification. For strong identifiers, these companies should

focus on single consumption events, but for non-identified consumers, ownership can be made more attractive if re-use value is emphasized.

Our findings in article 3 can also be of use in a marketing context. Specifically, the finding that people perceive a car-sharing user as more trustworthy when the person is presented as pro-environmentally motivated is relevant to how marketers of car-sharing services present prototypical users in their messaging. Since distrust in and fear of contamination from other users can be barriers to adoption, it should be of great interest of these services to boost positive perceptions of users. From this perspective, car-sharing marketers could present their users as pro-environmentally motivated. Since environmental motives are generally less important compared to economic and convenience benefits, it is important for marketers to know that environmental messages can have other positive effects.

### **Limitations and future research**

Some important limitations of the findings presented in this thesis must be mentioned. Firstly, the thesis has applied a confirmatory, hypothesis-testing approach. Although this was in line with my research goals, this does limit the scope of the findings. I have not explored the research context openly, and might thus have missed interesting observations that a more exploratory approach using qualitative research methods could have revealed. Future research on access-based consumption and the role of identity in innovative consumption modes should continue to draw on both qualitative and quantitative approaches in order to secure continuous knowledge development.

Secondly, the specific research methods applied in each article come with inherent strengths and weaknesses. In most of the studies, we have used online survey experiments to ask participants to respond to hypothetical scenarios. This limits external validity, meaning we must be cautious to conclude that our results will translate into real-life behavior. Our

research samples were also collected in Western countries (Norway and the US), which limits cross-cultural generalizability. This is an important caveat, especially when considering that some of the largest and fastest growing consumer markets are located in non-Western countries such as India and China. Future research should therefore explore how and whether identity affects access-based consumption in a more diverse set of countries and populations.

Thirdly, each of the articles have focused on a particular type of access-based service; Airbnb in article 1, clothing rental in article 2, and car-sharing in article 3. These contexts have both similarities and differences with other access-based services, and the degree to which findings can be expected to generalize from the chosen context to others will vary. For instance, the racial discrimination observed in the Airbnb context is enabled by the platform presenting names and pictures of users, and perhaps emphasized by the asymmetric information between hosts and guests, which spurs a need for trust. We would therefore expect similar effects in other access-based services requiring trust in other users, and where the group membership of other users is visible on the platform. With regards to the tentative finding that variety seeking moderates the relationship between identity relevance and a preference for ownership in article 2, we expect the effect to be limited to contexts where variety is experienced as valuable by strongly identified users. In the context of e.g. tools, we do not necessarily expect the effect to replicate. In article 3, the finding that pro-environmentally motivated car-sharing users are perceived as more trustworthy is of course related to the fact that car-sharing can be perceived as environmentally friendly. For access-based services where pro-environmental motives are less applicable, such as Airbnb, users would have to be presented with another type of other-oriented motive (e.g. social/communal motive) in order for us to expect similar effects.

Finally, there are also some methodological weaknesses for the studies presented in the current thesis. Although sample sizes are larger than what has been common in previous



research, the statistical power for interaction effects is still inadequate in the studies presented here. Moderation results must therefore be interpreted more cautiously than results for main effects or simple correlations. In article 1, we also apply statistical mediation analysis with a goal of examining potential indirect effects, but without manipulating the mediating variable. Mediation results should therefore be interpreted in light of the research design only manipulating the path from the independent variable to the mediators, not the path from the mediators to the dependent variables. For all studies, measures could also to a larger extent have been pre-tested and pre-validated.

As technology and society changes consumption at a rapid pace, consumer research should continuously re-examine what has previously been taken for granted or overlooked. The current thesis contributes to understanding consumer responses to novel modes of consumption, but there is still ample space for further examination of the relationships between access, ownership, identity and other forms of symbolic consumer value.

## References

- Acquier, A., Daudigeos, T., & Pinkse, J. (2017). Promises and paradoxes of the sharing economy: An organizing framework. *Technological Forecasting and Social Change*, *125*, 1-10. <https://doi.org/10.1016/j.techfore.2017.07.006>
- Adelson, J. L., & McCoach, D. B. (2010). Measuring the mathematical attitudes of elementary students: The effects of a 4-point or 5-point Likert-type scale. *Educational and Psychological Measurement*, *70*(5), 796-807.
- Aguirre-Rodriguez, A., Bosnjak, M., & Sirgy, M. J. (2012). Moderators of the self-congruity effect on consumer decision-making: A meta-analysis. *Journal of Business Research*, *65*, 1179–1188. <https://doi.org/10.1016/j.jbusres.2011.07.031>
- Ahmed, A. M., & Hammarstedt, M. (2008). Discrimination in the rental housing market: A field experiment on the Internet. *Journal of Urban Economics*, *64*(2), 362-372.
- Akbar, P., Mai, R., & Hoffmann, S. (2016). When do materialistic consumers join commercial sharing systems. *Journal of Business Research*, *69*(10), 4215–4224. <https://doi.org/10.1016/j.jbusres.2016.03.003>
- Bardhi, F., & Eckhardt, G. M. (2012). Access-based consumption: The case of car sharing. *Journal of Consumer Research*, *39*(4), 881–898. <https://doi.org/10.1086/666376>
- Bardhi, F., & Eckhardt, G. M. (2017). Liquid consumption. *Journal of Consumer Research*, *44*(3), 582–597. <https://doi.org/10.1093/jcr/ucx050>
- Bashir, N. Y., Lockwood, P., Chasteen, A. L., Nadolny, D., & Noyes, I. (2013). The ironic impact of activists: Negative stereotypes reduce social change influence. *European Journal of Social Psychology*, *43*(7), 614-626.
- Belk, R. (1988). Possessions and the extended self. *Journal of Consumer Research*, *15*(2),

139–168.

Belk, R. (2010). Sharing. *Journal of Consumer Research*, 36(5), 715–734.

Belk, R. (2014). You are what you can access: Sharing and collaborative consumption online.

*Journal of Business Research*, 67(8), 1595–1600.

<https://doi.org/10.1016/j.jbusres.2013.10.001>

Berger, J., & Heath, C. (2007). Where consumers diverge from others: Identity signaling and product domains. *Journal of Consumer Research*, 34(2), 121-134.

Berger, J., & Heath, C. (2008). Who drives divergence? Identity signaling, outgroup

dissimilarity, and the abandonment of cultural tastes. *Journal of Personality and Social*

*Psychology*, 95(3), 593–607. <https://doi.org/10.1037/0022-3514.95.3.593>

Bertrand, M., & Mullainathan, S. (2004). Are Emily and Greg more employable than Lakisha

and Jamal? A field experiment on labor market discrimination. *American Economic*

*Review*, 94(4), 991-1013.

Botsman, R., & Rogers, R. (2010). *What's mine is yours: The rise of collaborative*

*consumption*. New York: HarperCollins.

Brewer, M. B. (1979). In-group bias in the minimal intergroup situation: A cognitive-

motivational analysis. *Psychological Bulletin*, 86(2), 307–324.

<https://doi.org/10.1037/0033-2909.86.2.307>

Bucher, E., Fieseler, C., & Lutz, C. (2016). What's mine is yours (for a nominal fee)—

Exploring the spectrum of utilitarian to altruistic motives for Internet-mediated sharing.

*Computers in Human Behavior*, 62, 316–326. <https://doi.org/10.1016/j.chb.2016.04.002>

Campbell, D. T. (1957). Factors relevant to the validity of experiments in social settings.

*Psychological Bulletin*, 54(4), 297-312.

- Carlson, R. W., Bigman, Y. E., Gray, K., Ferguson, M. J., & Crockett, M. J. (2022). How inferred motives shape moral judgements. *Nature Reviews Psychology*, *1*(8), 468-478.
- Cockayne, D.G. (2016). Sharing and neoliberal discourse: the economic function of sharing in the digital on-demand economy. *Geoforum* *77*, 73–82.
- Cottrell, C. A., Richards, D. A. R., & Nichols, A. L. (2010). Predicting policy attitudes from general prejudice versus specific intergroup emotions. *Journal of Experimental Social Psychology*, *46*(2), 247–254. <https://doi.org/10.1016/j.jesp.2009.10.008>
- Doliński, D. (2018). Is psychology still a science of behaviour? *Social Psychological Bulletin*, *13*(2), 1-14.
- Dunham, Y. (2018). Mere membership. *Trends in Cognitive Sciences*, *22*(9), 780-793. <https://doi.org/10.1016/j.tics.2018.06.004>
- Durgee, J. F., & O'Connor, G. C.. (1995). An exploration into renting as consumption behavior. *Psychology & Marketing*, *12*(2), 89–104.
- Eckhardt, G. M., & Bardhi, F. (2016). The relationship between access practices and economic systems. *Journal of the Association for Consumer Research*, *1*(2), 210–225. <https://doi.org/doi:10.1086/684684>
- Edelman, B. G., & Luca, M. (2014). Digital discrimination: The case of Airbnb.com. (Harvard Business School NOM Unit Working Paper No. 14-054.) Available at SSRN: <https://ssrn.com/abstract=2377353> or <http://dx.doi.org/10.2139/ssrn.2377353>
- Escalas, J. E., & Bettman, J. R. (2003). You are what they eat: The influence of reference groups on consumers' connections to brands. *Journal of Consumer Psychology*, *13*(3), 339-348.
- Escalas, J. E., & Bettman, J. R. (2005). Self-construal, reference groups, and brand meaning.

*Journal of Consumer Research*, 32, 378–389.

Falk, C. F., Heine, S. J., & Takemura, K. (2014). Cultural variation in the minimal group effect. *Journal of Cross-Cultural Psychology*, 45(2), 265-281.

<https://doi.org/10.1177/0022022113492892>

Ferguson, C. J., & Heene, M. (2012). A vast graveyard of undead theories: Publication bias and psychological science's aversion to the null. *Perspectives on Psychological Science*, 7(6), 555-561.

Foddy, M., Platow, M. J., & Yamagishi, T. (2009). Group-based trust in strangers: The role of stereotypes and expectations. *Psychological Science*, 20(4), 419-422.

<https://doi.org/10.1111/j.1467-9280.2009.02312.x>

Fournier, S. (1998). Consumers and their brands: Developing relationship theory in consumer research. *Journal of Consumer Research*, 24(4), 343–373.

<https://doi.org/10.1086/209515>

Friedman, G. (2014). Workers without employers: shadow corporations and the rise of the gig economy. *Review of Keynesian Economics*, 2(2), 171–188.

Ge, Y., Knittel, C. R., MacKenzie, D., & Zoepf, S. (2020). Racial discrimination in transportation network companies. *Journal of Public Economics*, 190, 104205.

Gruen, A. (2017). Design and the creation of meaningful consumption practices in access-based consumption. *Journal of Marketing Management*, 33(3-4), 226-243.

Gullstrand Edbring, E., Lehner, M., & Mont, O. (2016). Exploring consumer attitudes to alternative models of consumption: Motivations and barriers. *Journal of Cleaner Production*, 123, 5–15. <https://doi.org/10.1016/j.jclepro.2015.10.107>

Habibi, M. R., Kim, A., & Laroche, M. (2016). From sharing to exchange: An extended

- framework of dual modes of collaborative nonownership consumption. *Journal of the Association for Consumer Research*, 1(2), 277-294.
- Hamari, J., Sjöklint, M., & Ukkonen, A. (2016). The sharing economy: Why people participate in collaborative consumption. *Journal of the Association for Information Science & Technology*, 67(9), 2047–2059. <https://doi.org/10.1002/asi.23552>
- Hartl, B., Sabitzer, T., Hofmann, E., & Penz, E. (2018). “Sustainability is a nice bonus”: the role of sustainability in carsharing from a consumer perspective. *Journal of Cleaner Production*, 202, 88-100.
- Hazée, S., Delcourt, C., & Van Vaerenbergh, Y. (2017). Burdens of access: Understanding customer barriers and barrier-attenuating practices in access-based services. *Journal of Service Research*, 20(4), 441–456. <https://doi.org/10.1177/1094670517712877>
- Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences*, 33(2-3), 61-83.
- Hornsey, M. J. (2008). Social identity theory and self-categorization theory: A historical review. *Social and Personality Psychology Compass*, 2(1), 204-222.
- Kennedy, E. H., & Horne, C. (2020). Accidental environmentalist or ethical elite? The moral dimensions of environmental impact. *Poetics*, 82, 101448.  
<https://doi.org/10.1016/j.poetic.2020.101448>
- Lamberton, C. P., & Rose, R. L. (2012). When ours is better than mine? A framework for understanding and altering participation in commercial sharing systems. *Journal of Marketing*, 76(4), 109–125. <https://doi.org/10.1509/jm.10.0368>
- Leary, M. R. (2007). Motivational and emotional aspects of the self. *Annual Review of Psychology*, 58, 317-344.

- Leung, E., Paolacci, G., & Puntoni, S. (2018). Man versus machine: Resisting automation in identity-based consumer behavior. *Journal of Marketing Research*, 55(6), 818–831.  
<https://doi.org/10.1177/0022243718818423>
- Leung, E., Cito, M. C., Paolacci, G., & Puntoni, S. (2022). Preference for material products in identity-based consumption. *Journal of Consumer Psychology*, 32(4), 672-679.
- Levy, S. J. (1959). Symbols for sale. *Harvard Business Review*, 37(4), 117-124.
- Mazar, N., & Zhong, C. B. (2010). Do green products make us better people? *Psychological Science*, 21(4), 494–498. <https://doi.org/10.1177/0956797610363538>
- Munafò, M. R., Nosek, B. A., Bishop, D. V., Button, K. S., Chambers, C. D., Percie du Sert, N., ... & Ioannidis, J. (2017). A manifesto for reproducible science. *Nature Human Behaviour*, 1(1), 1-9.
- Newman, G. E., Diesendruck, G., & Bloom, P. (2011). Celebrity contagion and the value of objects. *Journal of Consumer Research*, 38(2), 215–228.
- Norton, M. I., Mochon, D., & Ariely, D. (2012). The IKEA effect: When labor leads to love. *Journal of Consumer Psychology*, 22(3), 453-460.
- Ozanne, L. K., & Ballantine, P. W. (2010). Sharing as a form of anti-consumption? An examination of toy library users. *Journal of Consumer Behaviour*, 9(6), 485-498.
- Peck, J., & Shu, S. B. (2009). The effect of mere touch on perceived ownership. *Journal of Consumer Research*, 36(3), 434-447.
- Pierce, J. L., Kostova, T., & Dirks, K. T. (2003). The state of psychological ownership: Integrating and extending a century of research. *Review of General Psychology*, 7(1), 84-107.
- Platow, M. J., McClintock, C. G., & Liebrand, W. B. (1990). Predicting intergroup fairness

- and ingroup bias in the minimal group paradigm. *European Journal of Social Psychology*, 20(3), 221-239. <https://doi.org/10.1002/ejsp.2420200304>
- Price, L. L., & Belk, R. (2016). Consumer ownership and sharing: Introduction to the issue. *Journal of the Association for Consumer Research*, 1(2), 193–197.
- Reed, A., Forehand, M. R., Puntoni, S., & Warlop, L. (2012). Identity-based consumer behavior. *International Journal of Research in Marketing*, 29(4), 310–321. <https://doi.org/10.1016/j.ijresmar.2012.08.002>
- Rozin, P., Nemeroff, C., Wane, M., & Sherrod, A. (1989). Operation of the sympathetic magical law of contagion in interpersonal attitudes among Americans. *Bulletin of the Psychonomic Society*, 27(4), 367–370.
- Rucker, D. D., & Galinsky, A. D. (2008). Desire to acquire: Powerlessness and compensatory consumption. *Journal of Consumer Research*, 35(2), 257-267.
- Rudmin, F. (2016). The consumer science of sharing: A discussant's observations. *Journal of the Association of Consumer Research*, 1(2), 198–209. <https://doi.org/10.1086/685861>
- Sartre, J. P. (1943/1969). *Being and nothingness: An essay on phenomenological ontology*. New York: Philosophical Library.
- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Boston/New York: Houghton Mifflin Company.
- Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2011). False-positive psychology: undisclosed flexibility in data collection and analysis allows presenting anything as significant. *Psychological Science*, 22(11), 1359-1366.
- Sirgy, M. J. (1982). Self-concept in consumer behavior: A critical review. *Journal of*



*Consumer Research*, 9(3), 287-300.

Sirgy, M. J. (1985). Using self-congruity and ideal congruity to predict purchase motivation.

*Journal of Business Research*, 13, 195–206.

Skippon, S. M., Kinnear, N., Lloyd, L., & Stannard, J. (2016). How experience of use influences mass-market drivers' willingness to consider a battery electric vehicle: A randomised controlled trial. *Transportation Research Part A: Policy and Practice*, 92, 26-42.

Stanley, T. D., Carter, E. C., & Doucouliagos, H. (2018). What meta-analyses reveal about the replicability of psychological research. *Psychological Bulletin*, 144(12), 1325.

Van Bavel, J. J., & Packer, D. J. (2021). *The power of us: Harnessing our shared identities to improve performance, increase cooperation, and promote social harmony*. Boston: Little, Brown Spark.

Vargo, S. L., & Lusch, R. F. (2004). The four service marketing myths: remnants of a goods-based, manufacturing model. *Journal of Service Research*, 6(4), 324-335.

Vargo, S. L., Maglio, P. P., & Akaka, M. A. (2008). On value and value co-creation: A service systems and service logic perspective. *European Management Journal*, 26(3), 145-152.

Veblen, T. (1899) *The Theory of the Leisure Class*. New York: McMillan Co.

Vesely, S., Klöckner, C. A., & Brick, C. (2020). Pro-environmental behavior as a signal of cooperativeness: Evidence from a social dilemma experiment. *Journal of Environmental Psychology*, 67, 101362.

Zussman, A. (2013). Ethnic discrimination: Lessons from the Israeli online market for used cars. *The Economic Journal*, 123(572), 433–468. <https://doi.org/10.1111/eoj.12059>

## **Article 1: Racial Bias in the Sharing Economy and the Role of Trust and Self-Congruence**

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### **Author note**

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### Abstract

The rise of peer-to-peer platforms has represented one of the major economic and societal developments observed in the last decade. We investigated whether people engage in racial discrimination in the sharing economy, and how such discrimination might be explained and mitigated. Using a set of carefully controlled experiments (N = 1,599), including a pre-registered study on a nationally representative sample, we find causal evidence for racial discrimination. When an identical Airbnb apartment is presented with a racial out-group (vs. in-group) host, people report more negative attitudes towards the apartment, lower intentions to rent it, and are 25% less likely to choose the apartment over a standard hotel room in an incentivized choice. Reduced self-congruence with apartments owned by out-group hosts mediates these effects. Left-leaning liberals rated the out-group host as *more* trustworthy than the in-group host in non-committing judgments and hypothetical choice, but showed the same in-group preference as right-leaning conservatives when making a real choice. Thus, people may overstate their moral and political aspirations when doing so is cost-free. However, even in incentivized choice, racial discrimination disappeared when the apartment was presented with an explicit trust cue, as a visible top-rating by other consumers (5/5 stars).

*Keywords:* racial bias, sharing economy, trust, self-congruence

### **Public significance statement**

In three experiments (N = 1,599), which included a pre-registered study on a nationally representative sample (Norway), we find causal evidence for racial discrimination against minority Airbnb hosts. When an identical Airbnb apartment was presented with a racial out-group (vs. in-group) host, people reported more negative attitudes towards the apartment, lower intentions to rent it, and were 25% less likely to choose the apartment over a standard hotel room in a real choice.

### **Racial bias in the sharing economy and the role of trust and self-congruence**

The rise of peer-to-peer platforms has represented one of the major economic and societal developments observed in the last decade, typically referred to as the *sharing economy*. Each year, 730 million people stay at Airbnb apartments around the globe (Airbnb, n.d.) and over 10 billion Uber trips have been completed worldwide (Uber, 2018).

Unfortunately, there is growing evidence of racial discrimination on these platforms. Field experiments have demonstrated that guests with distinctively Black names are 16-40% less likely to be accepted by Airbnb hosts (Cui, Li, & Zhang, 2019; Edelman, Luca, & Svirsky, 2017). An observational study found that apartments belonging to Black Airbnb hosts were priced approximately 10% lower than similar listings belonging to White Airbnb hosts (Jaeger, Slegers, Evans, Stel, & Beest, 2019). These findings mirror the results from prior research showing that ethnic or racial minorities face discrimination in various markets (Bertrand & Mullainathan, 2004; Ondrich, Stricker, & Yinger, 1999), and suggest that such discrimination on peer-to-peer platforms may also be pervasive.

Discrimination in marketplace settings is a topic of high societal importance, but psychological research on the subject has been surprisingly sparse. Although economic research has provided a useful overview of the extent of discrimination in domains such as housing (Ondrich et al., 1999), labor (Bertrand & Mullainathan, 2004) and product markets (Zussman, 2013), less is known about psychological drivers and effective remedies. Field experiments, where fictitious requests are sent to real Airbnb hosts with either prototypical white- or black-sounding profile names, provide evidence of discrimination against ethnic minority Airbnb guests (Cui et al., 2019; Edelman et al., 2017). Both studies found that requests sent from profiles with black-sounding names were significantly less likely to be accepted by the hosts. However, providing reviews by previous hosts eliminated

discrimination, whereas a positive self-description written by the guests themselves did not have any impact (Cui et al., 2019).

Although previous research provided initial evidence for racial discrimination on Airbnb, the psychological process underlying these decisions has been left unexamined. Why do people act this way? The studies by Cui et al. (2019) and Edelman et al. (2017) both applied a theoretical framework from economics, namely the notion of "statistical discrimination" as opposed to "taste-based discrimination" (Guryan & Charles, 2013). The taste-based discrimination model states that some people might have a preference not to interact with members of certain social groups, and that they will be willing to pay a cost in order to discriminate against members of the disliked group (Becker, 1957). Statistical discrimination theory argues that discrimination in various transactions happens not because the discriminating party has a distaste for certain groups, but because a lack of precise knowledge about the specific individual leads to greater reliance on stereotypical, group-based information (Phelps, 1972).

What neither of the previous studies provide, however, is a test of which stereotypical beliefs and specific judgments are at work in producing racial discrimination on Airbnb. That is, the theoretical framework applied in previous studies does not predict what specific traits judgments are likely to place minority individuals in a negative light, which trait judgements that will influence consumer choice, and whether specific beliefs about the Airbnb host might have "spillover"-effects on how the rental apartment is perceived. Finally, statistical discrimination theory does not indicate whether there are certain groups of individuals who will be more or less likely to discriminate than others.

In our view, this suggests that a broader psychological perspective is needed to understand the drivers and remedies of racial discrimination. Moreover, by using controlled

experiments, hypotheses about the underlying decision process can be tested empirically. The studies by Cui et al. (2019) and Edelman et al. (2017) both employed a field experimental design in an Airbnb setting, which enables causal inference but does not easily allow for survey questions or other process measures. For that reason, these studies did not indicate whether discrimination was related to certain types of beliefs and not to others, or establish *why* externally provided information was more effective than self-provided information (Cui et al., 2019). As a natural next step in racial bias research in the sharing economy, we suggest that a proper understanding of the process driving discrimination is crucial for both psychological theory and applied interventions.

### **Theoretical framework**

In the current investigation, we apply a theoretical framework that integrates social psychological theories of prejudice and discrimination, as well as theories of identity-related consumer behavior to understand racial discrimination in the sharing economy. Specifically, we build on elements from the social identity perspective (Hornsey, 2008), theory of group-based trust (Foddy, Platow, & Yamagishi, 2009), intergroup threat theory (Stephan, Ybarra & Rios Morrison, 2009), and theories of identity and self-concept in consumer behavior (Sirgy, 1982; Escalas & Bettman, 2005, Berger & Heath, 2008). On this basis, we conducted three controlled experiments to test a set of specific hypotheses about racial discrimination on Airbnb and the psychological process underlying such discrimination.

#### **In-group bias and the social identity perspective**

A vast literature in social psychology has been dedicated to the issues of group-based prejudice and discrimination. At the core of this research is the phenomenon of in-group bias. Across a wide range of outcomes, people display a tendency to favor their own group, seemingly only because they belong to it (Brewer, 1979; Dunham, 2018). The seminal

framework of Social Identity Theory (Tajfel, 1982) was built from this observation, suggesting that the mere act of categorizing people as in-group or out-group members will tend to produce in-group favoritism, even when the groups are assigned based on minimal criteria and there is no history of conflict between the groups (Tajfel, Billig, Bundy, & Flament, 1971). According to Social Identity Theory people derive parts of their identity from their attachments to different groups, and they tend to behave in ways that support a positive view of their in-groups (Hogg, 2016). This in-group bias manifests itself in a wide range of outcomes, from evaluating in-group members more favorably on positive traits (Platow, McClintock, & Liebrand, 1990), to allocating more rewards to the in-group at the cost of an out-group (Tajfel, 1970).

### **Social identity and trust**

One particularly important category of group membership for many people, is race and ethnicity (Richeson, & Sommers, 2016). When people encounter different potential hosts on the Airbnb platform, the social identity perspective suggests that people will have a systematic tendency to form more positive impressions of the racial in-group hosts than racial out-group hosts – even when other sources of information are identical. Building on this, we argue that there is one kind of trait judgement that is especially relevant to people's attitudes and willingness to rent an Airbnb apartment, and that is *trust*. Trust is key to facilitate economic exchange, since marketplace interactions often involve a combination of future uncertainty and asymmetric information between seller and buyer. On Airbnb, the host possesses more information about their apartment than the guest, and distrust in the host can lead to uncertainty on part of the guest as to whether photos and descriptions provided are actually accurate. The relative lack of formal regulation of Airbnb might further elevate the importance of mutual trust. However, people tend to rate in-group members as more trustworthy (Platow et al., 1990, Falk, Heine, & Takemura, 2014) and trust in-group members



more than out-group members based on the belief that in-group members will favor each other (Foddy et al., 2009). Further, the perceived untrustworthiness of out-groups is uniquely predictive of actual marketplace discrimination (Zussman, 2013). For these reasons, we predicted lower demand for apartments that are owned by out-group hosts than in-group hosts, and that lower trust perceptions of out-group hosts would partly explain this effect through statistical mediation.

If trust perception is a factor underlying discrimination, providing explicit trust cues may mitigate bias. Prior research has found that reputation-based information can reduce racial discrimination among Airbnb users (Cui et al., 2019). However, as the previous research has not included measures of psychological variables, there is still a lacking understanding of why, when and for whom reputation-based information is effective. The current experiments were designed to investigate those questions as well, to build a deeper understanding of racial discrimination in the sharing economy.

### **Social identity and self-object congruence**

In addition to trust perceptions, a second path through which social identity might lead to discrimination on Airbnb is through feelings of perceived congruence between oneself and the apartment (hereafter referred to as *self-object congruence*). Theory of identity-based consumer behavior states that people use products, brands and services in order to construct and communicate their own identity (Belk, 1988; Berger & Heath, 2008; Reed, Forehand, Puntoni, & Warlop, 2012). People prefer products and brands that converge with their real or desired sense of self (Sirgy, 1980; Aguirre-Rodriguez, Bosnjak, & Sirgy, 2012), and prefer products and brands used by in-groups rather than out-groups (Escalas & Bettman, 2005). In light of Social Identity Theory these preferences can be seen as ways to express attachment to the in-group, or they might reflect people's tendency to use group norms to guide their

behavior. In any case, if we conceive of an Airbnb apartment as an experiential product that an individual can choose to consume or not, we would expect people to favor an in-group host's apartment, in part, because people will experience greater self-object congruence with the apartment. Put differently, people will tend to prefer an apartment if they know it belongs to someone like themselves.

This prediction is also supported by research on sharing, as people are generally more willing to share items with people belonging to their in-groups, such as family or close friends (Hellwig, Morhart, Girardin, & Hauser, 2015). Conversely, people are often averse to share items with strangers (Hazee, Delcourt, & Van Vaerenbergh, 2017), and particularly with disliked individuals (Newman, Diesendruck, & Bloom, 2011). In sum, the literatures on identity-based consumer behavior, sharing and contamination all support the prediction that perceived self-congruence will make a consumer more positive to use or consume an object.

If lower self-object congruence is a driver of racial discrimination, a possible strategy to mitigate discrimination could be to signal similarities between the out-group member and the in-group. According to the social identity perspective, the categorization of people into groups is a flexible process, and the criteria for parsing the social environment into "us" and "them" can vary across situations (Tajfel, 1970; Turner, Oakes, Haslam, & McGarty, 1994). Both highlighting multiple social identities (Crisp & Hewstone, 2007), and making a common social identity salient has been shown to be effective in some contexts of intergroup discrimination (Gaertner, Dovidio, & Bachman, 1996; Van Bavel & Cunningham, 2009). We experimentally test this explanation in the current research.

### **The moderating role of individual differences**

Although individuals from both sides of the political spectrum can display discrimination (Brandt, Reyna, Chambers, Crawford, & Wetherell, 2014), racial

discrimination against the out-group in the current experiments (non-Western immigrants) is more common among people with a conservative or right-leaning political ideology (Ceobanu & Escandell, 2010; Sidanius, Pratto, & Bobo, 1996). We therefore predict that people with a right-leaning (vs. left-leaning) political orientation will be more negative towards the Airbnb apartment with an out-group host. We also predict that political orientation is related to the degree to which people experience the hosts as trustworthy, and the degree to which people experience self-object congruence with the Airbnb apartment. Specifically, we expect that conservatives (to a larger extent than liberals) will rate the out-group host as less trustworthy than the in-group host, and rate the out-group host's apartment as less self-congruent.

Another dimension of enduring individual differences likely to affect evaluations of an in-group vs. out-group host and their apartments, is beliefs about the threat of the out-group in question. Perceived out-group threat is viewed as a central antecedent of discrimination across various theoretical perspectives (Böhm, Rusch, & Baron, 2018; Sherif, Harvey, White, Hood, & Sherif, 1954; Stephan & Stephan, 2000). Threat perceptions have been found to explain out-group hostility better than general prejudice measures, because they relate more closely to the specific emotional and behavioral response evoked by an out-group (Cottrell, Richards, & Nichols, 2010). Previous research has also found threat to be predictive of out-group distrust and out-group derogation (Voci, 2006). We predicted that participants' perceptions of an out-group as threatening to important aspects of their society would make participants more distrustful when encountering a member of that group on the Airbnb platform. We also predicted higher levels of perceived threat to increase motivation to dissociate oneself from the threatening group, which would manifest as reduced perception of self-object congruence with the out-group host's apartment. Research on symbolic contamination has shown that people devalue products they perceive to have been in contact with a source they regard as immoral (Newman et al., 2011), and we expect a similar effect to arise from perceptions of a

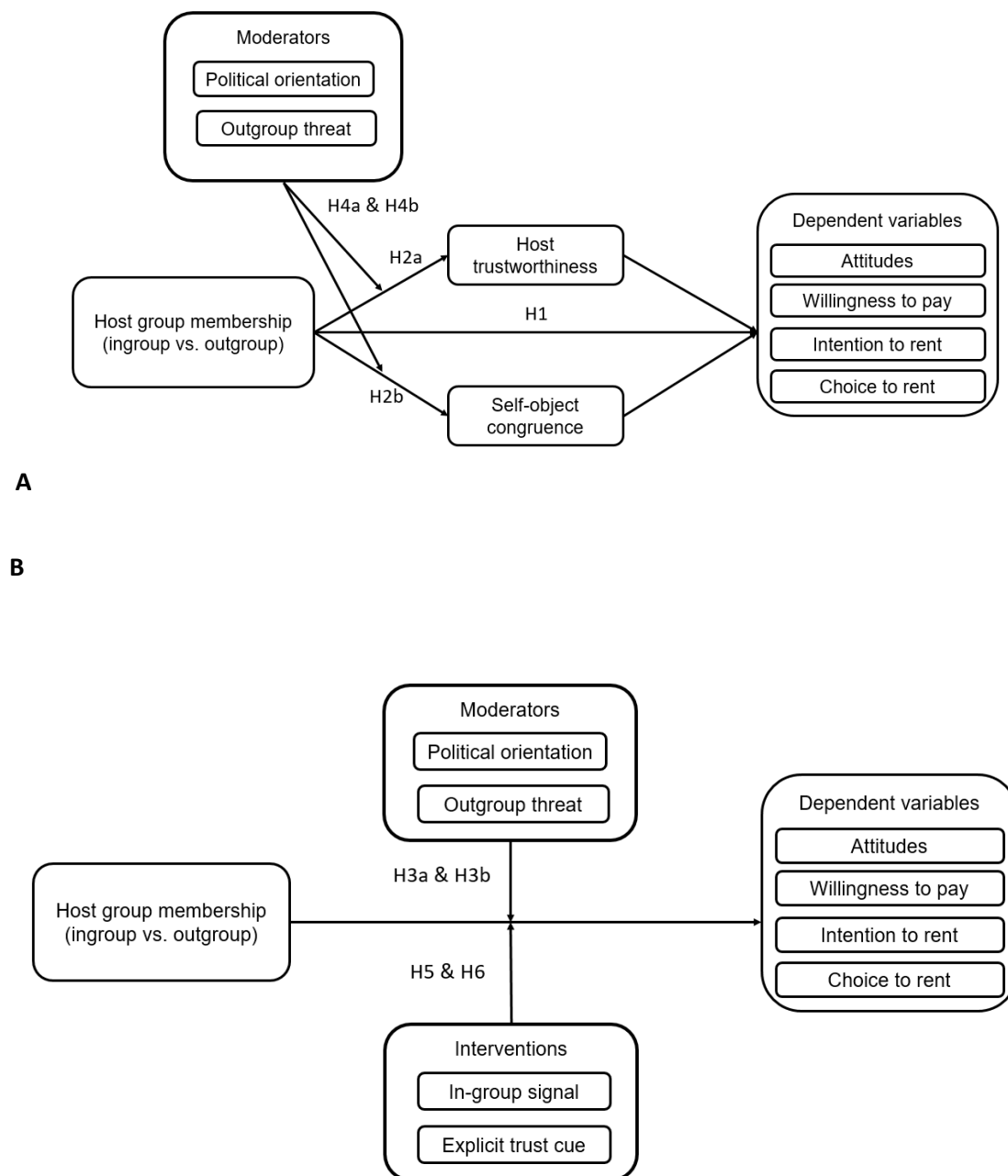
group being threatening. We expect that people who perceive an out-group as more threatening will display more reluctance towards renting an Airbnb apartment from an out-group host.

### **Current research**

The main goal of the current investigation is to build a better understanding of discrimination based on race and ethnicity in the sharing economy. In constructing our theoretical framework, we included variables from different perspectives, which made our framework more comprehensive than other models. For instance, research applying a threat-based approach to discrimination seldom measures self-congruence, and vice versa. By combining insights from modern social psychological theories of intergroup relations with insights from identity-related consumer behavior, we extend previous research on discrimination. By including measures of ideology, beliefs and social perceptions as moderator and mediator variables, we attempt to provide a more fine-grained explanation for the possibility of biased treatment of racial out-groups in this real-life marketplace setting. Crucially, we also experimentally test whether the psychology of trust can reduce racial discrimination, by testing the effect of reputation-based trust cues.

Relying on controlled experiments, we manipulate the racial group membership of the host (in-group vs. out-group) of an otherwise identical Airbnb apartment, and examine the mediating roles of self-object congruence and trust, and the moderating roles of perceived out-group threat and political orientation (see Figure 1). As outcome measures we include general evaluations of the apartment, willingness to pay, intentions to rent it, and an actual choice between the given apartment versus a standard hotel room. Crucially, we also test the effectiveness of two distinct approaches to reduce discrimination. We add an in-group signal to the profiles of out-group hosts and vary the peer ratings from previous guests to provide an

explicit trust cue. To ensure generalizability and robustness of our findings, two of our experiments use nationally representative samples of actual consumers, and our final study is a high-powered and pre-registered experiment using incentivized choice as the outcome measure.



*Figure 1:* Theoretical relationships tested in the current experiments. Panel A shows the predicted main effect of experimentally manipulating host group membership, as well as mediation effects through host trustworthiness and self-object congruence, and moderated mediation effects of political orientation and out-group threat perceptions. Panel B shows the predicted moderation effects by political orientation and out-group threat, and the predicted mitigating effects of two interventions (in-group signal and an explicit trust cue).

## **Experiment 1: Investigating discrimination and effects of an in-group signal**

Experiment 1 had three main goals: First, we sought to test whether people discriminate against an out-group Airbnb host when evaluating an Airbnb apartment. Second, we aimed to test the moderating and mediating factors proposed in our theoretical framework. Third, we wished to test whether discrimination would be reduced by adding in-group signaling information to the out-group host's profile.

### **Method**

**Sample.** For Experiment 1, we recruited a sample of students from a Norwegian higher education institution, through invitation by email. Sample size was based on achieving at least 80% statistical power for a one-way F test to detect a medium sized effect (Cohen's  $d = 0.5$ ), which indicated that we needed at least 159 participants. However, we put no upper restriction on participants, since a larger sample would only be desirable. We collected data over a one-week period, after which we had exceeded our sample size goal. 225 participants entered our experiment, but incomplete responses ( $n = 11$ ) were excluded from analyses (leaving a total sample of 214 participants who completed the whole experiment and were included in our analyses). The final sample consisted of 56.1% females, and the mean age was 23.7 ( $SD = 2.47$ ).

**Manipulations.** Participants were assigned to one of three different host descriptions: (1) in-group, (2) out-group or (3) out-group with in-group symbol. We manipulated the group membership of the fictitious Airbnb hosts through stated nationality, name, and picture. We chose to use a Norwegian host as the in-group host, and a non-Western immigrant host as the out-group host. The choice of non-Western immigrants as the target of discrimination reflects an attempt to operationalize racial bias in a European context. Previous investigations of ethnic discrimination in Nordic countries have often used non-Western immigrants, especially

immigrants from Muslim-majority countries (Carlsson & Eriksson, 2014; Midtbøen, 2016). In Experiment 1, the out-group host's nationality was Iraqi. The Iraqi nationality was selected because Iraqi immigrants are one of the largest groups of non-Western immigrants to Norway (Statistics Norway, 2017a), and research shows that there are negative stereotypes against this group in Norway (Bye, Herrebrøden, Hjetland, Røyset, & Westby, 2014).

The name selected for the Norwegian host was Martin (one of the top 15 most common male names in Norway, and the most popular name for 25-years old men in Norway, Statistics Norway, 2017b). The name used for the Arab host was Ahmed, the second most common Arabic male name in Norway<sup>1</sup> (Statistics Norway, 2017b). The profile pictures of the hosts were drawn from a pool of male face photos which are composites a large number of photos of individuals from different countries (The Postnational Monitor, 2011a; 2011b). The photo used for the Norwegian host was the photo for averages of European American males, since no photo has been constructed for Norwegian males. The photo used for the Iraqi host was the average photo of Iraqi males.

For the out-group host w/in-group signal, the name and photo were identical to the out-group host, but nationality was described as Norwegian-Iraqi. We also added information meant to signal affiliation and similarity with the Norwegian student sample in Experiment 1, through including information about common personal interests among students (such as an interest for travel, and outdoor sports), and a statement highlighting the host's bonds to Norway (see experimental stimuli in the supplemental materials for further details).

For all conditions, we made it clear through the apartment information that the host would not be present during the time of rental, in order to avoid potential confounds stemming from participants' expectations about in-person interaction with the host. However,

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<sup>1</sup> The most common Arabic name in Norway is Mohammed, which we did not select because we wanted to avoid obvious connotations to Muslim religion.

previous research has found that discrimination is similarly common for shared as for non-shared apartments (Edelman et al., 2017).

**Measures.** The main dependent variables were 1) attitudes towards the Airbnb apartment, 2) intention to rent the Airbnb apartment, and 3) willingness to pay to rent the Airbnb apartment. *Attitudes* were measured with a scale composed of five items. The items were designed to tap both participants' general liking for the apartment ("How much did you like the apartment?"), their impression of attractiveness to other consumers ("How attractive do you think this apartment would be to the average student?"), and their impression of how the apartment scored on the attributes of cleanliness, standard and niceness ("Based on your general impression, how do you believe this apartment has been rated by previous guests?"). We focused the questions on attitudes towards the apartment to minimize the influence of the host and make these items conceptually similar to a decision to rent the apartment. By posing questions about participants' beliefs about attractiveness to others and perceived previous ratings by others, we aimed to reduce social desirability in responding. *Intention to rent* the Airbnb apartment was measured with a single item: "If you were to make a decision here and now, how likely is it that you would choose this apartment?" *Willingness to pay* for the Airbnb apartment was measured with a single item: "This apartment is in the price range of 500-1500 NOK [approximately \$60-180 USD] per night. How much would you be willing to pay for this apartment per night?"

We measured three items pertaining to how participants experienced the Airbnb host. One item tapped general trustworthiness perceptions: "I think [host] can be trusted." One item tapped perceived benevolence: "I think [host] is someone who first and foremost cares about what is best for his guests." The third item tapped the perceived overlap between the self and the host: "[Host] and I probably have similar values and principles." We initially conceptualized the first two items as our measure of *host trustworthiness*, and the third item



as a separate construct, labeled *self-host congruence*. However, as a part of the analysis process, we realized that there were signs of collinearity problems for these two measures. We therefore eventually chose to include the self-host congruence item as a part of the host trustworthiness measure, both because of its strong correlations with the other trust items, and because theoretically, it reflects the integrity facet of trustworthiness (Mayer, Davis, & Schoorman, 1995). See the supplemental materials for further details. In our supplemental analyses in the supplemental materials, we also present findings using both versions of the measures for full transparency. The results obtained with the different versions of the measure are almost identical, and the few discrepancies that exist do not change our main conclusions.

*Self-object congruence* was measured with one item: “I immediately felt that this apartment is ‘typically me’.” This measure was partly based on the measure of self-brand connection developed by Escalas & Bettman (2005), and was intended to capture participant’s emotional experience of overlap between their self-image and the Airbnb apartment.

*Political orientation* was measured on an 11-point scale ranging from 1 (*Left*) to 11 (*Right*). *Perceived out-group threat* was measured with two items, and referred to Muslims as the out-group: “To what extent do you think Muslims pose a threat to Norwegians?” and “To what extent do you think Muslims pose a threat to Western culture?”. The reason we chose to measure threat with reference to Muslims, and not Iraqi people, was that we expected beliefs about Muslims to be central in predicting discrimination against people from Muslim-majority countries such as Iraq. Police statistics in Norway indicate that racist and anti-Muslim speech and behavior often coincide, and that it in many cases is difficult to distinguish between these two motivations for reported hate crimes (Norwegian Police, 2019). Research also shows that stereotypes about Iraqi and other Muslim-majority country immigrants resemble stereotypes about Muslims in general (Bye et al., 2014).

All responses were recorded using 11-point Likert scales, except for willingness to pay, where responses were given as numbers in an open-ended text box. In the main text, we only present findings from variables that were applied in all three studies. For overview of all variables measured, see the measurement chapter in the supplemental materials.

**Procedure.** Participants who confirmed their voluntary participation in the experiment were randomly assigned to one of the three host conditions (in-group, out-group or out-group w/in-group signal). They were then presented with the following scenario:

Imagine that you are traveling to Copenhagen for a week-end, and are interested in renting an Airbnb apartment in the price range of 500-1500 NOK [approximately \$60-180] per night. On the next page you will be presented with an apartment in the central area of Copenhagen within this price range.

Participants were then shown a page displaying information and a photo of the Airbnb apartment (identical across all host conditions). On this page, host name and photo was also visible, and this was manipulated across conditions. After viewing the first page for at least 10 seconds, participants would click to continue to the page containing information about the host. This page displayed the name and photo of the assigned host, as well as a short text description of the host. In this text, we varied nationality of the host (“I am a [Norwegian/Iraqi/Norwegian-Iraqi] student living in Copenhagen.”). For the out-group host w/in-group signal, the text contained additional information, as described in the manipulation section. Participants had to spend at least 10 seconds on this page before they could continue to the post-manipulation survey. In the post-manipulation survey, we first measured dependent variables, then mediating variables, then moderating variables and demographic/background variables. See the supplemental materials for all the stimuli used in the experiments.

**Analyses.** For mediation, moderation and moderated mediation analyses we used the PROCESS Macro (Hayes, 2018). Mediation was estimated using model 4, moderation was estimated using model 1, and moderated mediation was estimated using model 7.

## Results

We first examined whether host group affected attitudes, intentions to rent and willingness to pay by running a one-way ANOVA with the three host group conditions as independent variables. Contrary to our predictions, we found no significant main effect of host group on any of the dependent variables (attitudes:  $F(2, 211) = 1.35, p = .260, \text{partial } \eta^2 = 0.01$ , intentions:  $F(2, 211) = 1.02, p = .363, \text{partial } \eta^2 = 0.01$ , willingness to pay:  $F(2, 211) = 1.36, p = .260, \text{partial } \eta^2 = 0.01$ ). As Table 1 shows, mean scores on attitudes, intentions to rent and willingness to pay were lower for the out-group host's apartment than for the other two conditions, but none of the planned contrasts testing the mean differences between conditions were statistically significant. Neither age nor gender significantly interacted with the host group manipulation (see supplemental materials).

Table 1

*Mean scores on attitudes, willingness to pay and intentions to rent in Experiment 1*

| Experimental group        | Attitudes |      | Willingness to pay (\$) |       | Intentions |      |
|---------------------------|-----------|------|-------------------------|-------|------------|------|
|                           | M         | SD   | M                       | SD    | M          | SD   |
| Ingroup                   | 7.12      | 1.46 | 80.85                   | 25.20 | 6.17       | 2.19 |
| Outgroup                  | 6.81      | 1.49 | 74.37                   | 23.93 | 5.73       | 2.08 |
| Outgroup w/ingroup signal | 7.19      | 1.44 | 76.45                   | 22.90 | 6.24       | 2.58 |
| Total                     | 7.04      | 1.47 | 77.24                   | 24.07 | 6.05       | 2.29 |

Note. M = Mean. SD = Standard deviation. None of means are significantly different in planned contrast tests.

When estimating mediation, moderation and moderated mediation effects, we conducted separate analyses contrasting two and two conditions rather than analyzing all three experimental conditions together. The main reason for this was to ease the presentation of results, since the alternative would be to use dummy coding in order to represent the three

different conditions in the same analysis. Importantly, the results and conclusions for mediation, moderation and moderated mediation analyses remain the same independent of which approach is chosen. We first present results focusing on the in-group vs. out-group contrast, before we present results involving the out-group w/in-group signal condition.

As the previous analyses had showed that there was no main effect of an out-group vs. an in-group host on the dependent variables, it was not surprising that there was not any significant indirect effects through the mediators either (see Table 2).

Table 2  
*Mediation effects of in-group vs. out-group host in Experiment 1.*

| Mediator               | Attitudes |               | Intentions |               | Willingness to pay |               |
|------------------------|-----------|---------------|------------|---------------|--------------------|---------------|
|                        | b         | 95% CI        | b          | 95% CI        | b                  | 95% CI        |
| Self-object congruence | -0.09     | [-0.36, 0.18] | -0.11      | [-0.44, 0.23] | -0.72              | [-3.18, 1.48] |
| Host trustworthiness   | 0.06      | [-0.10, 0.24] | 0.07       | [-0.13, 0.31] | 0.86               | [-1.57, 3.77] |

Note. b = Coefficient for the indirect effect. CI = confidence interval. Results are from bootstrapped mediation analyses with 10 000 resamples. In-group host was coded as 1, out-group host as 2 in the analyses. None of the indirect effects were significant, as indicated by confidence intervals including zero.

However, analyses involving the moderating variables (political orientation and out-group threat) present an interesting picture. In order to test for potentially moderating effects of political orientation and out-group threat perceptions, we used regression analyses where we estimated the interaction effects of political orientation by host group, and out-group threat by host group. These moderation analyses revealed that the hypothesized discrimination of the out-group host was conditional on participants' political orientation and out-group threat perceptions. Specifically, out-group threat beliefs significantly moderated the effect of host in-group vs. out-group membership on participants' attitudes ( $b = -0.24$ , 95% CI [-0.45, -0.04],  $p = .023$ ), intentions to rent ( $b = -0.38$ , 95% CI [-0.68, -0.07],  $p = .015$ ) and willingness to pay<sup>2</sup> ( $b = -5.02$ , 95% CI [-8.51, -1.54],  $p = .005$ ) for the Airbnb apartment. To probe these interactions, we conducted floodlight analyses (Spiller, Fitzsimons, Lynch, & McClelland,

<sup>2</sup> All results for willingness to pay are reported in U.S. dollars.

2013), by estimating the simple effects of the independent variable (in-group vs. out-group) at all levels of the moderator. The floodlight analysis reveals a *region of significance*, which refers to the range of values of the moderator for which the simple effects of the independent variable are significant. This analysis revealed that participants with higher levels of threat responded significantly more negatively to the Airbnb apartment with an out-group (vs. in-group) host, whereas there was no significant in-group-out-group difference for participants with low threat levels. The effect of the out-group host (vs. the in-group host) was significant and negative for threat levels above 4.80 for attitudes (23.9% of the sample), above 4.55 for intentions (23.9% of the sample), and above 3.84 for willingness to pay (42.6% of the sample). Figure 2 displays this finding visually for attitudes as the dependent variable.

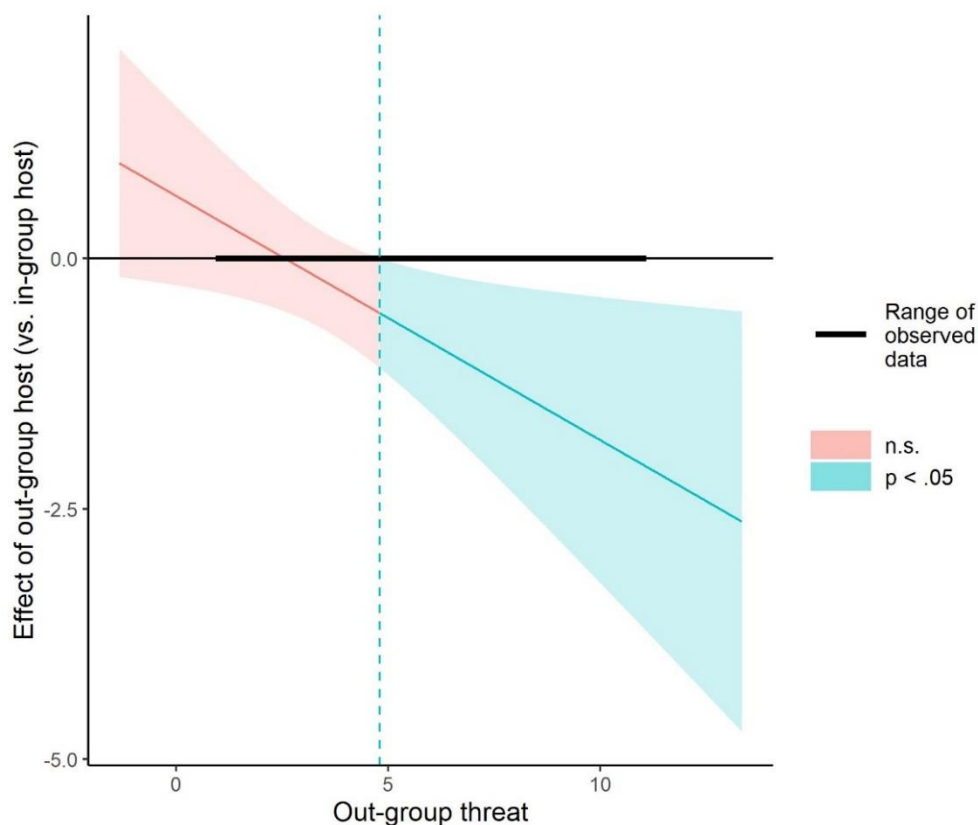


Figure 2: Effect (slope) of out-group (vs. in-group) host on attitudes towards the Airbnb apartment, showing that out-group discrimination was stronger for participants with higher levels of out-group threat. The blue area indicates the region of significance for effect of the out-group (vs. in-group) host on attitudes. Participants who were near the midpoint or higher on the threat scale displayed significant out-group discrimination. The stapled line indicates the Johnson-Neyman point, which is the point where a region of significance begins.

Out-group threat also significantly moderated the mediational effect through host trustworthiness on attitudes (95% CI [-0.19, -0.03]), intentions (95% CI [-0.25, -0.03]), and willingness to pay (95% CI [-3.52, -0.30]). Among low-threat participants, the out-group host was rated as significantly *more* trustworthy than the in-group host (*reverse discrimination*), whereas among high-threat participants, the out-group host was rated as *less* trustworthy than the in-group host (*discrimination*). This was further reflected in different mediational effects for low-threat vs. high-threat participants (see the supplemental materials for details).

Political orientation did not moderate the effect of an in-group vs. out-group host on any of the dependent variables (attitudes:  $b = -0.21$ , 95% CI [-0.45, 0.03],  $p = .091$ , intentions:  $b = -0.25$ , 95% CI [-0.60, 0.10],  $p = .167$ , willingness to pay:  $b = -1.63$ , 95% CI [-5.71, 2.44],  $p = .430$ ). However, as for out-group threat, political orientation significantly moderated the mediational effects through host trustworthiness on all the dependent variables (attitudes: 95% CI [-0.23, -0.04], intentions: 95% CI [-0.31, -0.05], willingness to pay: 95% CI [-4.14, -0.42]). Conservative participants rated the out-group host as less trustworthy, whereas liberal participants rated the out-group host as more trustworthy, which again resulted in different mediation effects for conservative vs. liberal participants (see the supplemental materials for details).

To examine the effects of the out-group host w/in-group signal, different analyses were conducted. First, we examined whether the in-group signal led to any mediational effects through host trustworthiness or self-object congruence. Results showed that participants rated the out-group host w/in-group signal as more trustworthy ( $M = 7.54$ ,  $SD = 1.71$ ) than both the out-group host ( $M = 6.77$ ,  $SD = 1.43$ ,  $t(211) = 2.79$ ,  $p = .006$ ) and the in-group host ( $M = 6.58$ ,  $SD = 1.78$ ,  $t(211) = 3.47$ ,  $p = .001$ ), and that there were positive indirect effects of the in-group signaling out-group host through host trustworthiness on all the dependent variables (see Table 3). There were however no significant effects of the out-group

host w/in-group signal on or through self-object congruence. In sum, results show that the in-group signal served to increase participants' perceived trustworthiness of the host (compared to both the in-group and the out-group host), and that this positively impacted attitudes towards the apartment and intentions and willingness to pay to rent it.

Table 3  
*Mediation effects of the out-group host w/in-group signal in Experiment 1.*

| Mediator  | Attitudes   |                     | Intentions  |                     | Willingness to pay |                     |
|---|-------------|---------------------|-------------|---------------------|--------------------|---------------------|
|   | b           | 95% CI              | b           | 95% CI              | b                  | 95% CI              |
| Out-group host w/in-group signal vs. in-group host  |             |                     |             |                     |                    |                     |
| Self-object congruence                              | 0.01        | [-0.23, 0.26]       | 0.01        | [-0.44, 0.51]       | 0.04               | [-1.55, 2.23]       |
| Host trustworthiness                                | <b>0.26</b> | <b>[0.09, 0.48]</b> | <b>0.33</b> | <b>[0.10, 0.61]</b> | <b>4.29</b>        | <b>[1.31, 8.07]</b> |
| Out-group host w/in-group signal vs. out-group host |             |                     |             |                     |                    |                     |
| Self-object congruence                              | 0.10        | [-0.16, 0.40]       | 0.14        | [-0.23, 0.57]       | 0.80               | [-1.16, 3.82]       |
| Host trustworthiness                                | <b>0.19</b> | <b>[0.05, 0.36]</b> | <b>0.19</b> | <b>[0.01, 0.41]</b> | <b>2.54</b>        | <b>[0.24, 5.26]</b> |

Note. b = Coefficient for the indirect effect. CI = confidence interval. Results are from bootstrapped mediation analyses with 10 000 resamples. The out-group host w/in-group signal was coded as 2 in the analyses, and the comparison group (either in-group host or out-group host) was coded as 1. Significant effects as indicated by 95% bootstrapped confidence intervals not including zero are marked in bold.

Further, we examined how the moderators interacted with the in-group signal. Based on the finding that people with opposing political orientations and out-group threat beliefs seemed to respond differently to the out-group host, we were curious about whether the effects of the in-group signal would also be moderated by the same factors. Results were to a large extent similar for the out-group host w/in-group signal as for the out-group host. Out-group threat perceptions significantly moderated the effect of an out-group host w/in-group signal (vs. an in-group host) on attitudes ( $b = -0.31$ , 95% CI [-0.52, -0.11],  $p = .002$ ), intentions ( $b = -0.62$ , 95% CI [-0.95, -0.29],  $p < .001$ ) and willingness to pay ( $b = -5.44$ , 95% CI [-8.83, -2.06],  $p = .002$ ). Floodlight analyses revealed that for attitudes and intentions, there were two regions of significance: for threat scores below 1.57 and 1.89, there was a significant positive effect of the out-group host w/in-group signal on respectively attitudes

and intentions. For threat scores above 5.39 and 4.73, the effect on attitudes and intentions was estimated as significant and negative. The region of significance for willingness to pay was for threat scores above 3.89 (30.8% of the sample). This means that responses to the out-group host w/in-group signal (vs. the in-group host) remained significantly negative for participants with high levels of out-group threat (see Figure 3 for an illustration). However, participants with low levels of perceived out-group threat displayed *more positive* attitudes and intentions to rent the apartment presented with the in-group signaling out-group host to the apartment presented with an in-group host. Thus, for the out-group host w/in-group signal, discrimination by high-threat participants remained, but reverse discrimination by low-threat participants also occurred.

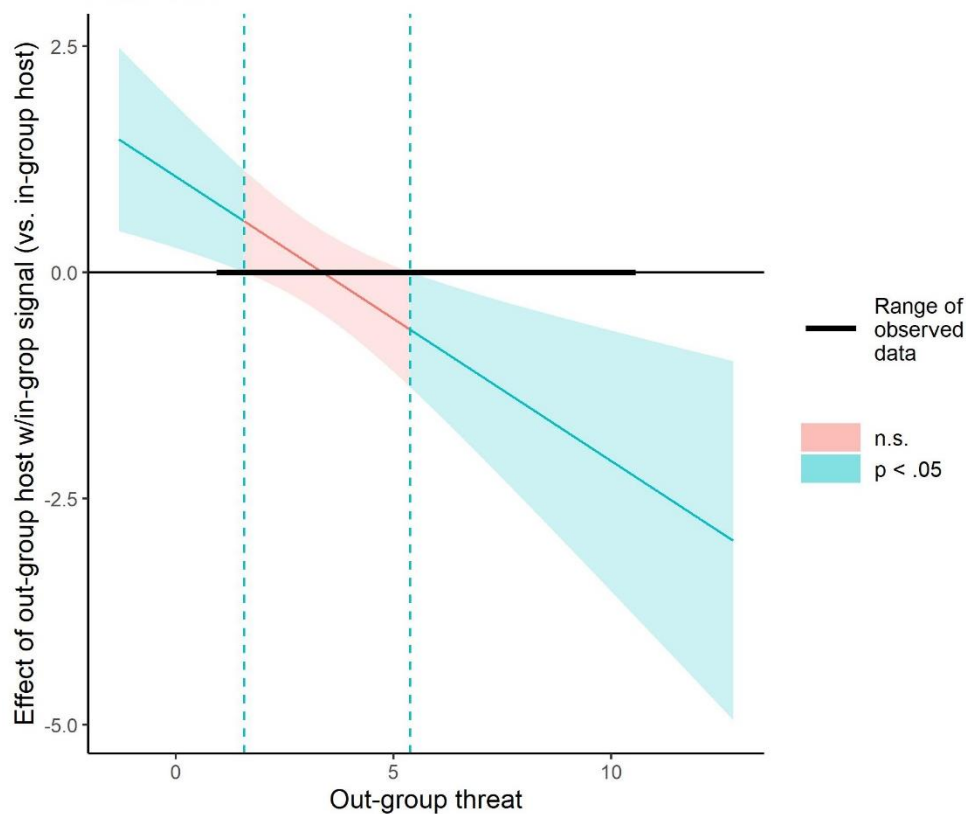


Figure 3: The conditional effect of the out-group host w/in-group signal (vs. in-group host) on attitudes towards the Airbnb apartment, showing that the out-group w/in-group signal had a negative effect when conditioning on higher threat levels, and a positive effect when conditioning on very low threat levels. The blue area indicates the region of significance for effect of the out-group (vs. in-group) host on attitudes. The stapled lines indicate the Johnson-Neyman points, which indicate the levels of the moderator where the regions of significance begin.



When comparing the out-group host with the in-group signaling out-group host, neither political orientation nor out-group threat moderated the effect of host group on the dependent variables (all  $p$ s > .05). This means that the general finding of no mean differences on the dependent variables between the out-group host and the out-group host w/in-group signal, was robust across political orientation and out-group threat perceptions.

Moderated mediation effects were also similar for the out-group host w/in-group signal and for the out-group host (see the supplemental materials for details). Liberal and low-threat participants rated the out-group host w/in-group signal as more trustworthy than the in-group host, and they rated the out-group host w/in-group signal's apartment as more self-congruent than the in-group host's apartment. For conservative and high-threat participants, these ratings were either neutral or more negative for the out-group host w/in-group signal. Thus, the in-group signal increased trustworthiness, but it did not eliminate the differences related to political orientation and out-group threat.

When comparing the out-group host w/in-group signal with the out-group host, out-group threat moderated the indirect effects through both host trustworthiness and self-object congruence. The in-group signal was more effective in increasing trustworthiness and self-object congruence among low-threat participants than among high-threat participants, resulting in the indirect effects through these variables being moderated (see supplemental materials).

Experiment 1 revealed no main effect of host race on attitudes or choice, which contradicted the previous field studies and correlational data. We did nonetheless observe discrimination against the out-group host among certain subgroups of participants, but also reverse discrimination among other subgroups. These opposing effects can contribute to explaining the lack of a main effect. Further, it seemed that adding in-group signaling information to the out-group host's profile had positive effects in terms of increasing host

trustworthiness, but that these effects did not hinder discrimination among high-threat participants.

### **Experiment 2: Conceptual replication in a large representative sample**

Although Experiment 1 revealed interesting results, the experiment relied on a non-representative student sample, which poses some limits on the generalizability of the findings (Henrich, Heine, & Norenzayan, 2010). Students tend to express less prejudice than the general population (Henry, 2008), which might have led to an underestimation of racial discrimination in Experiment 1. In Experiment 2, we therefore ran a large-scale conceptual replication of Experiment 1 on a nationally representative sample of Norwegian consumers ( $N = 584$ ) recruited through an online market research panel. The much larger, representative sample in Experiment 2 allowed us to determine which findings were robust as well as ensure they were generalizable to the national population.

### **Method**

**Sample.** For Experiment 2, we recruited participants who were members of a consumer panel run by a Norwegian market research agency. We purposely obtained a nationally representative sample in terms of gender, age and geographical location. We estimated our required sample size based on getting 80% statistical power for a one-way F test to detect a small effect of Cohen's  $d = 0.25$ . The expected effect size of  $d = 0.25$  was based on the effects observed in Experiment 1 ( $d = 0.21-0.23$ ), but with a slight upward adjustment due to changes in the sample demographics and the experimental design. This power analysis led us to aim for a sample of at least 576 participants. Data was collected from 601 participants through the market research agency (only including participants who responded correctly to an initial attention check, and completed the full experiment, as in Experiment 1). Unfortunately, because of a coding error, some participants were not forced to view the manipulation pages (apartment info and host info pages) for the full length of 10

seconds. 17 participants (9 from the in-group condition, 3 from the out-group condition and 5 from the in-group-signaling out-group conditions) spent less than 7 seconds on either of these pages, and were therefore excluded from analyses<sup>3</sup>.

The final sample consisted of 584 participants. The mean age was 50.13 ( $SD = 16.41$ ), and 52.1% were female. Our sample closely matched the general Norwegian population in terms of age distribution and geographical location (see the supplemental materials for details).

**Manipulations.** As in Experiment 1, we randomly assigned participants to one of three different host descriptions: (1) in-group, (2) out-group or (3) out-group with in-group symbol. The in-group host was described as Norwegian, and we used the same name (Martin) as in Experiment 1. The picture for Martin's profile was a Stockphoto image of a Scandinavian man.

Both the out-group host and the out-group host w/in-group signal were described as Norwegian-Somali (named Abdi, photo displaying a Somali man). The reason we switched from an Iraqi immigrant to Somali immigrant as the out-group host was in order to increase the potency of our manipulation, based on knowledge that in Norway, attitudes towards Somali immigrants are somewhat more negative than attitudes towards Iraqi immigrants (Bye et al., 2014). Further, we chose to use the mixed nationality in both these conditions in order to avoid large differences in beliefs about socio-economic status of the hosts<sup>4</sup>.

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<sup>3</sup> We judged 7 seconds as the minimum time that participants would need in order to read through the information on the Airbnb ad, and therefore the minimum time necessary to be able to count participants as sufficiently exposed to the experimental stimuli. Follow-up analyses including the 17 participants who fell below this time limit produce results that are almost identical to the results when excluding these participants. Two divergent findings exist, and are reported in the supplemental materials.

<sup>4</sup> By using a mixed-nationality target as an out-group host in Experiment 2 and 3, we made our test of discrimination in these experiments more conservative, as a clear national out-group would be more likely to evoke discrimination.

In Experiment 2, we also varied the in-group signal in a more controlled manner compared to in Experiment 1. In Experiment 1, the in-group signal consisted of both a mixed nationality, information about personal preferences and hobbies, as well as a stated attachment to the in-group country. This made the in-group signal condition inequivalent to the other two conditions, because it provided not just different information, but more information. In Experiment 2 we only varied whether the out-group host expressed attachment to the out-group (Somalis) or to the in-group (Norwegians) through the following statement in the text description of the host: “I am renting out my apartment as I frequently travel to [Somalia/Norway] to see my friends and family”.

**Measures.** All the dependent, mediating and moderating variables were measured in the same way as in Experiment 1, except for perceived out-group threat. In Experiment 1, we measured out-group threat with respect to Muslims. This was based on an assumption that participants would apply stereotypes towards Muslims to their judgements of the out-group host. However, we could not be sure that participants actually regarded the out-group host as Muslim. In Experiment 2, we decided to include items that tapped both perceived threat of Muslims, and perceived threat of Somalis in our threat measure, in order to avoid this potential limitation. We used the same items as in Experiment 1 for both these groups. See the measurement chapter in the supplemental materials for an overview of all variables measured.

**Procedure.** The procedure was identical to the one used in Experiment 1, with one addition. In order to ensure that participants attended sufficiently to the experimental instructions, we included an attention check question at the very start of the experiment, and screened out participants who failed this check. The attention check consisted of a question asking “Which of the following sports interest you the most?”, but where instructions

indicated that participants should select a specific option in order to confirm they had read the instructions.

## Results

Table 4 displays the mean scores on attitudes towards the apartment, willingness to pay, and intentions to rent, for the three host group conditions. Results from one-way analyses of variance comparing participants presented with the three different hosts revealed significant differences across the groups for attitudes towards the apartment ( $F(2, 581) = 7.42$ ,  $p = .001$ ,  $partial \eta^2 = 0.03$ ) and intentions to rent it ( $F(2, 581) = 6.13$ ,  $p = .002$ ,  $partial \eta^2 = 0.02$ ). Planned comparisons indicated that participants reported significantly more positive attitudes ( $t(581) = 3.12$ ,  $p = .002$ ,  $d = 0.31$ , 95% CI [0.11, 0.51]) and intentions ( $t(581) = 3.03$ ,  $p = .003$ ,  $d = 0.30$ , 95% CI [0.10, 0.50]) for the Airbnb apartment presented with an in-group (vs. out-group) host. For willingness to pay, the one-way ANOVA was not significant ( $F(2, 581) = 1.61$ ,  $partial \eta^2 = 0.01$ ,  $p = .200$ ), but planned contrast analysis revealed a significant in-group vs. out-group difference ( $t(376.07) = 2.32$ ,  $p = .021^5$ ,  $d = 0.24$ , 95% CI [0.04, 0.44]).

Table 4

*Mean scores on attitudes, willingness to pay and intentions to rent in Experiment 2*

| Experimental group        | Attitudes         |      | Willingness to pay (\$) |       | Intentions        |      |
|---------------------------|-------------------|------|-------------------------|-------|-------------------|------|
|                           | M                 | SD   | M                       | SD    | M                 | SD   |
| Ingroup                   | 6.96 <sub>a</sub> | 1.69 | 78.71 <sub>a</sub>      | 30.27 | 5.63 <sub>a</sub> | 2.72 |
| Outgroup                  | 6.41 <sub>b</sub> | 1.82 | 72.02 <sub>b</sub>      | 26.51 | 4.81 <sub>b</sub> | 2.69 |
| Outgroup w/ingroup signal | 6.34 <sub>b</sub> | 1.75 | 78.52 <sub>ab</sub>     | 60.46 | 4.81 <sub>b</sub> | 2.60 |
| Total                     | 6.57              | 1.77 | 76.39                   | 42.04 | 5.08              | 2.69 |

Note. M = Mean. SD = Standard deviation. Means that do not share any of the same subscripts are significantly different ( $p < .05$ ) according to planned contrast tests.

For attitudes and intentions to rent, there were no moderating effects of gender or age on discrimination, but for willingness to pay there was a significant interaction between the in-group-out-group manipulation and age. Floodlight analyses showed that older participants

<sup>5</sup> For willingness to pay, there was significant differences in variances across groups (Levene = 5.56,  $p = .004$ ), and therefore, equal variance of the groups was not assumed in this planned comparison test.

(above 46.9 years old, 58.7% of the sample) reported significantly lower willingness to pay for the out-group host's apartment, whereas younger participants (below 46.9 years old) did not differ in their willingness to pay for the out-group vs. in-group host's apartment.

Together, these results from a large, nationally representative sample are consistent with prior fieldwork and correlational studies finding evidence of racial discrimination in peer-to-peer interactions.

Self-object congruence significantly mediated the effect of the out-group (vs. in-group) host on attitudes, intentions, and willingness to pay, but there was no significant mediation through host trustworthiness (see Table 5). This means that people reported lower levels of self-object congruence with the out-group host's Airbnb apartment, and this partially explained participants' reduced attitudes, intentions and willingness to pay for this apartment, whereas for host trustworthiness, there was no significant mediation pattern for the whole sample.

Table 5  
*Mediation effects of in-group vs. out-group host in Experiment 2.*

| Mediator               | Attitudes    |                       | Intentions   |                       | Willingness to pay |                       |
|------------------------|--------------|-----------------------|--------------|-----------------------|--------------------|-----------------------|
|                        | b            | 95% CI                | b            | 95% CI                | b                  | 95% CI                |
| Self-object congruence | <b>-0.19</b> | <b>[-0.36, -0.03]</b> | <b>-0.36</b> | <b>[-0.66, -0.07]</b> | <b>-2.42</b>       | <b>[-4.71, -0.38]</b> |
| Host trustworthiness   | -0.01        | [-0.15, 0.12]         | -0.01        | [-0.13, 0.11]         | -0.12              | [-1.58, 1.37]         |

Note. b = Coefficient for the indirect effect. CI = confidence interval. Results are from bootstrapped mediation analyses with 10 000 resamples. In-group host was coded as 1, out-group host as 2 in the analyses. Significant effects as indicated by 95% bootstrapped confidence intervals not including zero are marked in bold.

Political orientation moderated the negative effect of an out-group (vs. in-group) host on the dependent variables (attitudes:  $b = -0.14$ , 95% CI [-0.29, -0.001],  $p = .048$ , intentions:  $b = -0.29$ , 95% CI [-0.51, -0.07],  $p = .009$ , willingness to pay:  $b = -3.27$ , 95% CI [-5.56, -0.98],  $p = .005$ ). Floodlight analyses indicated that the effect of the out-group (vs. in-group) host was significantly negative for moderate and conservative participants, and not significant for liberal participants (see Figure 4 for illustration and supplemental materials for details). The regions of significance began from political orientation scores above 4.48 for attitudes (68.8%

of the sample), above 4.92 for intentions (68.8% of the sample), and above 5.35 for willingness to pay (58.8% of the sample).

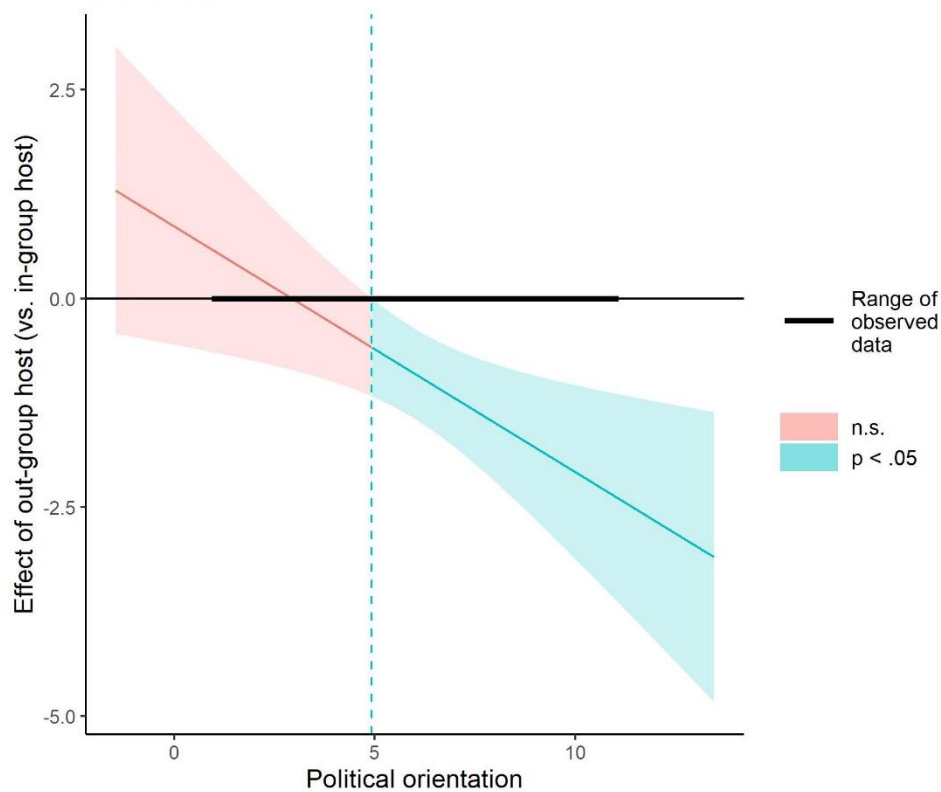


Figure 4: The conditional effect of an out-group (vs. in-group) host on intentions to rent the Airbnb apartment (Experiment 2), showing that the region of significance for the negative effect of the out-group host on intentions is for scores from 4.92 and above. Political orientation ranges from 1 (Left) to 11 (Right).

The four items used to measure out-group threat were highly correlated, and displayed almost identical relationships with the other variables in the dataset, and we therefore combined these items into a single out-group threat scale (Cronbach's  $\alpha = .97$ ). Out-group threat beliefs did not significantly moderate the effect of host group membership on the dependent variables (attitudes:  $b = -0.07$ , 95% CI [-0.18, 0.05],  $p = .238$ , intentions:  $b = -0.11$ , 95% CI [-0.29, 0.07],  $p = .230$ , willingness to pay:  $b = -1.38$ , 95% CI [-3.24, 0.48],  $p = .146$ ).

The moderated mediation effects in Experiment 2 followed the same pattern as in Experiment 1 (see the supplemental materials for details). The indirect effects were more negative for high-threat and conservative participants, and more positive for low-threat and liberal participants. For instance, political orientation significantly moderated the mediational

effects through host trustworthiness on attitudes (95% CI [-.18, -.05]), intentions (95% CI [-.18, -.04]), and willingness to pay (95% CI [-2.05, -0.45]). Among conservative participants, the out-group host was rated as less trustworthy, which led to a negative indirect effect through trustworthiness on the dependent variables. Conversely, among liberal participants, the out-group host was rated as more trustworthy, which led to a positive indirect effect through trustworthiness (another reverse discrimination effect).

The in-group signal had mixed effects in terms of reducing discrimination in Experiment 2. Participants expressed less positive attitudes ( $t(581) = 3.53, p < .001, d = 0.36, [0.16, 0.56]$ ) and intentions ( $t(581) = 3.05, p = .002, d = 0.31, [0.11, 0.51]$ ) for the out-group host w/in-group signal's apartment than the in-group host's apartment. However, participants' willingness to pay for the Airbnb apartment of the in-group host and the out-group host w/in-group signal did not differ ( $t(288.63) = 0.04, p = .968, d = .004, [-0.20, 0.20]$ ). The presence of an extreme outlier (more than three standard deviations from the mean) in the in-group signaling outgroup condition prohibits a clear interpretation of this result, but even when recoding this extreme score to the highest score within 3 SDs from the mean, the mean difference remains insignificant ( $t(378.39) = 1.14, p = .253$ ).

In contrast to in Experiment 1, the out-group host w/in-group signal was not rated as more trustworthy than the other hosts in Experiment 2, and there were therefore no positive indirect effects through trustworthiness (see Table 6). As for the baseline out-group host, there was a negative indirect effect of the out-group host w/in-group signal (vs. the in-group host) through self-object congruence. In moderation analyses including the out-group host w/in-group signal vs. the in-group host, there was no significant reverse discrimination by liberal or low-threat participants of the out-group host w/in-group signal. However, out-group threat moderated responses to the out-group host w/in-group signal in terms of attitudes ( $b = -0.13, 95\% \text{ CI } [-0.24, -0.02], p = .018$ ) and intentions to rent ( $b = -0.20, 95\% \text{ CI } [-0.37, -0.03],$



$p = .022$ ). A floodlight analysis showed that high-threat participants displayed more negative attitudes and intentions than low-threat participants. For attitudes, the region of significance started at threat scores above 3.84 (65.4% of the sample) and for intentions, the region of significance started for scores above 4.35, (61.0% of the sample). Political orientation did not significantly moderate the effect of an out-group host w/in-group signal (vs. an in-group host) on the dependent variables (all  $ps$  for interaction effect  $> .05$ ). Thus, whereas for the baseline out-group host, it was political orientation that significantly moderated discrimination, for the out-group host w/in-group signal, it was out-group threat that emerged as a significant moderator.

Table 6  
*Mediation effects of the out-group host w/in-group signal in Experiment 2.*

| Mediator  | Attitudes    |                       | Intentions   |                       | Willingness to pay |                       |
|---|--------------|-----------------------|--------------|-----------------------|--------------------|-----------------------|
|   | b            | 95% CI                | b            | 95% CI                | b                  | 95% CI                |
| Out-group host w/in-group signal vs. in-group host  |              |                       |              |                       |                    |                       |
| Self-object congruence                              | <b>-0.21</b> | <b>[-0.35, -0.06]</b> | <b>-0.42</b> | <b>[-0.74, -0.12]</b> | <b>-3.65</b>       | <b>[-6.70, -1.03]</b> |
| Host trustworthiness                                | -0.01        | [-0.17, 0.15]         | -0.01        | [-0.14, 0.12]         | -0.06              | [-1.53, 1.26]         |
| Out-group host w/in-group signal vs. out-group host |              |                       |              |                       |                    |                       |
| Self-object congruence                              | 0.03         | [-0.12, 0.17]         | 0.06         | [-0.23, 0.36]         | 0.49               | [-1.95, 3.00]         |
| Host trustworthiness                                | -0.01        | [-0.17, 0.16]         | -0.004       | [-0.12, 0.12]         | -0.03              | [-1.12, 1.20]         |

Note. b = Coefficient for the indirect effect. CI = confidence interval. Results are from bootstrapped mediation analyses with 10 000 resamples. The out-group host w/in-group signal was coded as 2 in the analyses, and the comparison group (either in-group host or out-group host) was coded as 1. Significant effects as indicated by 95% bootstrapped confidence intervals not including zero are marked in bold.

As was the case in Experiment 1, none of the moderators significantly interacted with the effect of the out-group host w/in-group signal vs. the out-group host (all  $ps$  for interaction effects  $> .05$ ). That means that the overall pattern was that the two out-group hosts were not treated significantly differently, and that this pattern held across different political orientations and out-group threat levels.

In terms of moderated mediation effects, the findings were similar for the out-group host w/in-group signal as for the out-group host (see the supplemental materials). Taken together, the in-group signal did not have clear mitigating effects on discrimination in Experiment 2. Discrimination remained on two of three main dependent variables, and there was no positive indirect effect of the in-group signal through increased trustworthiness ratings. A possible explanation for these findings could be that the in-group signal in Experiment 2 was more subtle than in Experiment 1. In Experiment 1, the in-group signal consisted of both a mixed nationality and information about hobbies and interests. In Experiment 2, the in-group signal was operationalized as a statement about traveling frequently to Norway. We conclude that this signal of in-group affiliation was not sufficient to reduce discrimination.

### **Experiment 3: Trust cues counteract racial discrimination**

In Experiment 3, we sought to extend the findings from the first two experiments using a realistic and incentivized choice of Airbnb apartments, and to test whether a different type of intervention could reduce discrimination. Participants in Experiment 3 were presented with a real choice between staying at an Airbnb apartment and a hotel room, if they should be the lucky winner of a lottery among the study participants. The previous studies provided initial evidence of racial discrimination, but it was on attitudinal measures, which are only modestly related to actual behavior (see Kraus, 1995). With a real choice dependent variable, we sought to get a better estimate of economic behavior and expected to reduce the amount of socially desirable responding that might be driving the *reverse discrimination* by left-wing and low-threat participants in our prior experiments.

Experiment 1 and 2 showed that the mitigating effects of in-group-signaling information were mixed. In Experiment 3, we therefore tested whether more direct, reputation-based information would be effective, by varying the presence and level of star

ratings presented with the Airbnb apartment. [Experiment 3 was the largest of our studies, it included incentivized choice, and the analyses were pre-registered. As such, we have the highest confidence in the findings from this study.](#)

## Method

Before starting data collection for Experiment 3, we pre-registered all hypotheses, measures and analyses: <https://osf.io/n8k6b/>

**Sample.** In Experiment 3, we recruited a nationally representative sample of Norwegian consumers from the same online consumer panel as used in Experiment 2<sup>6</sup> (49.6% females,  $M_{age} = 49.23$ ,  $SD = 16.95$ ). We calculated that for the current experiment, with a  $2 \times 3$  design, for an effect size of  $d = 0.28^7$ , in order to achieve at least 90% power with an alpha of 0.05 for an  $F$ -test for both main effects and interactions, we would need 649 participants ( $\approx 108$  per cell). Since the experiment included a dichotomous dependent variable (choice) with an unknown effect size, we wanted to increase sample size as much as our budget allowed, and we therefore aimed to recruit data from a sample of 800 individuals ( $\approx 133$  per cell). As in the previous experiments, we only included participants who were not screened out in the initial attention check, and who completed the full post-manipulation survey (this exclusion criteria was also pre-registered).

The final sample consisted of 801 participants. The mean age was 49.23 ( $SD = 16.95$ ), and 49.6% were female. Our sample closely matched the general Norwegian population in terms of age distribution and geographical location (see the supplemental materials for details).

**Manipulations.** Experiment 3 had a  $2$  (host group: in-group vs. out-group)  $\times 3$  (apartment rating: no rating vs. mediocre rating vs. top rating) between-subjects design. Host

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<sup>6</sup> People who participated in Experiment 2 were not invited to participate in Experiment 3.

<sup>7</sup> The average effect size in the previous experiments.

group (in-group vs. out-group) was manipulated similarly as in the previous experiments. We again described the in-group host as a Norwegian male named Martin, and the out-group host as a Norwegian-Somali male named Abdi. In Experiment 3, we used better controlled visual stimuli for the host pictures. We selected pictures from the Chicago face database (Ma, Correll, & Wittenbrink, 2015, filename CDF-BM-029-024-N for the out-group host, and filename CDF-WM-203-023-N for the in-group host), which allowed us to match the pictures of the in-group and out-group hosts in terms of pre-rated attractiveness, threateningness, trustworthiness, and anger. Specifically, we made sure the differences in ratings for these traits was no more than 0.5 scale point on a 7-point Likert scale. This approach was chosen, as the rating data does not contain standard deviations for the individual pictures' ratings, which precluded statistical tests of differences. Rating data for the pictures are available at <https://chicagofaces.org/default/>.

Apartment ratings were manipulated by presenting a visual star rating and a corresponding number. For the mediocre rating condition, 3.5 stars were displayed, for the top rating condition, 5 stars were displayed, and for the no ratings condition, we displayed a statement saying “This property has not yet received any reviews.” We confirmed through pre-testing that the 3.5 star rating was perceived by most people to be a mediocre or only slightly good score<sup>8</sup>. The hotel room option (the other option participants could choose, apart from the Airbnb apartment) was presented with a mediocre rating (3.5 stars), which was

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<sup>8</sup> Two pre-tests confirmed this: One used a convenience sample recruited online (N = 83, Mean age = 29.6), and one used a more diverse sample recruited from a mall location (N = 24, Mean age = 48.3). 3.5 stars is actually an uncommonly low score on the real Airbnb platform, but most Norwegian consumers have no or very little experience with Airbnb, and we therefore calibrated our experiment for a sample who would not be familiar with the distribution of scores on the real platform.

constant across all conditions. The reason we presented the hotel room with a mediocre rating was to avoid floor effects in Airbnb choice. Since most consumers prefer hotels to Airbnb, we expected that a hotel with a top rating would attract a large majority of choices. Because participants were told they could win their choice of accommodation as part of a lottery prize, we also wanted to avoid giving the hotel an unrealistically low rating. Therefore, we kept the hotel room rating constant at a mediocre level.

**Measures.** The dependent, mediating and moderating variables were measured largely as in Experiment 1 and 2, with three exceptions:

In Experiment 3 we included an incentivized choice measure as a dependent variable. Specifically, we informed participants that by completing the experiment, they would enter a lottery where they could win a week-end trip to London for two people, including flights and accommodation. We then presented participants with one Airbnb apartment and one hotel room, and asked them to choose the accommodation option they would like to be included if they were to win the trip.

We modified one of the items in the host trustworthiness scale to the following: “I believe I have a lot in common with [host].”

For the perceived out-group threat measure, we decided to only refer to Somalis, since responses in Experiment 2 were very similar to questions about Muslims and questions about Somalis. We also included two questions designed to tap the dimension of realistic threat (e.g. “To what degree do you think Somali people pose a threat to the Norwegian economy?”), in addition to the symbolic threat items we had previously used (e.g. “To what extent do you think Somali people pose a threat to Western culture?”). Previous research on out-group threat has found that symbolic and realistic threat can have different effects on prejudice and

discrimination (Stephan et al., 2009). We therefore wanted to include both dimensions in our measure in order to make sure it reflected these two main subtypes of out-group threat.

**Procedure.** We applied the same attention check screening procedure as in Experiment 2. Participants were randomly assigned to one out of six experimental conditions, and were first presented with the incentivized choice measure (choosing accommodation for the trip they might win). After making a choice, they were asked to report their attitudes and willingness to pay as in the previous experiments. We then measured mediating and moderating variables. In the survey, we also asked some filler questions about attitudes and willingness to pay for the hotel room, in order to reduce demand effects. Upon completing the post-manipulation survey, we debriefed participants about the real prize of the lottery, which was an open travel voucher worth the same as trip presented in the experiment (weekend in London for two).

## Results

The critical dependent measure in this experiment was incentivized choice. Results revealed that participants chose the Airbnb apartment (vs. hotel) significantly more often when the Airbnb host was an in-group member (38.4%, 95 % CI [33.6, 43.1]) compared to when the host was an out-group member (28.9%, 95% CI [24.7, 33.5],  $\chi^2(1, 801) = 7.80, p = .005$ , proportion difference = 9.3%, 95% CI [2.8, 15.8]). That is, in relative terms, people were approximately 25% less likely to choose the Airbnb apartment when it was presented with an out-group host compared to an in-group host. There was a significant interaction between gender and the in-group vs. out-group manipulation on choosing the Airbnb apartment vs. the hotel room. Results from Chi-square tests of independence revealed that men did not choose the Airbnb presented with an out-group host less often than the Airbnb presented with an in-group host ( $\chi^2 = 0.055, p = .825$ ), whereas women did ( $\chi^2 = 12.804, p <$

.001). This indicated that the discrimination on this variable was driven by the women in the sample. There was no moderating effect of age on discrimination for the choice variable.

Participants also reported significantly more positive attitudes towards the Airbnb apartment with an in-group (vs. out-group) host ( $t(799) = 2.441, p = .015, d = 0.17, 95\% \text{ CI } [0.03, 0.31]$ ). Participants did not report higher willingness to pay for the apartment with the in-group (vs. out-group) host ( $t(799) = 0.169, p = .866, d = 0.01, 95\% \text{ CI } [-0.13, 0.15]$ ), but signs of a ceiling effect on this measure prevents strong interpretations of this null effect. For attitudes and willingness to pay, there was no moderating effect of neither age nor gender (see supplemental materials).

In terms of psychological mediators, self-object congruence significantly mediated the effect of host group membership on choice, attitudes, and willingness to pay, but there were no statistically significant indirect effects of host group membership through host trustworthiness (see Table 7). This replicates the mediational findings from Experiment 2 with a similar representative sample, and supports the notion that reduced self-object congruence with the Airbnb apartment can partly explain people's reduced interest in renting from an out-group host.

Table 7  
*Mediation effects of in-group vs. out-group host in Experiment 3.*

| Mediator               | Choice       |                       | Attitudes    |                       | Willingness to pay |                       |
|------------------------|--------------|-----------------------|--------------|-----------------------|--------------------|-----------------------|
|                        | b            | 95% CI                | b            | 95% CI                | b                  | 95% CI                |
| Self-object congruence | <b>-0.19</b> | <b>[-0.36, -0.03]</b> | <b>-0.09</b> | <b>[-0.17, -0.01]</b> | <b>-1.89</b>       | <b>[-3.85, -0.31]</b> |
| Host trustworthiness   | 0.01         | [-0.01, 0.04]         | 0.03         | [-0.04, 0.11]         | 0.40               | [-0.51, 1.53]         |

Note. b = Coefficient for the indirect effect. CI = confidence interval. Results are from bootstrapped mediation analyses with 10 000 resamples. In-group host was coded as 1, out-group host as 2 in the analyses. Significant effects as indicated by 95% bootstrapped confidence intervals not including zero are marked in bold.

The four items measuring out-group threat were highly correlated, and were combined into a single scale (Cronbach's  $\alpha = .90$ ). Perceived out-group threat moderated the effect of host group membership on attitudes ( $b = -0.10$ , 95% CI [-0.20, -0.01],  $p = .027$ ), and a floodlight analysis revealed that high-threat participants displayed significantly more negative attitudes towards the out-group (vs. in-group) host's apartment, whereas there was no host group effect for low-threat participants. The region of significance started for threat scores above 2.98 (58.2% of the sample). Out-group threat did not moderate the discrimination we observed on the Airbnb vs. hotel choice ( $b = -0.02$ , 95% CI [-0.16, 0.12],  $p = .759$ ), or willingness to pay for the Airbnb apartment ( $b = 0.16$ , 95% CI [-2.80, 3.11],  $p = .918$ ). Furthermore, political orientation did not significantly moderate any of the effects of host group membership on any of the dependent variables (choice:  $b = -0.03$ , CI [-0.14, 0.09],  $p = .672$ , attitudes:  $b = 0.07$ , CI [-0.01, 0.16],  $p = .080$ , willingness to pay:  $b = 0.13$ , CI [-2.52, 2.78],  $p = .922$ ). There were also fewer significant moderated mediation effects in Experiment 3 (see supplemental materials). This suggests that the effects of political ideology in the previous experiments might be primarily expressive rather than shaping actual choice behavior.

Finally, we tested whether experimentally varying trust cues had an effect on discrimination. To examine whether the rating conditions moderated the in-group-out-group difference on the binary choice variable, we conducted a logistic regression analysis of the interaction between host group membership (in-group vs. out-group), and two dummy variables representing the three rating conditions. Dummy variable number 1 represented the contrast between any ratings and no ratings (mediocre & top rating vs. no ratings), and dummy variable number 2 represented the contrast between the two types of ratings (mediocre vs. top). We chose this coding scheme in order to test both whether the mere presence of ratings would have an effect, and whether the level of the ratings would have an



effect. Dummy variable number 1 indicates whether ratings are present or not, and dummy variable number 2 indicates whether ratings were mediocre or high.

Table 8

*Coding scheme for rating condition in logistic regression analysis*

| Dummy variable | No ratings | 3.5 stars | 5 stars |
|----------------|------------|-----------|---------|
| Dummy 1        | 0.667      | -0.333    | -0.333  |
| Dummy 2        | 0          | 0.5       | -0.5    |

Note. The table displays the values used to identify the three rating conditions (no rating, 3.5 star rating and 5 star rating) in a logistic regression analysis, by using two dummy variables.

Results revealed a significant interaction between host group membership and the mediocre vs. top rating dummy ( $b = -0.79$ , 95% CI [-1.54, -0.04],  $p = .038$ ), which indicated that discrimination depended on the level of the ratings. The mere presence of a trust cue (comparing no ratings with the two rating conditions) did not have a significant effect on the degree of discrimination of the out-group host ( $b = 0.03$ , 95% CI [-1.14, 0.28],  $p = .921$ ). See Table 9 and Figure 5 for an illustration of Airbnb choice proportions in the different host and rating conditions. Additional contrast tests are presented in the supplemental materials.

Table 9

*Percentage choosing Airbnb apartment in different host group and rating conditions in Experiment 3.*

| Rating condition | Ingroup | Outgroup | Difference |
|------------------|---------|----------|------------|
| No ratings       | 36.6%   | 26.1%    | 10.5%      |
| 3.5 stars        | 33.8%   | 17.9%    | 15.9%*     |
| 5 stars          | 44.4%   | 42.9%    | 1.5%       |
| Total            | 38.4%   | 28.9%    | 9.5%*      |

Note. \*Chi square test significant at  $p < .05$

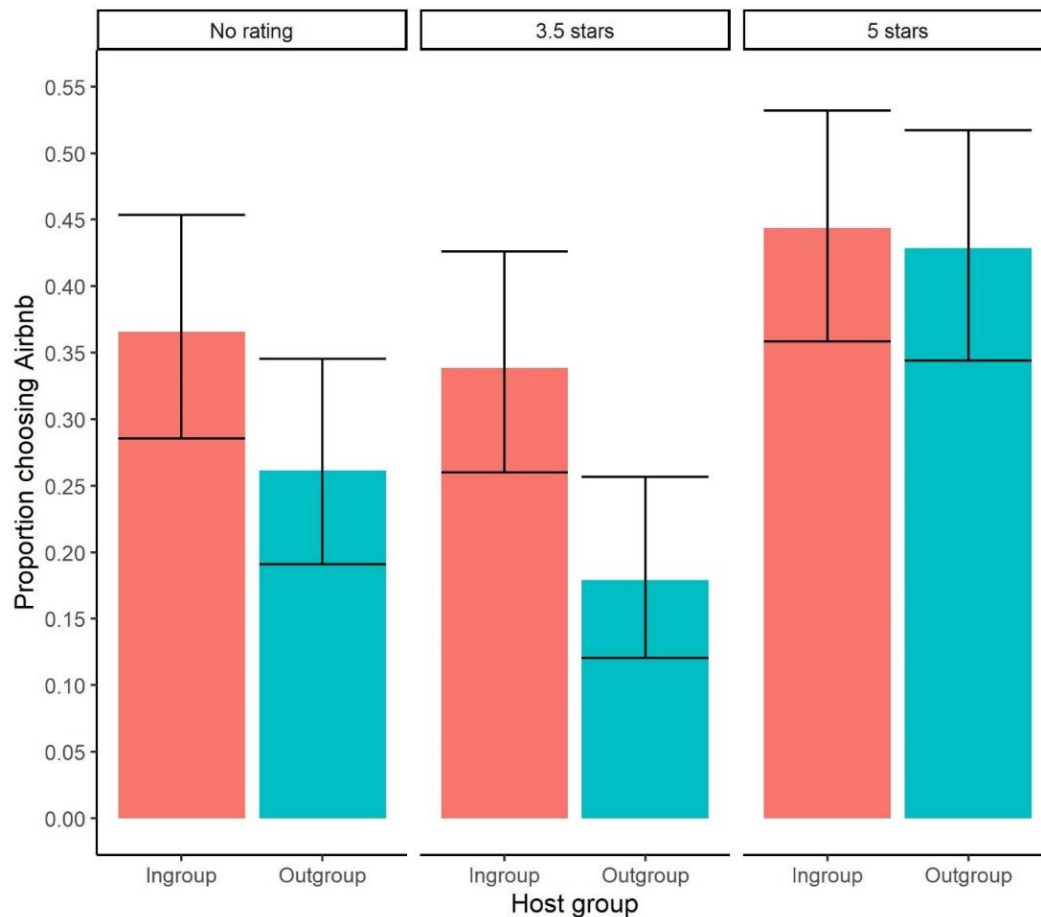


Figure 5: The figure shows the proportion of participants choosing the Airbnb as their preferred accommodation (relative to a hotel room) in a consequential choice in Experiment 3. We found evidence of discrimination in the mediocre rating condition (when the Airbnb host had 3.5 stars), but not in the top rating condition (when the Airbnb host had 5 stars). Error bars indicated 95% confidence intervals.

Probing the significant rating level  $\times$  host group interaction, we found that when the host had a mediocre rating (3.5 star), there was a statistically significant difference between the percentage of people choosing the in-group (33.8%, 95% CI [26.3, 42.2]) vs. the out-group (17.9%, 95% CI [12.3, 25.3]) Airbnb apartment (proportion difference = 15.9, 95% CI [5.4, 26.0],  $\chi^2(1, 267) = 8.83, p = .003$ ). In other words, when the Airbnb apartment had a mediocre rating, people were nearly twice as likely to choose the apartment when it was presented with an in-group host compared to when it was presented with an out-group host. However, when the Airbnb had a top (5 star) rating, there was no significant difference between the percentage choosing the in-group (44.4%, 95% CI [36.2, 52.8]) and out-group

(42.9%, 95% CI [34.8, 51.4]) Airbnb apartment (proportion difference = 1.5, 95% CI [-10.3, 13.2],  $\chi^2(1, 266) = 0.06, p = .805$ ). For the out-group host, there was also a significant difference between having a top rating vs. a mediocre rating (proportion difference = 24.9, 95% CI [14.0, 35.1],  $\chi^2(1, 267) = 19.66, p < .001$ ), whereas for the in-group host the difference between a mediocre and top rating was smaller and not statistically significant at the 0.05 alpha level (proportion difference = 10.5, 95% CI [-1.2, 21.8],  $\chi^2(1, 266) = 3.10, p = .079$ ).

Results from 2 (in-group vs. out-group)  $\times$  3 (rating condition) factorial analyses of variance further revealed that there was not a significant interaction between rating condition and host group membership in predicting neither attitudes ( $F(2, 795) = 0.32, p = .728, \text{partial } \eta^2 = .001$ ) nor willingness to pay ( $F(2, 795) = 0.93, p = .394, \text{partial } \eta^2 = .002$ ) for the Airbnb apartment. This means that the in-group-out-group differences on these variables did not change significantly across the rating conditions. See Table 10 for group means.

Table 10

*Mean scores on attitudes and willingness to pay in Experiment 3*

| Experimental group | Attitudes |      | Willingness to pay (\$) |       |
|--------------------|-----------|------|-------------------------|-------|
|                    | M         | SD   | M                       | SD    |
| Ingroup total      | 8.60      | 1.42 | 124.74                  | 44.70 |
| Ingroup No rating  | 8.65      | 1.48 | 126.61                  | 46.60 |
| Ingroup 3.5 stars  | 8.40      | 1.36 | 124.11                  | 44.99 |
| Ingroup 5 stars    | 8.75      | 1.39 | 123.50                  | 42.67 |
| Outgroup total     | 8.34      | 1.62 | 124.17                  | 51.90 |
| Outgroup No rating | 8.27      | 1.69 | 120.47                  | 47.47 |
| Outgroup 3.5 stars | 8.17      | 1.54 | 123.26                  | 61.68 |
| Outgroup 5 stars   | 8.58      | 1.61 | 128.81                  | 44.96 |
| Total              | 8.47      | 1.52 | 124.46                  | 48.41 |

Note. M = Mean. SD = Standard deviation. See supplemental materials for results of planned contrast tests.

### Internal meta-analysis

The central contribution in the current research, has been to gain a better understanding of the psychological mechanisms involved in racial discrimination in the sharing economy, and to test the effect of possible remedies. To provide a quantitative

overview of the simple main effect of out-group vs. in-group host on the dependent variables, we end with an internal meta-analysis. In Experiment 3, we measured real choice of an Airbnb apartment instead of intentions to rent, and these two measures are treated as a single variable in the internal meta-analysis because of their close conceptual link.

Based on Goh, Hall, & Rosenthal (2016), we conducted the internal meta-analyses using a fixed effects approach (Table 11). The meta-analytic effect sizes were statistically significant for attitudes towards the Airbnb apartment ( $d = 0.22$ ,  $p < .001$ , 95% CI [0.11, 0.32]), and for intention/choice to rent the Airbnb apartment ( $d = 0.25$ ,  $p = .002$ , 95% CI [0.14, 0.36]). For willingness to pay, the meta-analytic effect size was not statistically significant ( $d = 0.10$ ,  $p = 0.060$ , 95% CI [-0.004, 0.21]). However, signs of a ceiling effect on the willingness to pay measure in Experiment 3 prevents a strong interpretation of this result.

Table 11

*Standardized effect sizes and internal meta-analysis for the effect of an in-group (vs. out-group) Airbnb host on attitudes, intentions/choice to rent, and willingness to pay for an Airbnb apartment across three experiments (total N = 1332).*

| Dependent variable            | Experiment 1<br>(n = 143) | Experiment 2<br>(n = 388) | Experiment 3<br>(n = 801) | Meta-analytic effect size |
|-------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Attitudes                     | d = 0.21                  | d = 0.31**                | d = 0.17*                 | d = 0.22**                |
| Willingness to pay            | d = 0.26                  | d = 0.24*                 | d = 0.01                  | d = 0.10                  |
| Intention to rent/Real choice | d = 0.21                  | d = 0.30**                | d = 0.23**                | d = 0.25**                |

Note. \* $p < .05$ , \*\* $p < 0.01$ . d = Cohen's d. Internal meta-analysis conducted according to Goh et al. (2016). Intention to rent was measured in Experiment 1 and 2, whereas real choice to rent was measured in Experiment 3.

## Discussion

Across three experiments, we found that consumers discriminated against out-group hosts on Airbnb, both in terms of their attitudes and their actual choices. Most strikingly, our findings from the large-scale, nationally representative sample in Experiment 3 revealed that when an out-group (vs. in-group) host was presented together with an identical Airbnb apartment, the amount of people willing to choose that apartment in an incentivized choice dropped by 25%. Extending a previous field observation that non-White Airbnb hosts charge

prices that are approximately 10% lower than the prices charged by White Airbnb hosts for equivalent apartments (Jaeger et al., 2019), the current investigation provides causal evidence for such discrimination. Thus, people engage in costly racial discrimination towards hosts of an identical apartment.

The findings also shed light on how to reduce racial discrimination against hosts. We found strong evidence that explicit trust cues, in the form of reputation-based ratings from previous guests, can reduce such discrimination. When the Airbnb apartments were presented with either no ratings or a mediocre (3.5 star) rating, 29% and 47% fewer chose the out-group (vs. in-group) Airbnb apartment as their preferred accommodation option—even when the accommodations were otherwise identical across hosts. When the Airbnb apartments were presented with top (5 star) ratings, the in-group vs. out-group gap was almost completely eliminated (1.5% difference). This indicates that increasing the salience of top ratings for minority individuals could reduce discrimination on Airbnb and possibly other platforms in the sharing economy.

Contrary to our initial predictions, we did not find convincing evidence that highlighting points of similarity with the in-group reduce discrimination against out-group hosts in the Airbnb context. In Experiment 1, adding in-group signaling information to the out-group host's profile had positive effects in terms of increasing host trustworthiness, but these effects did not hinder discrimination among high-threat participants. In Experiment 2, with a more stringent in-group signaling manipulation, we concluded that the in-group signal did not manage to mitigate discrimination. Similarly, Cui and colleagues (2019) found that self-claimed positive information was less effective than reputation-based information in mitigating discrimination. Future research could therefore test the effects of providing signals of similarity generated by oneself vs. by trustworthy third parties.

Table 12

*Summary of findings from the three experiments*

| Variable                           | Experiment 1<br>(N = 214, student sample)  | Experiment 2<br>(N = 584, representative sample)  | Experiment 3<br>(N = 801, representative sample)                         |
|------------------------------------|--|---|--|
| Main effect (H1)                   |  |   |  |
| Discrimination                     | N.s. for sample as a whole   | Lower attitudes, intentions and WTP for outgroup apartment  | Lower choice rate and attitudes for outgroup apartment, n.s. for WTP     |
| Mediation (H2)                     |  |   |  |
| Trust                              | N.s.   | N.s.  | N.s.   |
| Self-object congruence             | N.s.   | Significant negative indirect effect for attitudes, intentions and WTP  | Significant negative indirect effect for attitudes, intentions and WTP   |
| Moderation (H3)                    |  |   |  |
| Political orientation              | N.s.   | Significant moderation of effect of host on attitudes, intentions and WTP   | N.s.   |
| Out-group threat                   | Significant moderation of effect of host on attitudes, intentions and WTP  | N.s.  | Significant moderation of effect of host on attitudes                    |
| Moderated mediation (H4)           |  |   |  |
| Host trustworthiness               | Significant moderated mediation on attitudes, intentions and WTP by both moderators                                  | Significant moderated mediation on attitudes, intentions and WTP by both moderators                                     | Significant moderated mediation on attitudes and WTP by out-group threat |
| Self-object congruence             | Significant moderated mediation on attitudes, intentions and WTP by political orientation                            | Significant moderated mediation on attitudes, intentions and WTP by political orientation                               | N.s.   |
| Mitigation interventions (H5 & H6) |  |   |  |
| Ingroup-signaling information      | The intervention increased trustworthiness ratings, but did not eliminate discrimination by high threat participants | The intervention did not increase trustworthiness ratings, and yielded mixed results in reducing overall discrimination | -  |
| Explicit trust cues (ratings)      | -  | -   | A top (5 star) rating significantly reduced discrimination               |

However, we do not interpret our findings to mean that perceived similarity is unimportant. After all, self-object congruence emerged as the most reliable mediator across our three studies. This suggests that people use host identity as a cue in forming an impression about whether an Airbnb apartment fits with their own identity, and that this judgement in turn leads to out-group host's apartments being seen as less attractive. This finding is a novel extension to the literature on racial bias, illustrating the theoretical potential of integrating consumer psychology with social psychology in order to explain behavior in marketplace contexts.

Regarding the role of political orientation and perceived out-group threat, the findings from all three experiments point to the same general pattern, although not all findings are statistically significant across the board (see the supplemental materials for illustrations). The results converged in revealing that liberal political views and low perceptions of out-group threat were related to more positive responses to the out-group host, whereas moderate and conservative political views and high perceptions of out-group threat were related to more negative responses to the out-group host. Across experiments, participants with either liberal political views or low out-group threat ratings reported *higher* trustworthiness for the out-group (vs. in-group) host, whereas participants with conservative political views or high out-group threat ratings reported *lower* trustworthiness for the out-group (vs. in-group) host. This resulted in opposite indirect effects through host trustworthiness for liberal/low-threat and conservative/high-threat participants, and explains why we do not observe a simple mediational effect through host trustworthiness in our results.

While we expected responses to the out-group host to be more negative for conservative and high-threat participants, we did not anticipate the phenomenon of reverse discrimination. One possible explanation for this behavior comes from the justification-suppression model of prejudice (Crandall & Eshleman, 2003), which states that people might

harbor negative prejudices about certain groups, but be reluctant to express them because these prejudices conflict with egalitarian values or concerns of appearing “politically correct”. In our sample, this might have been characteristic of the liberal and low-threat subgroup of our participants. Participants with liberal and pro-immigrant values might have (consciously or unconsciously) made an effort to appear un-prejudiced in their evaluations of the out-group host and his apartment, and therefore ended up rating the out-group host more favorably than the in-group host.

Interestingly, when it came to the incentivized outcome variable in Experiment 3, neither political orientation nor out-group threat beliefs mattered for participants’ decisions: People chose the in-group host’s apartment more often than the out-group host’s apartment, regardless of ideology. Whereas political orientation and out-group threat had significant moderation effects on hypothetical outcomes (attitudes and willingness to pay), we found no such effects when it came to a real and consequential choice. Additionally, in Experiment 3, political orientation and out-group threat had less impact overall, as there was no evidence for a liberal “outgroup preference” on neither incentivized choice or the evaluative mediator variables. A possible explanation for this could be that different psychological processes underlie bias on evaluative outcomes and outcomes that have real-life implications for the individual. Indeed, Dunham (2018) has made a convincing case for a distinction between in-group bias in evaluations and in-group bias in cooperative behavior. He argues that in-group bias in evaluations of others (e.g. judging in-group members to be more friendly or intelligent than out-group members) could be caused by a spill-over of positive self-regard to groups that get associated with the self, whereas in-group bias in cooperative behavior (e.g. deciding to reward in-group members more than out-group members) seems more likely to be explained by tacit norms and expectations about in-group reciprocity (Dunham, 2018). Evidence supporting this view comes from research showing that in-group bias in cooperation is



reduced when there is no interdependency of outcomes among group members, but that evaluative biases can remain (Balliet, Wu & De Dreu, 2014).

As such, our own findings are consistent with prior work, and also point to a possible extension. In Experiment 3, political orientation did not matter for discrimination in terms of actual choice, and unlike Experiment 2, it did not matter for evaluative ratings either. One way to interpret this could be that for liberal participants, choosing the hotel room over the out-group host's Airbnb apartment would have created an aversive state of cognitive dissonance in Experiment 2, when expressing one's moral aspirations was cost-free. In Experiment 3, however, economic incentivization created a practical dimension to the choice, which possibly reduced the salience or weight of moral motives. Thus, when liberal participants were placed in this real choice scenario, they showed a similar ingroup preference as conservative participants, and presumably were less bothered by it than they would have been in a purely hypothetical exercise.

More generally, our results points to the importance of distinguishing between situations where discrimination is measured on a purely evaluative level, and situations where discrimination happens in a context of potential reciprocal behavior. For instance, evaluating an Airbnb apartment can be seen as a mainly evaluative judgement, whereas actually choosing to stay in an Airbnb apartment involves cooperative aspects like enacting trust. One might speculate that motivated cognitive processes like suppression of prejudice could be more likely to affect the evaluative types of outcomes, compared to the types of outcomes with real risk to the target individual. This appears to us an interesting avenue for future research. Given that most research in social psychology is based on attitude ratings and hypothetical choices, with no measure of actual behavior (Baumeister, Vohs, & Funder, 2007; Dolinski, 2018), this discrepancy serves as a reminder of why we should combine hypothetical outcomes with incentivized choices as often as possible. Especially when social

desirability is relevant, the attitude-behavior gap is likely to occur when the person can signal their political identity and moral aspirations at no cost, possibly deceiving both themselves and others at once (von Hippel & Trivers, 2011). Systematic variation of the real cost of decision-making can therefore be leveraged to provide a better understanding of the underlying psychology, and may also improve the applied relevance to the real world.

**Generalizability and limitations.** Although our experiments focus on the specific marketplace context of Airbnb, we suggest that the findings are relevant to peer-to-peer platforms more generally, as well as other transactional contexts where people must rely on trust perceptions and judgements under uncertainty. Finally, our study findings also contribute to general theoretical knowledge about drivers and mitigation strategies that apply to racial discrimination. The degree of generalizability across different contexts and choice environments should be examined empirically in future research.

In the theoretical framework applied in this research, we attempt to strike a balance between comprehensiveness and parsimony. As a consequence, there are additional variables that we imagine could have contributed with further explanation of discrimination, that we have left unmeasured. One example is measuring feelings of threat as a mediating factor. It follows from our theoretical reasoning that when encountering an out-group host, participants might experience the host as threatening, which could result in negative evaluations and intentions of the Airbnb apartment. However, we argue that by measuring host trustworthiness, we should to a large extent be able to capture the same phenomenon, since experiencing threat could be seen as the opposite of experiencing trust. Similarly, we have chosen not to measure general trustworthiness perceptions towards the out-group, because we do measure out-group threat.

Our experiments focus on discrimination against racial minorities, specifically immigrant hosts from non-Western, Muslim majority countries, which is a group that is often the target of prejudice and discrimination in Norway (Bye et al., 2014). Thus, findings might be more relevant to discrimination of stigmatized groups as opposed to any type of intergroup context. Part of the background for selecting a negatively stereotyped group as the out-group was that our design (a hypothetical survey experiment with restrictions on maximum sample size) would not be sufficient to detect very subtle discrimination effects. In short: we aimed for a strong rather than subtle manipulation of the in-group-out-group dimension. Future research may explore whether discrimination might also arise for more minimal groups in the Airbnb context. Another suggestion for future research is to include manipulation checks at the end of the post-manipulation survey. We did not implement manipulation checks in the current research, but we acknowledge that this could have been useful.

## **Conclusion**

In conclusion, the current research provides causal evidence for racial discrimination in the sharing economy, and shows that reputation-based information can be highly effective in reducing such discrimination when real choices are made. Our findings not only reveal how racial discrimination can enter these decisions, they also offer the possibility for change. Large platforms can easily scale insights from research to reduce discrimination and promote greater fairness in the sharing economy. In an age where the economy has become decentralized, it is more important than ever to understand the individual psychology behind economic decision-making.

## **Open practices statement**

Experiment 1 and 2 were not pre-registered. The pre-registration of Experiment 3 can be accessed at <https://osf.io/n8k6b>. Data, materials and an overview of measures from all

three experiments are available at <https://osf.io/ak35s/>. We report how we determined our sample size, all data exclusions (if any), all manipulations, and all measures in the studies.

### **Ethics statement**

We complied with all relevant ethical regulations regarding human research participants, including the guidelines from the Helsinki Declaration. As Norwegian laws and regulations does not require review by an institutional review board for non-medical, low-risk research with human participants, we did not submit the project to such a review. Informed consent was obtained from all participants.

## References

- Aguirre-Rodriguez, A., Bosnjak, M., & Sirgy, M. J. (2012). Moderators of the self-congruity effect on consumer decision-making: A meta-analysis. *Journal of Business Research*, *65*, 1179–1188. <https://doi.org/10.1016/j.jbusres.2011.07.031>
- Airbnb. (n.d.). Fast facts. Retrieved June 24, 2019, from <https://press.airbnb.com/fast-facts/>
- Balliet, D., Wu, J., & De Dreu, C. K. (2014). Ingroup favoritism in cooperation: A meta-analysis. *Psychological Bulletin*, *140*(6), 1556–1581. <https://doi.org/10.1037/a0037737>
- Baumeister, R. F., Vohs, K. D., & Funder, D. C. (2007). Psychology as the science of self-reports and finger movements: Whatever happened to actual behavior? *Perspectives on Psychological Science*, *2*(4), 396-403. <https://doi.org/10.1111/j.1745-6916.2007.00051.x>
- Becker, G.S. (1957). *The economics of discrimination*. Chicago: University of Chicago Press.
- Belk, R. W. (1988). Possessions and the extended self. *Journal of Consumer Research*, *15*, 139-168. <https://doi.org/10.1086/209154>
- Berger, J., & Heath, C. (2008). Who drives divergence? Identity signaling, outgroup dissimilarity, and the abandonment of cultural tastes. *Journal of Personality and Social Psychology*, *95*(3), 593–607. <https://doi.org/10.1037/0022-3514.95.3.593>
- Bertrand, M., & Mullainathan, S. (2004). Are Emily and Greg more employable than Lakisha and Jamal? A field experiment on labor market discrimination. *The American Economic Review*, *94*(4), 991–1013. DOI: 10.1257/0002828042002561
- Böhm, R., Rusch, H., & Baron, J. (2020). The psychology of intergroup conflict: A review of theories and measures. *Journal of Economic Behavior and Organization*, *178*, 947-962. <https://doi.org/10.1016/j.jebo.2018.01.020>
- Brandt, M. J., Reyna, C., Chambers, J. R., Crawford, J. T., & Wetherell, G. (2014). The

ideological-conflict hypothesis: Intolerance among both liberals and conservatives.

*Current Directions in Psychological Science*, 23(1), 27-34.

<https://doi.org/10.1177/0963721413510932>

Brewer, M. B. (1979). In-group bias in the minimal intergroup situation: A cognitive-motivational analysis. *Psychological Bulletin*, 86(2), 307–324.

<https://doi.org/10.1037/0033-2909.86.2.307>

Bye, H. H., Herrebrøden, H., Hjetland, G. J., Røyset, G. Ø., & Westby, L. L. (2014).

Stereotypes of Norwegian social groups. *Scandinavian Journal of Psychology*, 55(5), 469-476. <https://doi.org/10.1111/sjop.12141>

Carlsson, M., & Eriksson, S. (2014). Discrimination in the rental market for apartments.

*Journal of Housing Economics*, 23, 41-54. <https://doi.org/10.1016/j.jhe.2013.11.004>

Ceobanu, A. M., & Escandell, X. (2010). Comparative analyses of public attitudes toward immigrants and immigration using multinational survey data: A review of theories and research. *Annual Review of Sociology*, 36, 309–328.

<https://doi.org/10.1146/annurev.soc.012809.102651>

Cottrell, C. A., Richards, D. A. R., & Nichols, A. L. (2010). Predicting policy attitudes from general prejudice versus specific intergroup emotions. *Journal of Experimental Social Psychology*, 46(2), 247–254. <https://doi.org/10.1016/j.jesp.2009.10.008>

<https://doi.org/10.1016/j.jesp.2009.10.008>

Crandall, C. S., & Eshleman, A. (2003). A justification-suppression model of the expression and experience of prejudice. *Psychological Bulletin*, 129(3), 414–446.

<https://doi.org/10.1037/0033-2909.129.3.414>

Crisp, R. J., & Hewstone, M. (2007). Multiple social categorization. *Advances in*

*Experimental Social Psychology*, 39, 163-254. <https://doi.org/10.1016/S0065->

2601(06)39004-1

- Cui, R., Li, J. & Zhang, D. J. (2020). Reducing discrimination with reviews in the sharing economy: Evidence from field experiments on Airbnb. *Management Science*, 66(3), 1071-1094. <https://doi.org/10.1287/mnsc.2018.3273>
- Doliński, D. (2018). Is psychology still a science of behaviour? *Social Psychological Bulletin*, 13(2), 1-14.
- Dunham, Y. (2018). Mere membership. *Trends in Cognitive Sciences*, 22(9), 780-793. <https://doi.org/10.1016/j.tics.2018.06.004>
- Edelman, B. G., Luca, M., & Svirsky, D. (2017). Racial discrimination in the sharing economy: Evidence from a field experiment. *American Economic Journal: Applied Economics*, 9(2), 1–22. <https://doi.org/10.2139/ssrn.2701902>
- Escalas, J. E., & Bettman, J. R. (2005). Self-construal, reference groups, and brand meaning. *Journal of Consumer Research*, 32, 378-389. <https://doi.org/10.1086/497549>
- Falk, C. F., Heine, S. J., & Takemura, K. (2014). Cultural variation in the minimal group effect. *Journal of Cross-Cultural Psychology*, 45(2), 265-281. <https://doi.org/10.1177/0022022113492892>
- Foddy, M., Platow, M. J., & Yamagishi, T. (2009). Group-based trust in strangers: The role of stereotypes and expectations. *Psychological Science*, 20(4), 419-422. <https://doi.org/10.1111/j.1467-9280.2009.02312.x>
- Gaertner, S. L., Dovidio, J. F., & Bachman, B. A. (1996). Revisiting the contact hypothesis: The induction of a common ingroup identity. *International Journal of Intercultural Relations*, 20(3-4), 271–290. [https://doi.org/10.1016/0147-1767\(96\)00019-3](https://doi.org/10.1016/0147-1767(96)00019-3)
- Goh, J. X., Hall, J. A., & Rosenthal, R. (2016). Mini meta-analysis of your own studies: Some

- arguments on why and a primer on how. *Social and Personality Psychology Compass*, *10(10)*, 535-549.
- Guryan, J., & Charles, K. K. (2013). Taste-based or statistical discrimination: The economics of discrimination returns to its roots. *The Economic Journal*, *123* (572), 417–432.  
<https://doi.org/10.1111/ecoj.12080>
- Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: Guilford Publications.
- Hazée, S., Delcourt, C., & Van Vaerenbergh, Y. (2017). Burdens of access: understanding customer barriers and barrier-attenuating practices in access-based services. *Journal of Service Research*, *20(4)*, 441-456. <https://doi.org/10.1177/1094670517712877>
- Hellwig, K., Morhart, F., Girardin, F., & Hauser, M. (2015). Exploring different types of sharing: A proposed segmentation of the market for “sharing” businesses. *Psychology & Marketing*, *32(9)*, 891-906. <https://doi.org/10.1002/mar.20825>
- Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences*, *33(2-3)*, 61-83.  
<https://doi.org/10.1017/S0140525X0999152X>
- Henry, P. J. (2008). College sophomores in the laboratory redux: Influences of a narrow data base on social psychology's view of the nature of prejudice. *Psychological Inquiry*, *19(2)*, 49-71. <https://doi.org/10.1080/10478400802049936>
- Hogg, M. A. (2016). Social Identity Theory. In: S. McKeown, R. Haji, & N. Ferguson (Eds.), *Understanding Peace and Conflict Through Social Identity Theory, Peace Psychology Book Series* (pp. 3-15). Springer, Cham. DOI 10.1007/978-3-319-29869-6\_1
- Hornsey, M. J. (2008). Social identity theory and self-categorization theory: A historical



- review. *Social and Personality Psychology Compass*, 2(1), 204-222.
- Jaeger, B., Slegers, W., Evans, A. M., Stel, M., & Beest, I. Van. (2019). The effects of facial attractiveness and trustworthiness in online peer-to-peer markets. *Journal of Economic Psychology*, 75, 102125. <https://doi.org/S0167487018302794>
- Kraus, S. J. (1995). Attitudes and the prediction of behavior: A meta-analysis of the empirical literature. *Personality and Social Psychology Bulletin*, 21(1), 58-75.  
<https://doi.org/10.1177/0146167295211007>
- Ma, D. S., Correll, J., & Wittenbrink, B. (2015). The Chicago face database: A free stimulus set of faces and norming data. *Behavior Research Methods*, 47(4), 1122-1135. doi: 10.3758/s13428-014-0532-5
- Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). An integrative model of organizational trust. *Academy of Management Review*, 20(3), 709-734.  
<https://doi.org/10.5465/amr.1995.9508080335>
- Midtbøen, A. H. (2016). Discrimination of the second generation: Evidence from a field experiment in Norway. *Journal of International Migration and Integration*, 17(1), 253-272. DOI 10.1007/s12134-014-0406-9
- Newman, G. E., Diesendruck, G., & Bloom, P. (2011). Celebrity contagion and the value of objects. *Journal of Consumer Research*, 38, 215-228. <https://doi.org/10.1086/658999>
- Norwegian Police. Oslo Police District. (2019). *Hatkriminalitet: Anmeldt hatkriminalitet 2018* [Hate crime: Filed reports of hate crime 2018]. Retrieved from [https://www.politiet.no/globalassets/dokumenter/oslo/rapporter/anmeldt-hatkriminalitet-oslo/Anmeldt\\_hatkriminalitet\\_i\\_Oslo\\_2018](https://www.politiet.no/globalassets/dokumenter/oslo/rapporter/anmeldt-hatkriminalitet-oslo/Anmeldt_hatkriminalitet_i_Oslo_2018)
- Ondrich, J., Stricker, A., & Yinger, J. (1999). Do landlords discriminate? The incidence and

- causes of racial discrimination in rental housing markets. *Journal of Housing Economics* 8(3), 185–204. <https://doi.org/10.1006/jhec.1999.0249>
- Phelps, E. S. (1972). The statistical theory of racism and sexism. *The American Economic Review*, 62(4), 659–661.
- Platow, M. J., McClintock, C. G., & Liebrand, W. B. (1990). Predicting intergroup fairness and ingroup bias in the minimal group paradigm. *European Journal of Social Psychology*, 20(3), 221-239. <https://doi.org/10.1002/ejsp.2420200304>
- Reed II, A., Forehand, M. R., Puntoni, S., & Warlop, L. (2012). Identity-based consumer behavior. *International Journal of Research in Marketing*, 29(4), 310-321. <https://doi.org/10.1016/j.ijresmar.2012.08.002>
- Richeson, J. A., & Sommers, S. R. (2016). Toward a social psychology of race and race relations for the twenty-first century. *Annual Review of Psychology*, 67, 439-463. <https://doi.org/10.1146/annurev-psych-010213-115115>
- Sherif, M., Harvey, O. J., White, B. J., Hood, W. R., Sherif, C. W. (1954). *Intergroup conflict and cooperation: The Robbers Cave experiment*. Norman, Oklahoma: University Book Exchange.
- Sidanius, J., Pratto, F., & Bobo, L. (1996). Racism, conservatism, Affirmative Action, and intellectual sophistication: A matter of principled conservatism or group dominance? *Journal of Personality and Social Psychology*, 70(3), 476–490. <https://doi.org/10.1037/0022-3514.70.3.476>
- Sirgy, M. J. (1982). Self-concept in consumer behavior: A critical review. *Journal of Consumer Research*, 9, 287-300. <https://doi.org/10.1086/208924>
- Spiller, S. A., Fitzsimons, G. J., Lynch, J. G., & McClelland, G. H. (2013). Spotlights, floodlights, and the magic number zero: Simple effects tests in moderated regression. *Journal of Marketing Research*, 50(2), 277–288. <https://doi.org/10.1509/jmr.12.0420>

Statistics Norway. (2017a). Innvandrere i Norge 2017 (Immigrants in Norway 2017).

Retrieved from <https://www.ssb.no/befolkning/artikler-og-publikasjoner/innvandrere-i-norge-2017>

Statistics Norway. (2017b). Navn: Statistikkbank (Names: Statistics bank). Retrieved from

<https://www.ssb.no/befolkning/statistikker/navn>

Stephan, C. W., & Stephan, W. S. (2000). An integrated threat theory of prejudice. In S.

Oskamp (Ed.), *Reducing prejudice and discrimination* (pp. 23-46). Mahwah, N.J:

Lawrence Erlbaum Associates.

Stephan, W. G., Ybarra, O., & Rios Morrison, K. (2009). Intergroup Threat Theory. In T.

Nelson (Ed.), *Handbook of prejudice* (pp. 43-59). Mahwah, NJ: Lawrence Erlbaum

Associates.

Tajfel, H. (1970). Experiments in intergroup discrimination. *Scientific American*, 223(5), 96-

103. DOI: 10.2307/24927662

Tajfel, H. (1982). Social psychology of intergroup relations. *Annual Review of Psychology*,

33, 1–39. <https://doi.org/10.1146/annurev.ps.33.020182.000245>

Tajfel, H., Billig, M. G., Bundy, R. P., & Flament, C. (1971). Social categorization and

intergroup behaviour. *European Journal of Social Psychology*, 1(2), 149-178.

<https://doi.org/10.1002/ejsp.2420010202>

The Postnational Monitor. (2011a). World of facial averages: Populations of the Americas.

[Blog post]. Retrieved from <https://pmsol3.wordpress.com/2009/10/10/world-of-averages-populations-of-the-americas/>

The Postnational Monitor. (2011b). World of facial averages: Middle Eastern, Central Asian

and South Asia. [Blog post]. Retrieved from

<https://pmsol3.wordpress.com/2011/04/07/world-of-facial-averages-middle-eastern-and-central-asian/>

- Turner, J. C., Oakes, P. J., Haslam, S. A., & McGarty, C. (1994). Self and collective: Cognition and social context. *Personality and Social Psychology Bulletin*, 20(5), 454-463. <https://doi.org/10.1177/0146167294205002>
- Uber. (2018, July 24). 10 billion. Retrieved from <https://www.uber.com/newsroom/10-billion/>.
- Van Bavel, J. J., & Cunningham, W. A. (2009). Self-categorization with a novel mixed-race group moderates automatic social and racial biases. *Personality and Social Psychology Bulletin*, 35(3), 321-335. <https://doi.org/10.1177/0146167208327743>
- Voci, A. (2006). The link between identification and in-group favouritism: Effects of threat to social identity and trust-related emotions. *British Journal of Social Psychology*, 45(2), 265-284. <https://doi.org/10.1348/014466605X52245>
- Von Hippel, W., & Trivers, R. (2011). The evolution and psychology of self-deception. *Behavioral and Brain Sciences*, 34(1), 1-56.
- Zussman, A. (2013). Ethnic discrimination: Lessons from the Israeli online market for used cars. *The Economic Journal*, 123(572), 433–468. <https://doi.org/10.1111/eoj.12059>

## **Appendix: Article 1**

### **Explanation of content**

This document contains a selection of supplemental materials relevant to the article “Racial bias in the sharing economy and the role of trust and self-congruence”. The purpose of the materials included in this supplement is to provide specialist readers with added detail about the analyses and methods, to make experimental stimuli and measures available to all readers, and to provide an overview of sample and data characteristics. Some sections of this supplement are referred to in the main manuscript, whereas others are merely provided in the spirit of increasing transparency of the research and analyses.

### **Note about host trustworthiness measure**

We initially conceptualized our measure of host trustworthiness as consisting of two items, tapping respectively the perceived trustworthiness and perceived benevolence of the Airbnb host. In addition to these items, we measured perceived self-host congruence with another item, which we originally conceptualized as a separate construct. However, as a part of the analysis process, we realized that there were signs of collinearity problems for the host trustworthiness measure and the self-host congruence measure. Specifically, the self-host congruence item was highly correlated with the two-item scale of host trustworthiness (Pearson correlations: 0.64, 0.72, and 0.56 for studies 1, 2 and 3 respectively). In our confirmatory analyses, self-host congruence did not have any independent mediation or moderated mediation effects when the other mediators were present in the models, but in exploratory analyses including only the self-host congruence as a sole mediator, there were significant effects in line with the findings for host trustworthiness. We therefore eventually chose to include the self-host congruence item as a part of the host trustworthiness measure, both because of its strong correlations with the other trust items, and because theoretically, it reflects the integrity facet of trustworthiness, in the sense that integrity perceptions are related to the perceiver and target having overlapping values (Mayer, Davis, & Schoorman, 1995). However, in the tables for our supplemental analyses, we present findings using both versions of the measures for full transparency. The results obtained with the different versions of the measure are almost identical, and the few discrepancies that exist do not change our main conclusions.

### **Supplemental analyses: Moderation and moderated mediation**

#### **Experiment 1: Moderation and moderated mediation**

**Moderation: floodlight analyses.** Out-group threat significantly moderated the effect of an out-group (vs. in-group) host on attitudes ( $b = -0.24$ ,  $SE = 0.11$ ,  $p = .023$ ), intentions to rent ( $b = -0.38$ ,  $SE = 0.15$ ,  $p = .015$ ) and willingness to pay<sup>9</sup> (WTP,  $b = -5.02$ ,  $SE = 1.76$ ,  $p = .005$ ). Probing these interactions with floodlight analyses, we identified the region of significance for these moderation effects. The negative effect of an outgroup host was estimated as significant at levels of outgroup threat above 4.80 (23.9% of participants) for attitudes, above 4.55 (23.9% of participants) for intentions, and above 3.84 (41.6% of participants) for willingness to pay (on an 11-point scale for outgroup threat, with 6 as the midpoint).

Political orientation did not significantly moderate the effects of an out-group (vs. in-group) host on the dependent variables, and we therefore did not conduct floodlight analyses for this moderator.

**Moderated mediation results.** Political orientation significantly moderated the indirect effects of an out-group (vs. in-group) host through host trustworthiness and self-object congruence on all the dependent variables (see Table S1). A floodlight analysis revealed that the effect of an out-group (vs. in-group) host on host trustworthiness was significantly negative for conservative participants (political score  $\geq 9.00$ , 17.5% of the sample), but significantly positive for liberal participants (political score  $\leq 5.78$ , 28.0% of the sample). Similarly, the effect of an out-group (vs. in-group) host on self-object congruence was significantly negative for conservative participants (political score  $\geq 7.71$ , 41.3% of the sample), and significantly positive for liberal participants (political score  $\leq 4.09$ , 15.4% of the sample). These moderation effects on the a-path of the mediation process resulted in positive

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<sup>9</sup> All results for WTP are reported in U.S. dollars.

indirect effects of an out-group host for liberal participants, and negative indirect effects of an out-group host for conservative participants.

Out-group threat significantly moderated the indirect effect of an out-group (vs. in-group) host through host trustworthiness on all the dependent variables (see Table S1). Floodlight analyses indicated that high-threat participants (threat scores  $\geq 7.08$ ; 8.5% of the sample) rated the out-group (vs. in-group) host as significantly less trustworthy. Interestingly, we found that low-threat participants (threat scores  $\leq 2.60$ ; 45.1% of the sample) rated the out-group (vs. in-group) host as *more* trustworthy (reverse discrimination). The indirect effects through self-object congruence were not moderated by out-group threat.

Using the three-item host trustworthiness measure gave almost identical results as when using the two-item host trustworthiness measure. Host trustworthiness continued to display significant moderated mediation by both political orientation and out-group threat. With the combined three-item measure, the only difference in the results was that moderated mediation effects were also significant for the willingness to pay outcome variable, thus converging with the effects on attitudes towards the Airbnb apartment, and intentions to rent it. See Table S1 for details and a comparison of the results for the different versions of the measure.



| Table S1   |  |  |   |
|--|--|--|---|
| Results for moderated mediation analyses, Experiment 1, comparing results for new and original measure of host trustworthiness   |  |  |   |
| Trustworthiness measure  | Attitudes  | Intention  | WTP   |
| Moderator: Political orientation   |  |  |   |
| Combined (new)   | Trust: BCI [-0.23, -0.04]<br>Self-object: BCI [-0.34, -0.07]                           | Trust: BCI [-0.31, -0.05]<br>Self-object: BCI [-0.42, -0.09]                           | Trust: BCI [-4.14, -0.42]<br>Self-object: BCI [-3.18, -0.40]                                |
| Original   | Trust: BCI [-.28, -.05]<br>Self-host: BCI [-.03, .11]<br>Self-object: BCI [-.33, -.07] | Trust: BCI [-.26, -.01]<br>Self-host: BCI [-.14, .04]<br>Self-object: BCI [-.42, -.08] | Trust: BCI [-3.22, 0.28]<br>Self-host: BCI [-2.52, 0.70]<br>Self-object: BCI [-3.12, -0.38] |
| Moderator: Outgroup threat   |  |  |   |
| Combined (new)   | Trust: BCI [-0.19, -0.03]<br>Self-object: BCI [-0.23, 0.04]                            | Trust: BCI [-0.25, -0.03]<br>Self-object: BCI [-0.29, 0.04]                            | Trust: BCI [-3.52, -0.30]<br>Self-object: BCI [-2.08, 0.31]                                 |
| Original   | Trust: BCI [-.29, -.03]<br>Self-host: BCI [-.03, .06]<br>Self-object: BCI [-.21, .04]  | Trust: BCI [-.27, -.01]<br>Self-host: BCI [-.13, .02]<br>Self-object: BCI [-.29, .05]  | Trust: BCI [-3.54, 0.24]<br>Self-host: BCI [-2.49, 0.19]<br>Self-object: BCI [-2.06, 0.28]  |
| <i>Note.</i> Trust: Host trustworthiness. Self-host: Self-host congruence. Self-object: Self-object congruence. BCI = 95% Bootstrap Confidence Interval. All bootstrap analyses were conducted using 10 000 bootstrap samples. |  |  |   |

| Table S2   |           |                |            |                 |                    |                |
|--|-----------|----------------|------------|-----------------|--------------------|----------------|
| <i>Moderated mediation effects of the in-group signaling out-group host in Experiment 1.</i>                                     |           |                |            |                 |                    |                |
| Variable   | Attitudes |                | Intentions |                 | Willingness to pay |                |
|  | b         | 95% CI         | b          | 95% CI          | b                  | 95% CI         |
| In-group signaling out-group host vs. in-group host  |           |                |            |                 |                    |                |
| Political orientation  |           |                |            |                 |                    |                |
| Self-object congruence   | -0.13     | -0.28, -0.002  | -0.25      | -0.54, -0.01    | -0.90              | [-2.36, 0.01]  |
| Host trustworthiness   | -0.11     | -0.23, -0.02   | -0.14      | [-0.29, -0.02]  | -1.77              | [-4.00, -0.23] |
| Out-group threat   |           |                |            |                 |                    |                |
| Self-object congruence   | -0.20     | [-0.34, -0.10] | -0.39      | [-0.64, -0.19]  | -1.39              | [-3.03, -0.25] |
| Host trustworthiness   | -0.16     | [-0.27, -0.07] | -0.21      | [-0.36, -0.08]  | -2.71              | [-5.15, -0.90] |
| In-group signaling out-group host vs. out-group host   |           |                |            |                 |                    |                |
| Political orientation  |           |                |            |                 |                    |                |
| Self-object congruence   | 0.06      | [-0.09, 0.21]  | 0.09       | [-0.15, 0.28]   | 0.51               | [-0.86, 1.830] |
| Host trustworthiness   | 0.01      | [-0.06, 0.08]  | 0.01       | [-0.07, 0.08]   | 0.10               | [-0.85, 1.08]  |
| Out-group threat   |           |                |            |                 |                    |                |
| Self-object congruence   | -0.13     | [-0.27, -0.02] | -0.19      | [-0.41, -0.02]  | -1.05              | [-2.64, -0.05] |
| Host trustworthiness   | -0.07     | [-0.14, -0.01] | -0.06      | [-0.16, -0.001] | -0.89              | [-2.10, -0.07] |
| Note. In-group host was coded as 1, and the in-group signaling out-group host as 2 in the analyses. Significant effects in bold. |           |                |            |                 |                    |                |

## Experiment 2: Moderation and moderated mediation

**Moderation: floodlight analyses.** Political orientation had a significant moderating effect on the impact of host group membership on the dependent variables (attitudes:  $b = -0.14$ ,  $SE = 0.07$ ,  $p = .048$ , intentions:  $b = -0.29$ ,  $SE = 0.11$ ,  $p = .009$ , WTP:  $b = -26.61$ ,  $SE = 9.48$ ,  $p = .005$ ). Floodlight analyses were used to probe the significant interactions between host group membership and political orientation, and showed that the effect of the out-group (vs. in-group) host was estimated as significant and negative for levels of political orientation above 4-5 on the 11-point scale on attitudes (Political score  $\geq 4.48$  and above, 68.8% of participant in the sample), intentions (Political score  $\geq 4.92$ , 68.8% of participants in the

sample), and willingness to pay (Political score  $\geq 5.35$ , 58.8% of participants in the sample). This indicated that discrimination occurred among people with political views spanning from slightly liberal to very conservative, and did not occur among the most liberal.

Out-group threat did not significantly moderate the effects of an out-group (vs. in-group) host on the dependent variables, and we therefore did not conduct floodlight analyses for this moderator.

**Moderated mediation results.** Both political orientation and out-group threat significantly moderated the indirect effect of the out-group host through host trustworthiness on all the dependent variables (see Table S3). Floodlight analyses revealed that for liberal (political score  $\leq 4.07$ , 31.2% of the sample) and low-threat (threat score  $\leq 2.72$ , 22.9% of the sample) participants, the out-group (vs. in-group) host was rated as significantly *more* trustworthy, whereas for conservative (political score  $\geq 6.79$ ; 37.1% of the sample) and high-threat (threat score  $\geq 6.42$ ; 38.9% of the sample) participants, the out-group (vs. in-group) host was rated as significantly *less* trustworthy.

Political orientation significantly moderated the indirect effect through self-object congruence on all the dependent variables (see Table S3). Floodlight analyses revealed that there was a significant negative effect of the out-group (vs. in-group) host on self-object congruence for conservative participants (political score  $\geq 5.15$ , 58.8% of the sample), and a non-significant effect of host group for liberal participants (political score  $\leq 5.15$ , 41.2% of the sample). Out-group threat did not significantly moderate the indirect effect through self-object congruence.

As for Experiment 1, the only distinction between results for the two- vs. three-item host trustworthiness measure was that moderated mediation effects on the willingness to pay outcome were also significant with the combined three-item measure.

**Results including the excluded participants.** Because of a technical error, not all participants were forced to stay for the pre-determined limit of 10 seconds on each of the pages presenting the Airbnb apartment and the Airbnb host. We therefore decided to exclude 17 participants who spent less than 7 seconds on one of these pages. However, including these participants in the analyses produce results that are almost identical to the results where they are excluded. The only exceptions are: 1) The interaction effect between host group and political orientation on rental attitudes, which is significant ( $p = .048$ ) when excluding the 17 cases, becomes non-significant when including these cases ( $p = .060$ ). 2) The moderated mediation effect of political orientation through self-object congruence are significant for all dependent variables when excluding the 17 cases, as indicated by 95% bootstrapped confidence intervals for the index of moderated mediation that do not include zero (attitudes [-.14, -.01], intentions [-.26, -.01], willingness to pay [-1.85, -.06]). These moderated mediation effects become non-significant when including these cases (attitudes [-.132, .002], intentions [-.250, .005], willingness to pay [1.684, .034]).

**Results for contamination-related variables.** As an exploratory part of Experiment 2, but not a focal issue in the current paper, we measured variables related to fear of contamination/disgust. These items were based on research on symbolic contamination, which has found, for instance, that people are more interested in touching items owned by a positive celebrity, and that people are averse to touching items owned by negative celebrities (Newman, Diesendruck, & Bloom, 2011). Three variables together composed a scale of *desired contact* with the apartment (specifically, asking how tempted the participants would be to make dinner, have a bath and lie on the couch in the apartment, Cronbachs alpha = .82). One variable consisted of one item asking participants for their *interest in professional cleaning* of the apartment (“Usually, Airbnb apartments are prepared by the hosts themselves. How interested would you be in that this apartment would be cleaned by a professional

cleaning firm before your stay?”). We tested whether any of these two constructs mediated discrimination on attitudes, intentions and willingness to pay. The results showed that neither desired contact nor interest in professional cleaning mediated the negative effect of an out-group host (vs. in-group host) on attitudes, intentions or willingness to pay. We interpret these findings to rule out contamination fear as a central alternative explanation for the discrimination effect.

| Mediator                          | Attitudes |                 | Intentions |                 | Willingness to pay |                 |
|-----------------------------------|-----------|-----------------|------------|-----------------|--------------------|-----------------|
|                                   | b         | 95% CI          | b          | 95% CI          | b                  | 95% CI          |
| Desired contact                   | -0.118    | [-0.322, 0.080] | -0.146     | [-0.394, 0.101] | -1.340             | [-3.637, 0.923] |
| Interest in professional cleaning | -0.005    | [-0.044, 0.027] | -0.005     | [-0.047, 0.031] | -0.103             | [-0.801, 0.517] |

Note. In-group host was coded as 1, out-group host as 2 in the analyses. Significant effects in bold.

| Table S3   |   |  |  |
|--|---|--|--|
| Results for moderated mediation analyses, Experiment 2, comparing results for new and original measure of host trustworthiness   |   |  |  |
| Trustworthiness measure  | Attitudes   | Intention  | WTP  |
| Moderator: Political orientation   |   |  |  |
| Combined (new)   | Trust: BCI [-.18, -.05]<br>Self-object: BCI [ -.14, -.01]                               | Trust: BCI [-.18, -.04]<br>Self-object: BCI [ -.26, -.01]                              | Trust: BCI [-2.05, -0.45]<br>Self-object: BCI [ -1.85, -0.06]                                |
| Original   | Trust: BCI [-.17, -.04]<br>Self-host: BCI [-.05, .004]<br>Self-object: BCI [-.15, -.01] | Trust: BCI [-.15, -.01]<br>Self-host: BCI [-.08, .01]<br>Self-object: BCI [-.27, -.01] | Trust: BCI [-2.17, -0.33]<br>Self-host: BCI [-0.57, 0.37]<br>Self-object: BCI [-1.88, -0.07] |
| Moderator: Outgroup threat   |   |  |  |
| Combined (new)   | Trust: BCI [-.14, -.04]<br>Self-object: BCI [ -.06, .05]                                | Trust: BCI [-.14, -.028]<br>Self-object: BCI [ -.12, .09]                              | Trust: BCI [-1.65, -0.27]<br>Self-object: BCI [ -0.79, 0.62]                                 |
| Original   | Trust: BCI [-.11, -.02]<br>Self-host: BCI [-.05, .004]<br>Self-object: BCI [-.06, .05]  | Trust: BCI [-.10, -.003]<br>Self-host: BCI [-.09, .01]<br>M3: BCI [-.11, .09]          | Trust: BCI [-1.44, -0.13]<br>Self-host: BCI [-0.67, 0.39]<br>Self-object: BCI [-0.82, 0.63]  |
| <i>Note.</i> Trust: Host trustworthiness. Self-host: Self-host congruence. Self-object: Self-object congruence. BCI = 95% Bootstrap Confidence Interval. All bootstrap analyses were conducted using 10 000 bootstrap samples. |   |  |  |

| Table S4   |           |                 |            |                 |                    |                |
|--|-----------|-----------------|------------|-----------------|--------------------|----------------|
| <i>Moderated mediation effects of the in-group signaling out-group host in Experiment 2.</i>                                     |           |                 |            |                 |                    |                |
| Variable   | Attitudes |                 | Intentions |                 | Willingness to pay |                |
|  | b         | 95% CI          | b          | 95% CI          | b                  | 95% CI         |
| In-group signaling out-group host vs. in-group host  |           |                 |            |                 |                    |                |
| Political orientation  |           |                 |            |                 |                    |                |
| Self-object congruence   | -0.01     | [-0.07, 0.05]   | -0.02      | [-0.15, 0.11]   | -0.16              | [-1.28, 0.93]  |
| Host trustworthiness   | -0.07     | [-0.14, -0.004] | -0.06      | [-0.12, -0.004] | -0.54              | [-1.37, 0.001] |
| Out-group threat   |           |                 |            |                 |                    |                |
| Self-object congruence   | -0.04     | [-0.09, 0.01]   | -0.08      | [-0.18, 0.02]   | -0.70              | [-1.68, 0.15]  |
| Host trustworthiness   | -0.12     | [-0.18, -0.06]  | -0.09      | [-0.15, -0.05]  | -0.91              | [-1.75, -0.19] |
| In-group signaling out-group host vs. out-group host   |           |                 |            |                 |                    |                |
| Political orientation  |           |                 |            |                 |                    |                |
| Self-object congruence   | -0.06     | [-0.12, 0.001]  | -0.12      | [-0.24, 0.01]   | -0.95              | [-2.08, 0.023] |
| Host trustworthiness   | -0.06     | [-0.13, 0.01]   | -0.04      | [-0.10, 0.01]   | -0.37              | [-0.98, 0.08]  |
| Out-group threat   |           |                 |            |                 |                    |                |
| Self-object congruence   | 0.03      | [-0.01, 0.08]   | 0.07       | [-0.03, 0.17]   | 0.57               | [-0.25, 1.46]  |
| Host trustworthiness   | 0.02      | [-0.04, 0.08]   | 0.01       | [-0.03, 0.06]   | 0.10               | [-0.29, 0.52]  |
| Note. In-group host was coded as 1, and the in-group signaling out-group host as 2 in the analyses. Significant effects in bold. |           |                 |            |                 |                    |                |

### Experiment 3: Moderation and moderated mediation

**Moderation: floodlight analyses.** Perceived out-group threat moderated the effect of host group membership on attitudes ( $b = -0.10$ ,  $SE = 0.05$ ,  $p = .027$ ), and a floodlight analysis revealed that the effect was estimated as significant and negative at and above 2.98 (58.2% of participants) on the out-group threat scale. This meant that participants with higher threat-levels displayed significantly more negative attitudes towards the out-group host's apartment compared to the in-group host's apartment, and that low-threat participants did not discriminate.

**Moderated mediation results.** For perceived out-group threat, there was no evidence of moderated mediation on choice (see Table S5). However, the indirect effects through host trustworthiness on attitudes and WTP for the Airbnb apartment were significantly moderated by perceived out-group threat (attitudes: index 95% BCI [-0.1489, -0.0666], WTP: index 95% BCI [-2.2382, -0.4223]). For people with low perceived out-group threat (threat score  $\leq 3.28$ ; 50.6% of the sample), the effect of the out-group host on trustworthiness was significant and positive, whereas for people with high levels of perceived out-group threat (threat score  $\geq 4.74$ ; 32.5% of the sample), there was a significant negative effect of the out-group host on trustworthiness.

In Experiment 3, there were no differences between the moderated mediation effects of the two- and three-item host trustworthiness measures.



| Table S5   |                                      |                                      |                                      |
|--|--------------------------------------|--------------------------------------|--------------------------------------|
| Results for moderated mediation analyses, Experiment 3, comparing results for new and original measure of host trustworthiness   |                                      |                                      |                                      |
| Trustworthiness measure  | Choice                               | Attitudes                            | WTP                                  |
| Moderator: Political orientation   |                                      |                                      |                                      |
| Combined (new)   | Trust: BCI [-0.03, 0.004]            | Trust: BCI [-0.06, 0.01]             | Trust: BCI [-0.83, 0.07]             |
|  | Self-object: BCI [-0.02, 0.11]       | Self-object: BCI [-0.01, 0.05]       | Self-object: BCI [-0.18, 1.21]       |
| Original   | Trust: BCI [-0.03, 0.003]            | Trust: BCI [-0.06, 0.001]            | Trust: BCI [-0.86, 0.03]             |
|  | Self-host: BCI [-0.01, 0.01]         | Self-host: BCI [-0.01, 0.004]        | Self-host: BCI [-0.28, 0.14]         |
|  | Self-object: BCI [-0.02, 0.12]       | Self-object: BCI [-0.01, 0.06]       | Self-object: BCI [-0.20, 1.22]       |
| Moderator: Outgroup threat   |                                      |                                      |                                      |
| Combined (new)   | Trust: BCI [-0.07, 0.02]             | Trust: BCI [-0.15, -0.07]            | Trust: BCI [-2.24, -0.42]            |
|  | Self-object: BCI [-0.10, 0.05]       | Self-object: BCI [-0.05, 0.03]       | Self-object: BCI [-1.03, 0.55]       |
| Original   | Trust: BCI [-0.08, 0.01]             | Trust: BCI [-0.14, -0.06]            | Trust: BCI [-2.18, -0.12]            |
|  | Self-host: BCI [-0.03, 0.04]         | Self-host: BCI [-0.03, 0.01]         | Self-host: BCI [-0.87, 0.41]         |
|  | Self-object: BCI [-0.10, 0.05]       | Self-object: BCI [-0.05, 0.03]       | Self-object: BCI [-1.02, 0.57]       |
| Moderator: Rating condition  |                                      |                                      |                                      |
| Combined (new)   | 3.5 vs. 5 stars: [-0.19, 0.26]       | 3.5 vs. 5 stars: [-0.23, 0.33]       | 3.5 vs. 5 stars: [-3.80, 5.12]       |
|  | No rating vs. 5 stars: [-0.30, 0.16] | No rating vs. 5 stars: [-0.37, 0.21] | No rating vs. 5 stars: [-5.89, 3.25] |
| Original   | 3.5 vs. 5 stars: [-0.16, 0.25]       | 3.5 vs. 5 stars: [-0.20, 0.34]       | 3.5 vs. 5 stars: [-3.04, 5.02]       |
|  | No rating vs. 5 stars: [-0.26, 0.16] | No rating vs. 5 stars: [-0.33, 0.21] | No rating vs. 5 stars: [-5.29, 3.13] |
| <i>Note.</i> Trust: Host trustworthiness. Self-host: Self-host congruence. Self-object: Self-object congruence. BCI = 95% Bootstrap Confidence Interval. All bootstrap analyses were conducted using 10 000 bootstrap samples. |                                      |                                      |                                      |

**Moderated mediation by rating conditions.** As specified in the pre-registration for Experiment 3, one of our secondary hypotheses was that the level of star ratings presented with the Airbnb apartment would moderate the indirect effect of an in-group vs. out-group host through host trustworthiness. To test this, we ran moderation analyses using Model 7 in PROCESS. Since we were testing the effect of three rating conditions (no ratings, 3.5 stars and 5 stars) we used two dummy variables to represent rating conditions in the regression. We used indicator coding for the dummy coding, with the top (5 star) rating condition as the reference category. The first dummy represented the contrast between the 3.5 star condition and the 5 star condition, and the second dummy represented the contrast between the no rating condition and the 5 star condition. Our hypothesis was that the top (5 star) rating would reduce the effect of host group membership (in-group vs. out-group) on host trustworthiness. Contrary to our prediction, the indirect effect of host group membership through host trustworthiness was not moderated by rating condition (see Table S5).

**Choice proportion tests.** In the article manuscript, we focus on the contrasts between the no rating condition vs. the two rating conditions, and between the mediocre and top rating conditions. In Table S6, we present the results from Chi square tests for all the remaining available contrasts, which might be of interest to readers.

| Table S6   |                              |                               |
|--|------------------------------|-------------------------------|
| <i>Chi square tests of proportion differences within host group conditions</i> |                              |                               |
| No ratings vs. 3.5 stars   |                              |                               |
|  | Ingroup                      | Outgroup                      |
| Choice   | Chi square = 0.218, p = .640 | Chi square = 2.630, p = .105  |
| No ratings vs. 5 stars   |                              |                               |
|  | Ingroup                      | Outgroup                      |
| Choice   | Chi square = 1.683, p = .194 | Chi square = 8.280, p = .004  |
| 3.5 stars vs. 5 stars  |                              |                               |
|  | Ingroup                      | Outgroup                      |
| Choice   | Chi square = 3.094, p = .079 | Chi square = 19.565, p < .001 |

**Planned contrast tests.** In tables S7-S9, we display results of planned comparisons.

Tables S7 and S8 show in-group vs. out-group difference tests, and Table S9 shows tests between rating conditions within each host group condition.

| Table S7  |             |             |                                  |
|---|-------------|-------------|----------------------------------|
| Attitudes towards Airbnb apartment (M & SD)                       |             |             |                                  |
|   | Ingroup     | Outgroup    | Mean differences (effect size d) |
| No ratings  | 8.65 (1.48) | 8.27 (1.69) | 0.38 (d = 0.24)*                 |
| 3.5 stars   | 8.40 (1.36) | 8.17 (1.54) | 0.23 (d = 0.16)                  |
| 5 stars   | 8.75 (1.39) | 8.58 (1.61) | 0.17 (d = 0.11)                  |
| Total   | 8.60 (1.42) | 8.34 (1.62) | 0.26 (d = 0.17)*                 |
| Note. Standard deviations in parentheses.<br>*p < .05, ** p < .01 |             |             |                                  |

| Table S8  |                |                |                                  |
|---|----------------|----------------|----------------------------------|
| Willingness to pay for Airbnb apartment (\$)                      |                |                |                                  |
|   | Ingroup        | Outgroup       | Mean differences (effect size d) |
| No ratings  | 126.61 (46.60) | 120.47 (47.47) | 6.14 (d = 0.13)                  |
| 3.5 stars   | 124.11 (44.99) | 123.26 (61.68) | 0.85 (d = 0.02)                  |
| 5 stars   | 123.50 (42.67) | 128.81 (44.96) | -5.31 (d = 0.12)                 |
| Total   | 124.74 (44.70) | 124.17 (51.90) | 0.57 (d = 0.01)                  |
| Note. Standard deviations in parentheses.<br>*p < .05, ** p < .01 |                |                |                                  |

| Table S9   |                          |                           |
|--|--------------------------|---------------------------|
| <i>Planned comparison tests of differences in attitudes and willingness to pay across rating conditions within host group conditions</i> |                          |                           |
| No ratings vs. 3.5 stars   |                          |                           |
|  | In-group                 | Out-group                 |
| Attitudes  | t(795) = 1.30, p = .193  | t(795) = 0.52, p = .601   |
| Willingness to pay   | t(795) = 0.42, p = .673  | t(795) = -0.47, p = .638  |
| No ratings vs. 5 stars   |                          |                           |
|  | In-group                 | Out-group                 |
| Attitudes  | t(795) = -0.59, p = .558 | t(795) = -1.68, p = .093  |
| Willingness to pay   | t(795) = 0.52, p = .601  | t(795) = -1.41, p = .160  |
| 3.5 stars vs. 5 stars  |                          |                           |
|  | In-group                 | Out-group                 |
| Attitudes  | t(795) = -1.89, p = .060 | t(795) = -2.20, p = .028* |
| Willingness to pay   | t(795) = 0.10, p = .919  | t(795) = -0.94, p = .349  |
| Note. *p < .05, ** p < .01   |                          |                           |

### Supplemental analyses: gender and age effects

In this section, we report analyses of interaction effects between gender and age and the host group manipulations for all three experiments.

#### Experiment 1: gender and age effects

**Gender.** There were no significant interactions between gender and the in-group vs. out-group host manipulation on any of the dependent variables.

| Table 6.1: Results from factorial ANOVA with gender and host group membership (in-group vs. out-group) as factors |                         |     |             |          |      |                     |
|---|-------------------------|-----|-------------|----------|------|---------------------|
| Dependent Variable: Attitudes   |                         |     |             |          |      |                     |
| Source  | Type III Sum of Squares | df  | Mean Square | F        | Sig. | Partial Eta Squared |
| Corrected Model   | 5,827 <sup>a</sup>      | 3   | 1,942       | ,885     | ,451 | ,019                |
| Intercept   | 6759,162                | 1   | 6759,162    | 3078,733 | ,000 | ,957                |
| Gender  | 1,975                   | 1   | 1,975       | ,900     | ,345 | ,007                |
| In_vs_Out   | 3,750                   | 1   | 3,750       | 1,708    | ,193 | ,012                |
| Gender * In_vs_Out  | ,213                    | 1   | ,213        | ,097     | ,756 | ,001                |
| Error   | 300,775                 | 137 | 2,195       |          |      |                     |
| Total   | 7134,640                | 141 |             |          |      |                     |
| Corrected Total   | 306,601                 | 140 |             |          |      |                     |
| a. R Squared = ,019 (Adjusted R Squared = -,002)  |                         |     |             |          |      |                     |

| Table 6.2: Results from factorial ANOVA with gender and host group membership (in-group vs. out-group) as factors |                         |     |             |          |      |                     |
|---|-------------------------|-----|-------------|----------|------|---------------------|
| Dependent Variable: Intention   |                         |     |             |          |      |                     |
| Source  | Type III Sum of Squares | df  | Mean Square | F        | Sig. | Partial Eta Squared |
| Corrected Model   | 9,209 <sup>a</sup>      | 3   | 3,070       | ,663     | ,576 | ,014                |
| Intercept   | 4926,162                | 1   | 4926,162    | 1063,920 | ,000 | ,886                |
| Gender  | 1,459                   | 1   | 1,459       | ,315     | ,576 | ,002                |
| In_vs_Out   | 7,008                   | 1   | 7,008       | 1,514    | ,221 | ,011                |
| Gender * In_vs_Out  | ,376                    | 1   | ,376        | ,081     | ,776 | ,001                |
| Error   | 634,337                 | 137 | 4,630       |          |      |                     |
| Total   | 5624,000                | 141 |             |          |      |                     |

| Table 6.3: Results from factorial ANOVA with gender and host group membership (in-group vs. out-group) as factors |                         |     |              |          |      |                     |
|---|-------------------------|-----|--------------|----------|------|---------------------|
| Dependent Variable: Willingness to pay  |                         |     |              |          |      |                     |
| Source  | Type III Sum of Squares | df  | Mean Square  | F        | Sig. | Partial Eta Squared |
| Corrected Model   | 204266,289 <sup>a</sup> | 3   | 68088,763    | 1,710    | ,168 | ,036                |
| Intercept   | 55732254,291            | 1   | 55732254,291 | 1399,413 | ,000 | ,911                |
| Gender  | 87144,754               | 1   | 87144,754    | 2,188    | ,141 | ,016                |
| In_vs_Out   | 117551,532              | 1   | 117551,532   | 2,952    | ,088 | ,021                |
| Gender * In_vs_Out  | 4,261                   | 1   | 4,261        | ,000     | ,992 | ,000                |
| Error   | 5456088,321             | 137 | 39825,462    |          |      |                     |
| Total   | 61522500,000            | 141 |              |          |      |                     |
| Corrected Total   | 5660354,610             | 140 |              |          |      |                     |
| a. R Squared = ,036 (Adjusted R Squared = ,015)   |                         |     |              |          |      |                     |
| Corrected Total   | 643,546                 | 140 |              |          |      |                     |
| a. R Squared = ,014 (Adjusted R Squared = -,007)  |                         |     |              |          |      |                     |

**Age.** There were no significant interactions between age and the in-group vs. out-group host manipulation on any of the dependent variables.

| Table 6.4: Regressions of Host Group Membership, Age and Host Group Membership*Age Interaction on Dependent Variables |                              |        |       |                              |        |       |                               |         |       |
|---|------------------------------|--------|-------|------------------------------|--------|-------|-------------------------------|---------|-------|
|   | Consequent                   |        |       |                              |        |       |                               |         |       |
|   | Y1: Attitudes                |        |       | Y2: Intentions               |        |       | Y3: Willingness to pay        |         |       |
| Antecedent  | Coeff.                       | SE     | p     | Coeff.                       | SE     | p     | Coeff.                        | SE      | p     |
| Ingroup vs. Outgroup  | -1.6164                      | 2.7040 | .5510 | 1,4709                       | 3,9084 | ,7072 | 55,6431                       | 44,5250 | ,2135 |
| Age   | -.0705                       | .2064  | .7333 | ,2137                        | ,2984  | ,4752 | 5,5820                        | 3,3993  | ,1029 |
| Interaction   | .0545                        | .1137  | .6327 | -,0819                       | ,1643  | ,6190 | -2,6556                       | 1,8723  | ,1583 |
| Constant  | 9.1118                       | 4.8983 | .0650 | 1,5809                       | 7,0800 | ,8236 | -43,9651                      | 80,6567 | ,5866 |
|   | R <sup>2</sup> = .0156       |        |       | R <sup>2</sup> = .0202       |        |       | R <sup>2</sup> = .0436        |         |       |
|   | F(3, 137) = .7254, p = .5385 |        |       | F(3, 137) = .9426, p = .4220 |        |       | F(3, 137) = 2.0810, p = .1056 |         |       |

## Experiment 2: gender and age effects

**Gender.** There were no significant interactions between gender and the in-group vs. out-group host manipulation on any of the dependent variables.

| Table 6.5: Results from factorial ANOVA with gender and host group membership (in-group vs. out-group) as factors |                         |     |             |          |      |                     |
|---|-------------------------|-----|-------------|----------|------|---------------------|
| Dependent Variable: Attitudes   |                         |     |             |          |      |                     |
| Source  | Type III Sum of Squares | df  | Mean Square | F        | Sig. | Partial Eta Squared |
| Corrected Model   | 71,079 <sup>a</sup>     | 3   | 23,693      | 7,922    | ,000 | ,058                |
| Intercept   | 16943,390               | 1   | 16943,390   | 5664,937 | ,000 | ,937                |
| In_vs_Out   | 34,938                  | 1   | 34,938      | 11,681   | ,001 | ,030                |
| gender  | 33,104                  | 1   | 33,104      | 11,068   | ,001 | ,028                |
| In_vs_Out * gender  | 7,674                   | 1   | 7,674       | 2,566    | ,110 | ,007                |
| Error   | 1148,514                | 384 | 2,991       |          |      |                     |
| Total   | 18543,240               | 388 |             |          |      |                     |
| Corrected Total   | 1219,594                | 387 |             |          |      |                     |
| a. R Squared = ,058 (Adjusted R Squared = ,051)   |                         |     |             |          |      |                     |

| Table 6.6: Results from factorial ANOVA with gender and host group membership (in-group vs. out-group) as factors |                         |     |             |          |      |                     |
|---|-------------------------|-----|-------------|----------|------|---------------------|
| Dependent Variable: Intention   |                         |     |             |          |      |                     |
| Source  | Type III Sum of Squares | df  | Mean Square | F        | Sig. | Partial Eta Squared |
| Corrected Model   | 102,698 <sup>a</sup>    | 3   | 34,233      | 4,716    | ,003 | ,036                |
| Intercept   | 10316,176               | 1   | 10316,176   | 1421,330 | ,000 | ,787                |
| In_vs_Out   | 72,594                  | 1   | 72,594      | 10,002   | ,002 | ,025                |
| gender  | 27,703                  | 1   | 27,703      | 3,817    | ,051 | ,010                |
| In_vs_Out * gender  | 9,283                   | 1   | 9,283       | 1,279    | ,259 | ,003                |
| Error   | 2787,116                | 384 | 7,258       |          |      |                     |
| Total   | 13448,000               | 388 |             |          |      |                     |
| Corrected Total   | 2889,814                | 387 |             |          |      |                     |
| a. R Squared = ,036 (Adjusted R Squared = ,028)   |                         |     |             |          |      |                     |

Table 6.7: Results from factorial ANOVA with gender and host group membership (in-group vs. out-group) as factors

| Dependent Variable: Willingness to pay |                         |     |               |          |      |                     |
|--|-------------------------|-----|---------------|----------|------|---------------------|
| Source                                 | Type III Sum of Squares | df  | Mean Square   | F        | Sig. | Partial Eta Squared |
| Corrected Model                        | 354476,611 <sup>a</sup> | 3   | 118158,870    | 2,206    | ,087 | ,017                |
| Intercept                              | 143340180,003           | 1   | 143340180,003 | 2676,575 | ,000 | ,875                |
| In_vs_Out                              | 285905,884              | 1   | 285905,884    | 5,339    | ,021 | ,014                |
| gender                                 | 64328,342               | 1   | 64328,342     | 1,201    | ,274 | ,003                |
| In_vs_Out * gender                     | 2771,862                | 1   | 2771,862      | ,052     | ,820 | ,000                |
| Error                                  | 20564577,232            | 384 | 53553,587     |          |      |                     |
| Total                                  | 166522557,000           | 388 |               |          |      |                     |
| Corrected Total                        | 20919053,843            | 387 |               |          |      |                     |

a. R Squared = ,017 (Adjusted R Squared = ,009)

**Age.** There was a significant interaction between age and the in-group vs. out-group host manipulation on willingness to pay (WTP) in Experiment 2. Floodlight analyses revealed that older participants (above 46.9 years old, 58.7% of the sample) reported significantly lower WTP for the out-group host's apartment, whereas younger participants (below 46.9 years old) did not differ in their WTP for the out-group vs. in-group host's apartment.

There were not significant interaction effects between age and the in-group vs. out-group host manipulation on attitudes or intentions to rent the apartments.

| Table 6.8: Regressions of Host Group Membership, Age and Interaction on Dependent Variables |                                |       |       |                               |        |       |                               |         |       |
|---|--------------------------------|-------|-------|-------------------------------|--------|-------|-------------------------------|---------|-------|
|   | Consequent                     |       |       |                               |        |       |                               |         |       |
|   | Y1: Attitudes                  |       |       | Y2: Intentions                |        |       | Y3: Willingness to pay        |         |       |
| Antecedent  | Coeff.                         | SE    | p     | Coeff.                        | SE     | p     | Coeff.                        | SE      | p     |
| Ingroup vs. Outgroup  | .2365                          | .5449 | .6645 | .1057                         | .8485  | .9009 | 11.2786                       | 8.9968  | .2107 |
| Age   | .0009                          | .0164 | .9540 | .0007                         | .0256  | .9769 | .5141                         | .2716   | .0591 |
| Interaction   | -.0154                         | .0104 | .1407 | -.0180                        | .0163  | .2686 | -.3628                        | .1724   | .0360 |
| Constant  | 7.4329                         | .8526 | .0000 | 6.3697                        | 1.3277 | .0000 | 60.0593                       | 14.0775 | .0000 |
|   | R <sup>2</sup> = .0730         |       |       | R <sup>2</sup> = .0513        |        |       | R <sup>2</sup> = .0253        |         |       |
|   | F(3, 384) = 10.0872, p = .0000 |       |       | F(3, 384) = 6.9185, p = .0002 |        |       | F(3, 384) = 3.3161, p = .0200 |         |       |

### Experiment 3: gender and age effects

**Gender.** There was a significant interaction between gender and the in-group vs. out-group manipulation on choosing the Airbnb apartment vs. the hotel room. Results from Chi-square tests of independence revealed that men did not choose the Airbnb presented with an out-group host less often than the Airbnb presented with an in-group host ( $\chi^2 = 0.055$ ,  $p = .825$ ), whereas women did ( $\chi^2 = 12.804$ ,  $p < .001$ ). This indicated that the discrimination on this variable was driven by the women in the sample.

There were no significant interactions between gender and the in-group vs. out-group manipulation on attitudes or willingness to pay.

|   | Y1: Choice |       |       |
|---|------------|-------|-------|
| Antecedent  | Coeff.     | SE    | p     |
| Ingroup vs. Outgroup                                  | -.0521     | .2217 | .8143 |
| Gender  | 1.5333     | .4763 | .0013 |
| Interaction   | -.6935     | .3052 | .0231 |
| Constant  | -.8677     | .3504 | .0133 |
| Nagelkerke $R^2 = .0418$                              |            |       |       |
| -2LL = 997.9492, ModelLL = 24.4966, df = 3, p = .0000 |            |       |       |

| Dependent Variable: Attitudes                   |                         |     |             |           |      |                     |
|---|-------------------------|-----|-------------|-----------|------|---------------------|
| Source  | Type III Sum of Squares | df  | Mean Square | F         | Sig. | Partial Eta Squared |
| Corrected Model                                 | 64,727 <sup>a</sup>     | 3   | 21,576      | 9,572     | ,000 | ,035                |
| Intercept                                       | 57479,693               | 1   | 57479,693   | 25500,013 | ,000 | ,970                |
| In_vs_Out                                       | 13,271                  | 1   | 13,271      | 5,887     | ,015 | ,007                |
| gender  | 50,216                  | 1   | 50,216      | 22,277    | ,000 | ,027                |
| In_vs_Out * gender                              | ,716                    | 1   | ,716        | ,318      | ,573 | ,000                |
| Error   | 1796,521                | 797 | 2,254       |           |      |                     |
| Total   | 59314,360               | 801 |             |           |      |                     |
| Corrected Total                                 | 1861,248                | 800 |             |           |      |                     |
| a. R Squared = ,035 (Adjusted R Squared = ,031) |                         |     |             |           |      |                     |



| Table 6.11: Results from factorial ANOVA with gender and host group membership (in-group vs. out-group) as factors |                         |     |              |          |      |                     |
|--|-------------------------|-----|--------------|----------|------|---------------------|
| Dependent Variable: Willingness to pay (dollar)  |                         |     |              |          |      |                     |
| Source   | Type III Sum of Squares | df  | Mean Square  | F        | Sig. | Partial Eta Squared |
| Corrected Model  | 4178,638 <sup>a</sup>   | 3   | 1392,879     | ,594     | ,619 | ,002                |
| Intercept  | 12400057,384            | 1   | 12400057,384 | 5283,802 | ,000 | ,869                |
| In_vs_Out  | 80,246                  | 1   | 80,246       | ,034     | ,853 | ,000                |
| gender   | 2675,834                | 1   | 2675,834     | 1,140    | ,286 | ,001                |
| In_vs_Out * gender   | 1431,646                | 1   | 1431,646     | ,610     | ,435 | ,001                |
| Error  | 1870404,309             | 797 | 2346,806     |          |      |                     |
| Total  | 14281982,344            | 801 |              |          |      |                     |
| Corrected Total  | 1874582,947             | 800 |              |          |      |                     |
| a. R Squared = ,002 (Adjusted R Squared = -,002)   |                         |     |              |          |      |                     |

**Age.** There were no significant interactions between age and the in-group vs. out-group manipulation on any of the dependent variables in Experiment 3.

| Table 6.12: Regressions of Host Group Membership, Age and Interaction on Dependent Variables |   |       |       |                                |       |       |                              |         |       |
|--|---|-------|-------|--------------------------------|-------|-------|------------------------------|---------|-------|
|  | Consequent  |       |       |                                |       |       |                              |         |       |
|  | Y1: Choice  |       |       | Y2: Attitudes                  |       |       | Y3: Willingness to pay       |         |       |
| Antecedent   | Coeff.  | SE    | p     | Coeff.                         | SE    | p     | Coeff.                       | SE      | p     |
| Ingroup vs. Outgroup   | -.1395  | .4600 | .7616 | .0988                          | .3223 | .7592 | 9.3685                       | 10.5378 | .3743 |
| Age  | -.0153  | .0144 | .2878 | -.0100                         | .0099 | .3093 | .3024                        | .3225   | .3488 |
| Interaction  | -.0056  | .0092 | .5452 | -.0068                         | .0062 | .2755 | -.2020                       | .2025   | .3187 |
| Constant   | .6582   | .7164 | .3582 | 9.3164                         | .5089 | .0000 | 110.5110                     | 16.6429 | .0000 |
|  | Nagelkerke $R^2 = .0596$                                |       |       | $R^2 = .0593$                  |       |       | $R^2 = .0013$                |         |       |
|  | -2LL = 987.2705<br>ModelLL = 35.1753, df = 3, p = .0000 |       |       | F(3, 797) = 16.7565, p = .0000 |       |       | F(3, 797) = .3416, p = .7952 |         |       |

## Sample characteristics

In this section, we present an overview of sample characteristics for the three experiments, as well as comparisons of the main demographics of the Norwegian adult population and our samples in Experiment 2 and 3, confirming that these samples were nationally representative for Norwegian adult consumers.

### Overview of samples

*Table 7.1: Overview of sample size and sample characteristics for the three experiments.*

|                             | Experiment 1  | Experiment 2  | Experiment 3  |
|-----------------------------|---|---|---|
| N                           | 214   | 584   | 801   |
| Experimental conditions     | Ingroup, n = 72<br>Outgroup, n = 71<br>Ougroup w/ingroup symbol, n = 71 | Ingroup, n = 191<br>Outgroup, n = 197<br>Outgroup w/ingroup symbol, n = 196 | Ingroup, no rating, n = 134<br>Ingroup, mediocre, n = 133<br>Ingroup, top, n = 133<br>Outgroup, no rating, n = 134<br>Outgroup, mediocre, n = 134<br>Outgroup, top, n = 133 |
| Sample type                 | Norwegian students  | Representative of Norwegian consumers                                       | Representative of Norwegian consumers   |
| Age and gender distribution | $M_{\text{age}} = 23.73$ , $SD_{\text{age}} = 2.47$ ,<br>56.1% female   | $M_{\text{age}} = 50.13$ , $SD_{\text{age}} = 16.41$ , 52.1% female         | $M_{\text{age}} = 49.23$ , $SD_{\text{age}} = 16.95$<br>49.6% female  |

## Representativeness of sample: Experiment 2

*Table 7.2: Percentage of Study 2 sample and Norwegian population (2017) from each Norwegian county*

| County           | Percent of sample | Percent of Norwegian pop. |
|------------------|-------------------|---------------------------|
| Finnmark         | 1,9               | 1,45                      |
| Troms            | 3,1               | 3,15                      |
| Nordland         | 5,0               | 4,62                      |
| Nord-Trøndelag   | 1,9               | 2,61                      |
| Sør-Trøndelag    | 8,0               | 6,04                      |
| Møre og Romsdal  | 3,8               | 5,06                      |
| Sogn og Fjordane | 1,9               | 2,10                      |
| Hordaland        | 9,8               | 9,89                      |
| Rogaland         | 9,4               | 8,98                      |
| Vest-Agder       | 2,1               | 3,50                      |
| Aust-Agder       | 1,7               | 2,22                      |
| Telemark         | 5,3               | 3,30                      |
| Vestfold         | 4,6               | 4,70                      |
| Buskerud         | 3,1               | 5,32                      |
| Oppland          | 4,1               | 3,60                      |
| Hedmark          | 4,1               | 3,73                      |
| Østfold          | 7,5               | 5,57                      |
| Akershus         | 9,6               | 11,49                     |
| Oslo             | 13,2              | 12,68                     |

*Table 7.3: Gender distribution of Norwegian population (2017) and Study 2 sample*

| Gender | Percent of sample | Percent of Norwegian pop. |
|--------|-------------------|---------------------------|
| Men    | 47,9              | 50,38                     |
| Women  | 52,1              | 49,62                     |

*Table 7.4: Age distribution of Norwegian population (2017) and Study 2 sample*

| Age group | Percent of sample | Percent of Norwegian pop. |
|-----------|-------------------|---------------------------|
| 18-29     | 15,4              | 20,43                     |
| 30-39     | 13,9              | 16,96                     |
| 40-49     | 18,3              | 17,97                     |
| 50-59     | 18,5              | 16,25                     |
| 60-69     | 20,4              | 13,83                     |
| 70-79     | 13,0              | 9,21                      |
| 80+       | 0,5               | 5,38                      |

### Representativeness of sample: Experiment 3

*Table 7.5: Percentage of Study 2 sample and Norwegian population (2018) from each Norwegian county*

| County           | Percent of sample | Percent of Norwegian pop. |
|------------------|-------------------|---------------------------|
| Finnmark         | 1,0               | 1,44                      |
| Troms            | 2,4               | 3,14                      |
| Nordland         | 4,7               | 4,60                      |
| Trøndelag        | 11,0              | 8,66                      |
| Møre og Romsdal  | 4,1               | 5,04                      |
| Sogn og Fjordane | 2,1               | 2,08                      |
| Hordaland        | 9,6               | 9,87                      |
| Rogaland         | 9,2               | 8,94                      |
| Vest-Agder       | 3,2               | 3,52                      |
| Aust-Agder       | 2,0               | 2,21                      |
| Telemark         | 3,5               | 3,27                      |
| Vestfold         | 4,1               | 4,70                      |
| Buskerud         | 4,0               | 5,32                      |
| Oppland          | 4,6               | 3,59                      |
| Hedmark          | 4,2               | 3,72                      |
| Østfold          | 3,7               | 5,58                      |
| Akershus         | 12,1              | 11,59                     |
| Oslo             | 14,2              | 12,72                     |

*Table 7.6: Gender distribution of Norwegian population (2018) and Study 3 sample*

| Gender | Percent of sample | Percent of Norwegian pop. |
|--------|-------------------|---------------------------|
| Men    | 50,4              | 50,39                     |
| Women  | 49,6              | 49,61                     |

*Table 7.7: Age distribution of Norwegian population (2018) and Study 3 sample*

| Age group | Percent of sample | Percent of Norwegian pop. |
|-----------|-------------------|---------------------------|
| 18-29     | 15,5              | 20,29                     |
| 30-39     | 18,4              | 17,00                     |
| 40-49     | 19,0              | 17,65                     |
| 50-59     | 13,6              | 16,34                     |
| 60-69     | 18,5              | 13,75                     |
| 70-79     | 14,0              | 9,64                      |
| 80+       | 1,1               | 5,33                      |

## Supplemental plots

### Dependent variable plots

Note: In all plots, the black dot indicates the mean, and the black lines represent one standard deviation on each side of the mean.

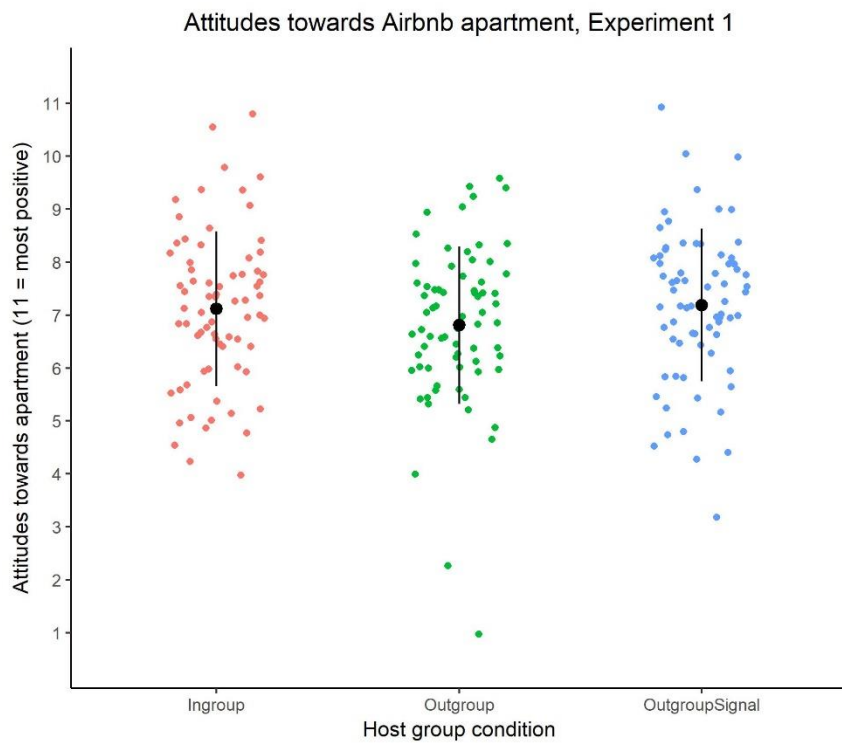


Figure 0-6

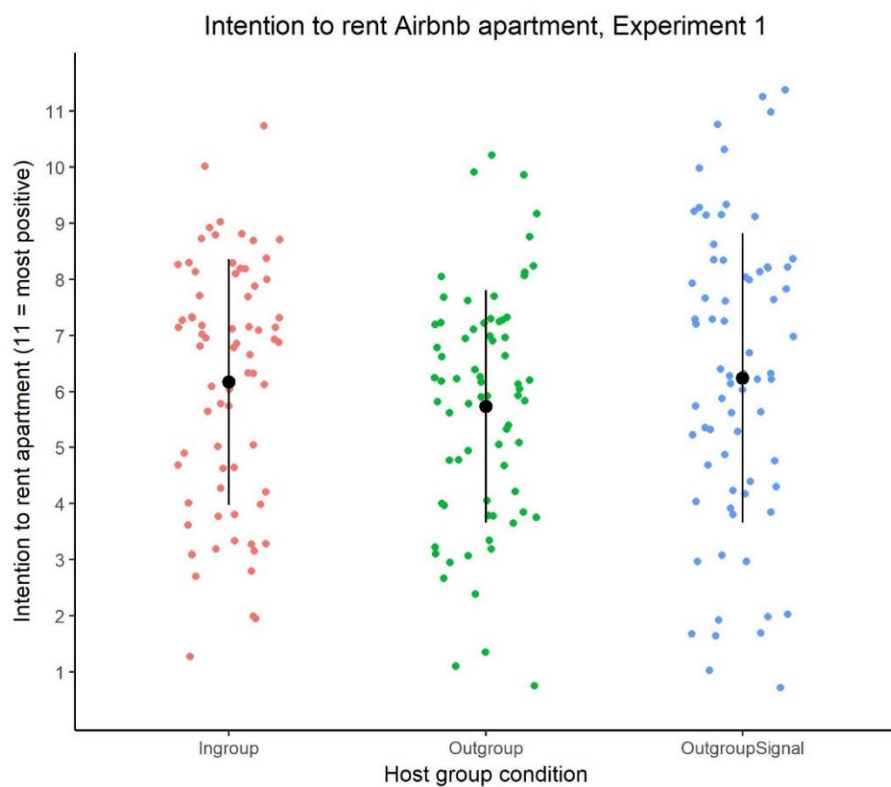


Figure 0-7

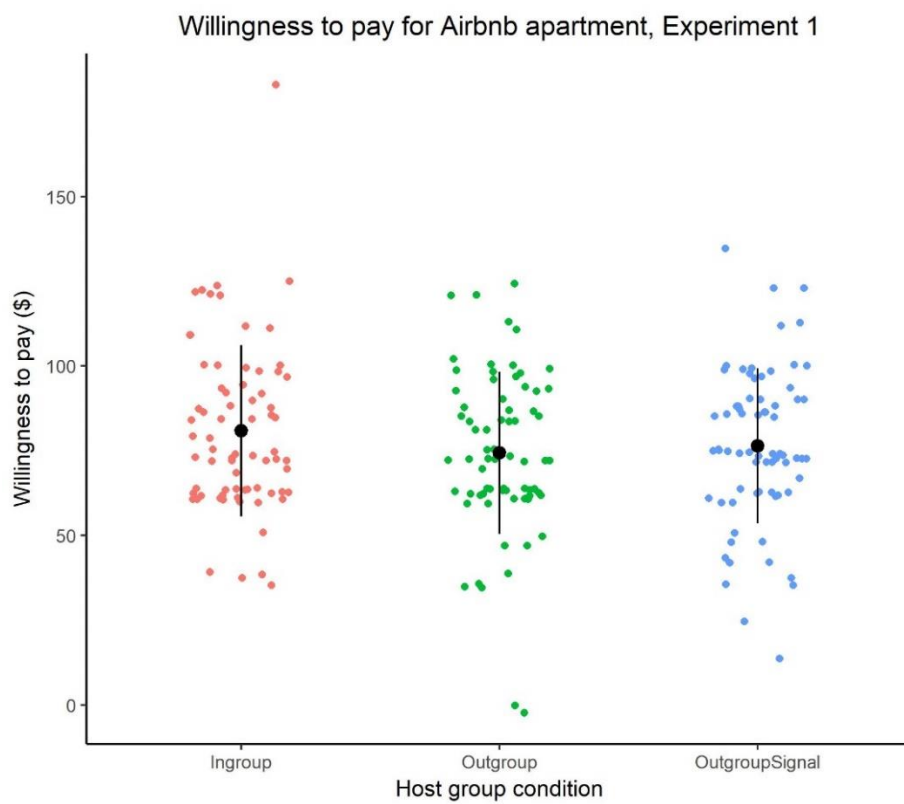


Figure 0-8

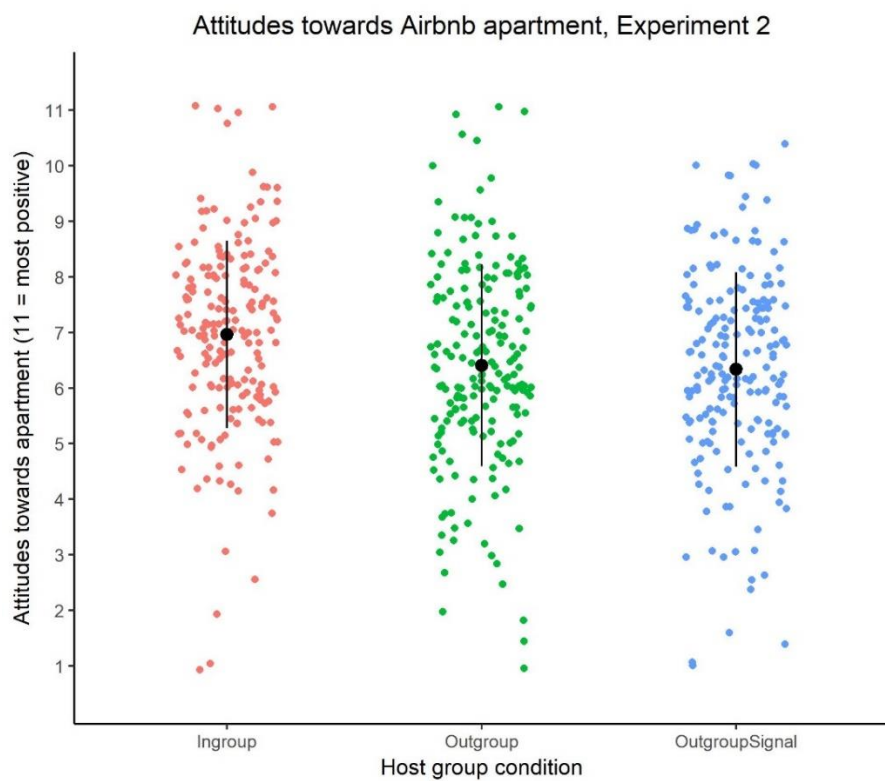


Figure 0-9

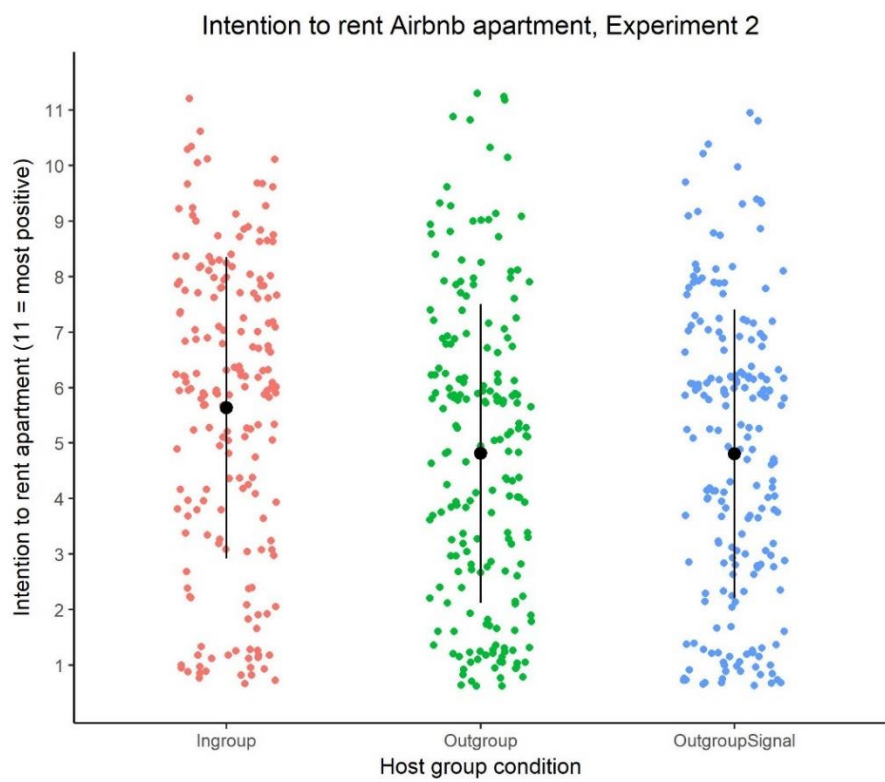


Figure 0-10

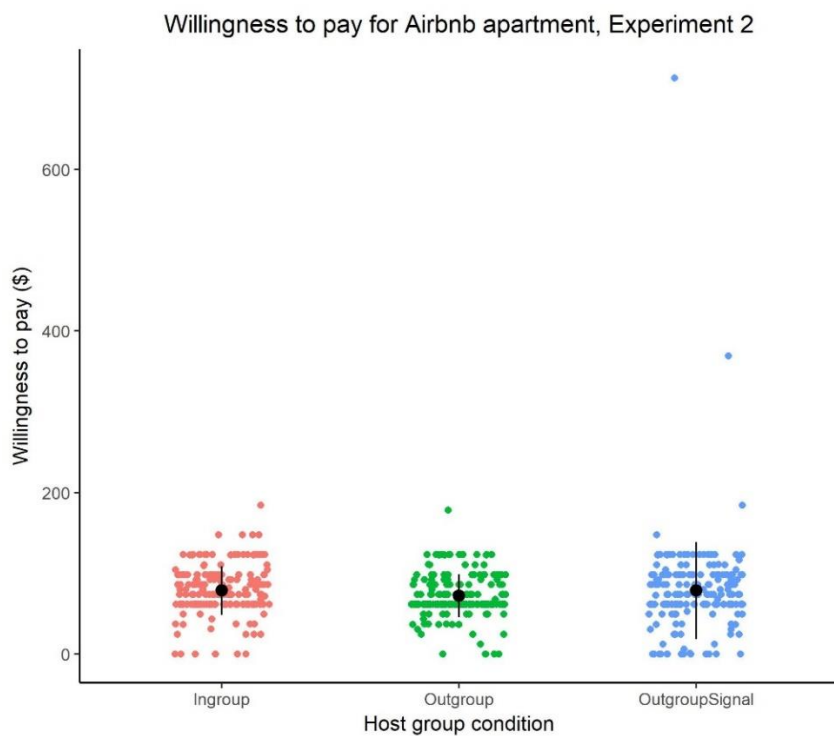


Figure 0-11

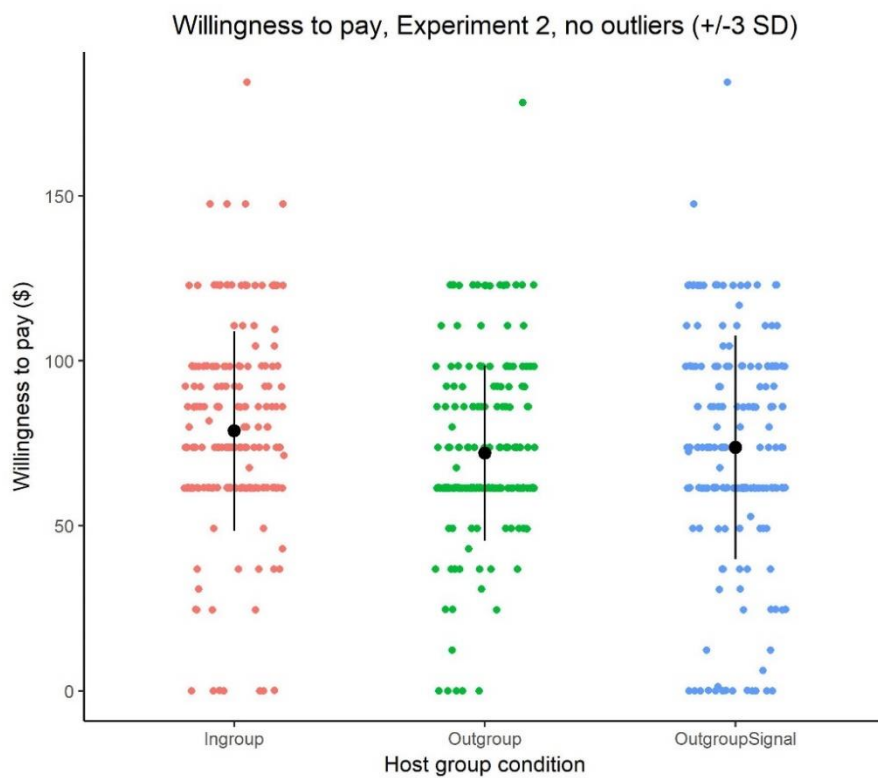


Figure 0-12



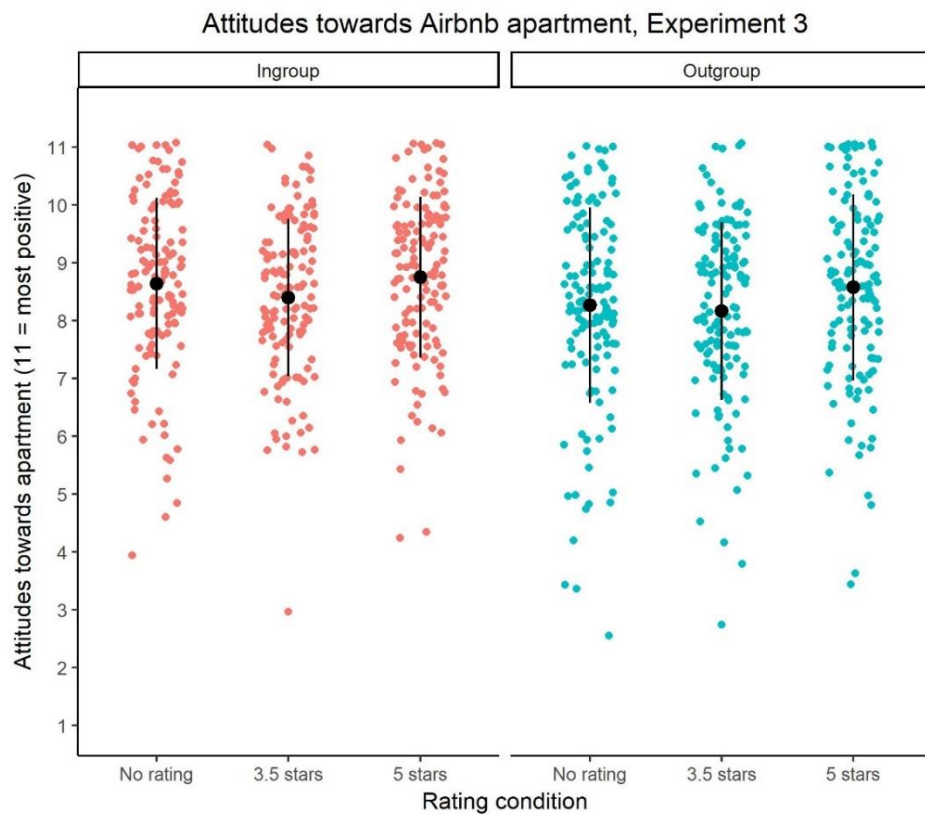


Figure 0-13

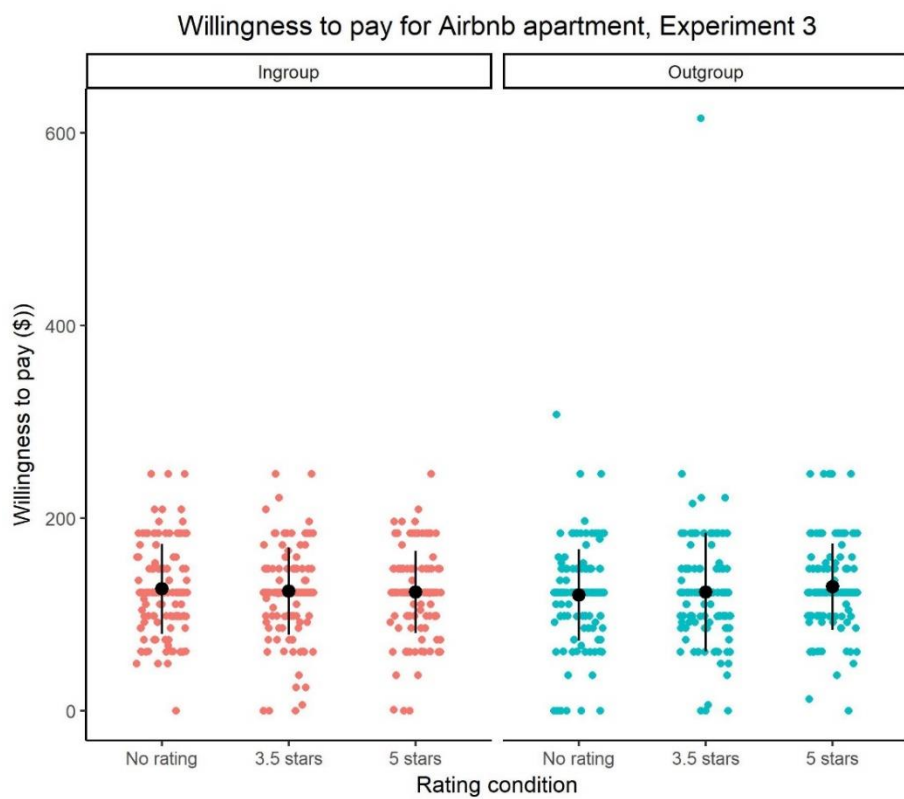


Figure 0-14

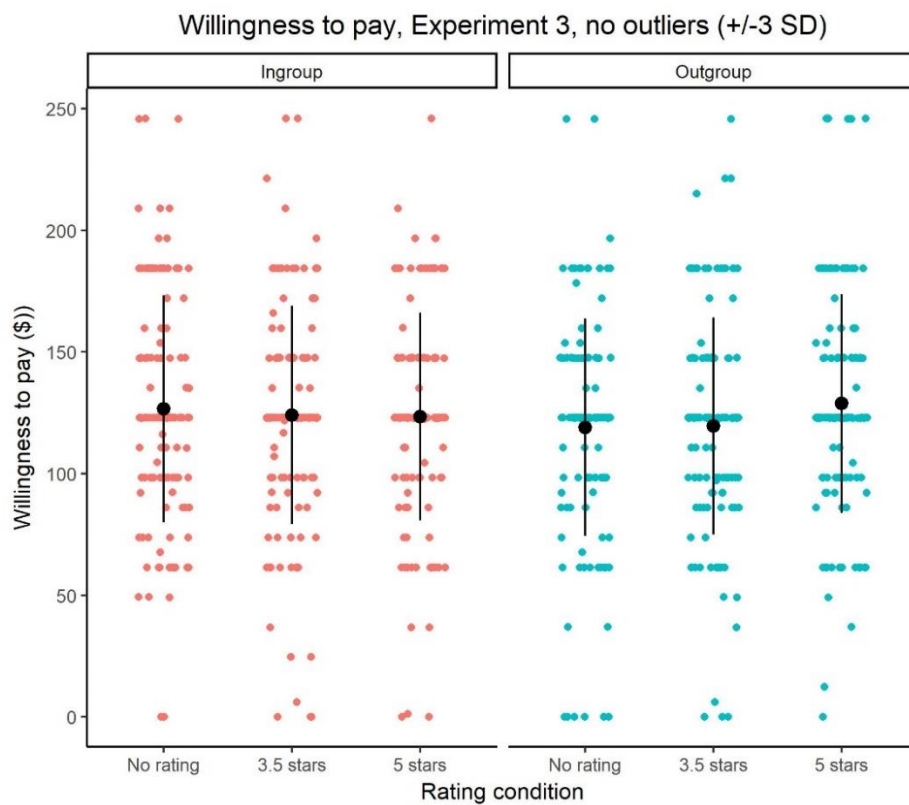
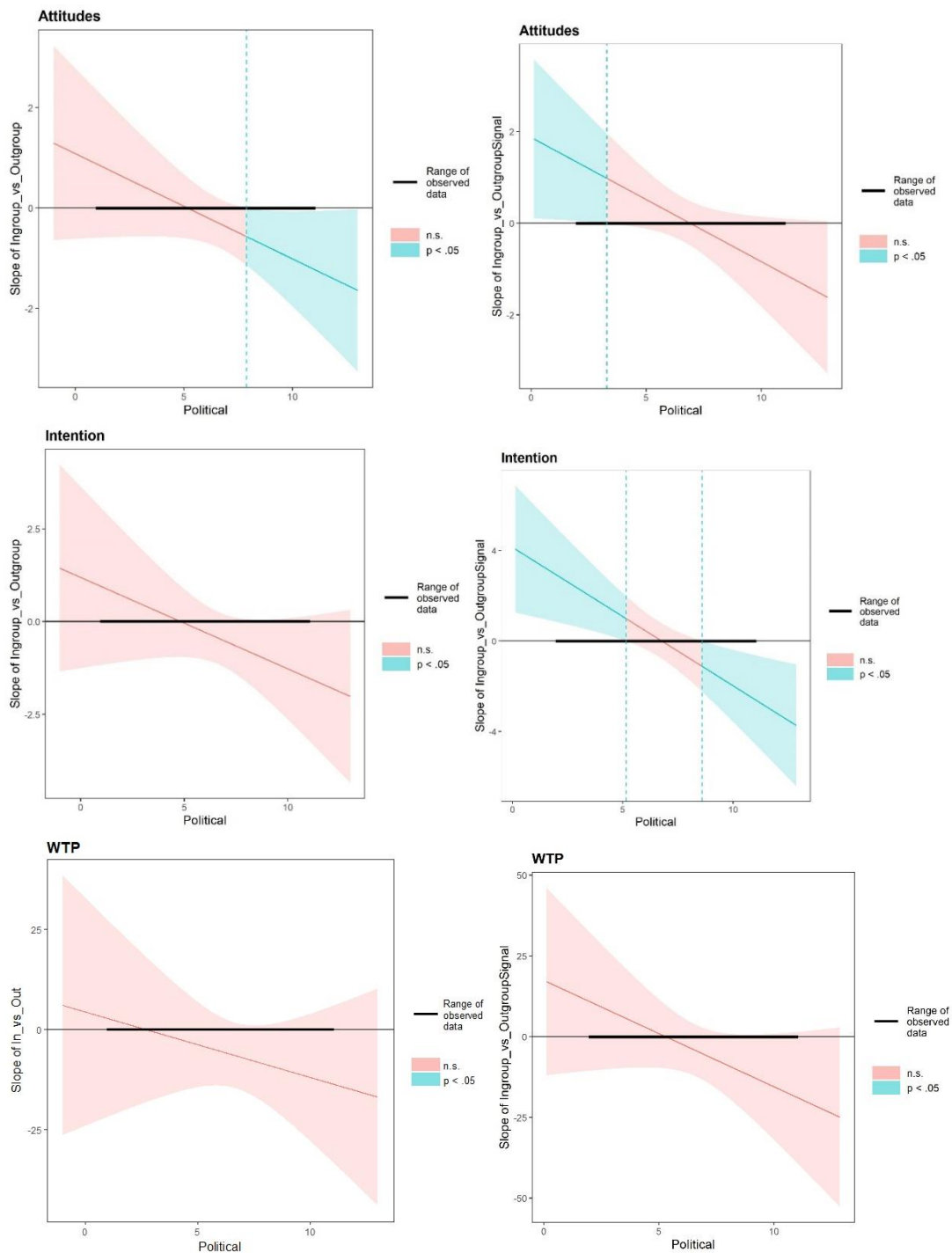
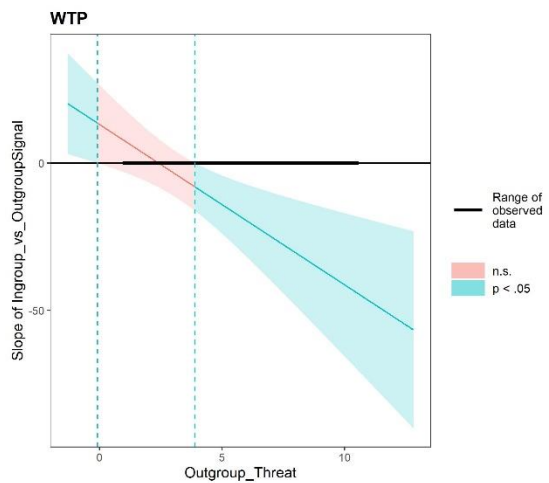
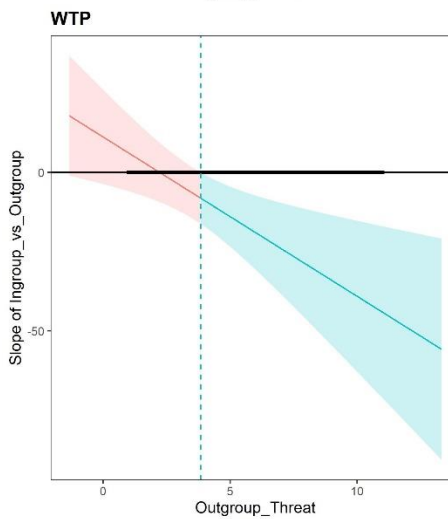
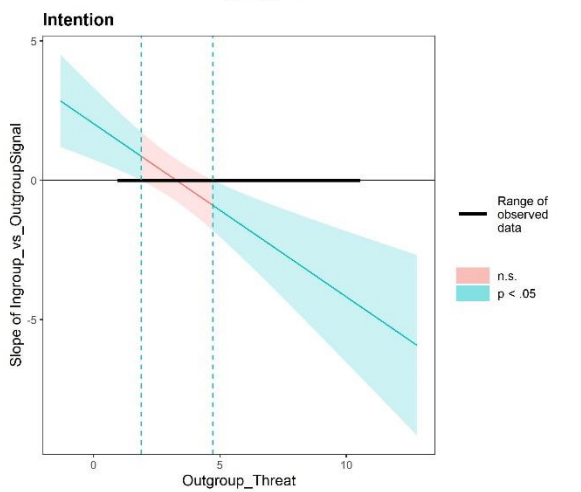
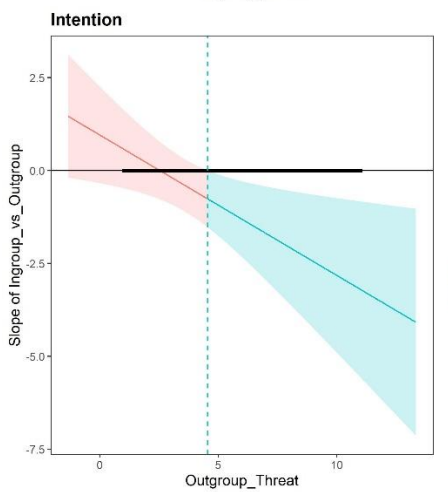
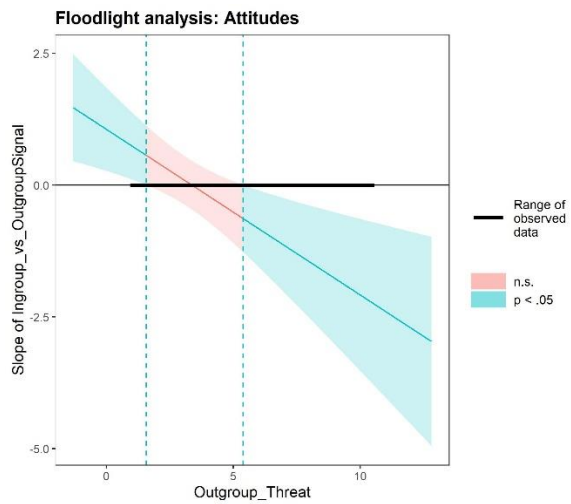
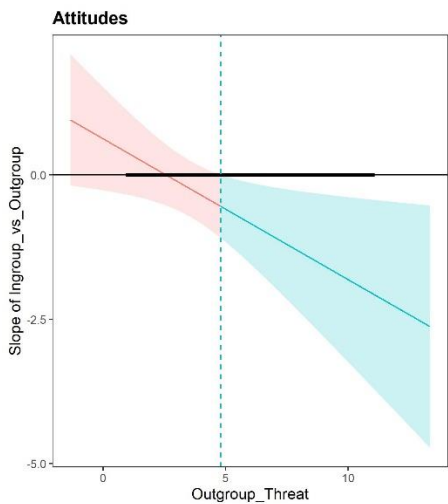


Figure 0-15

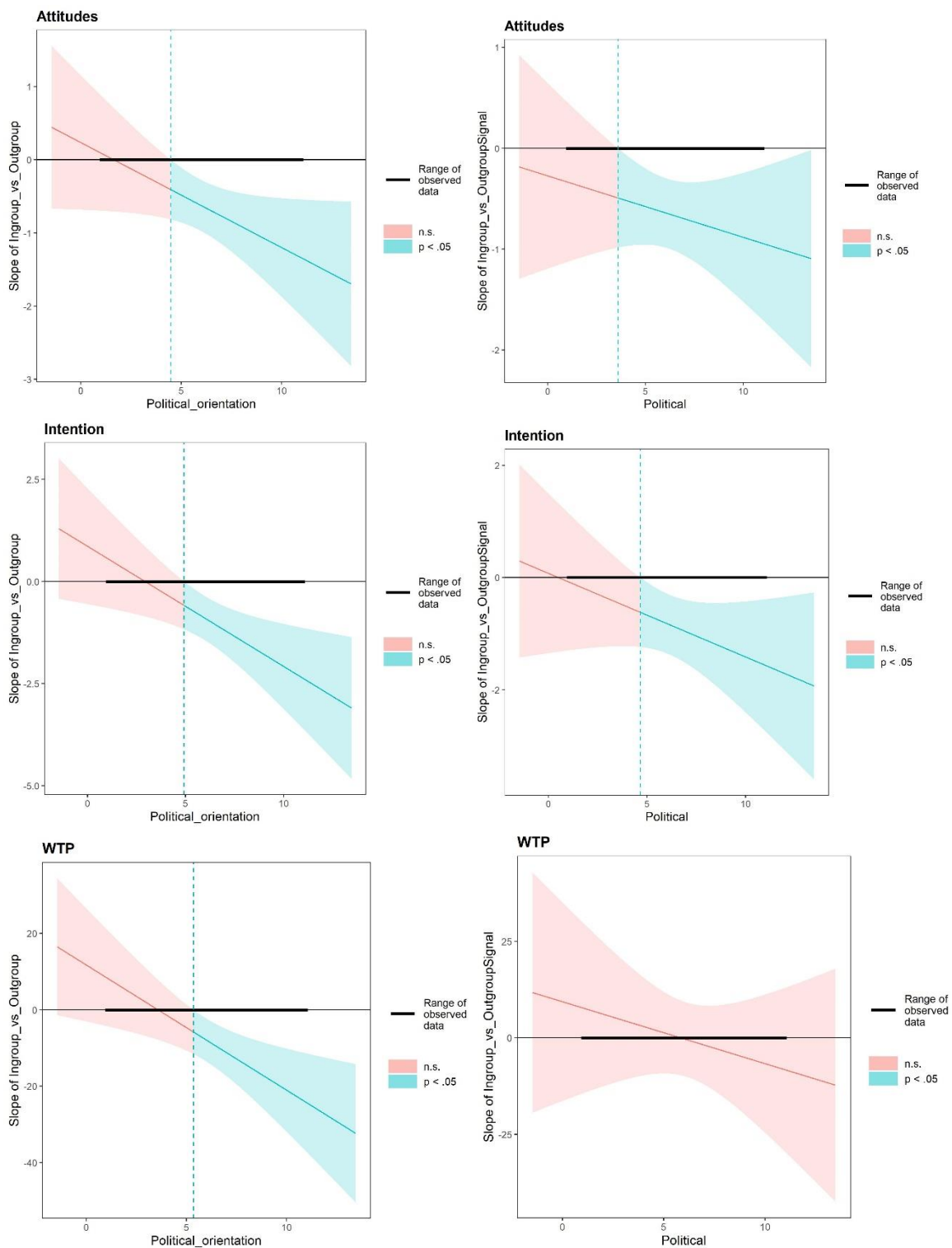
## Interaction plots

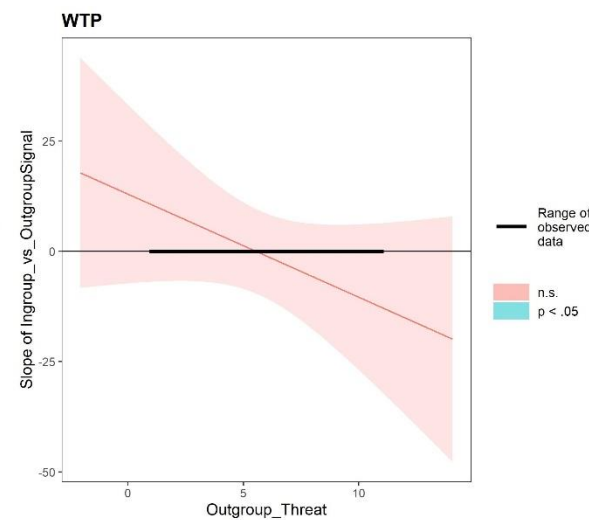
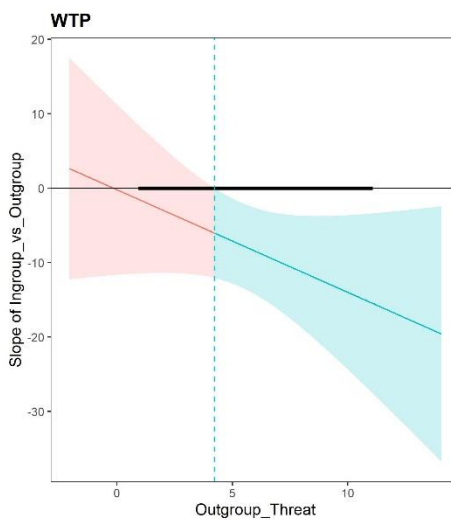
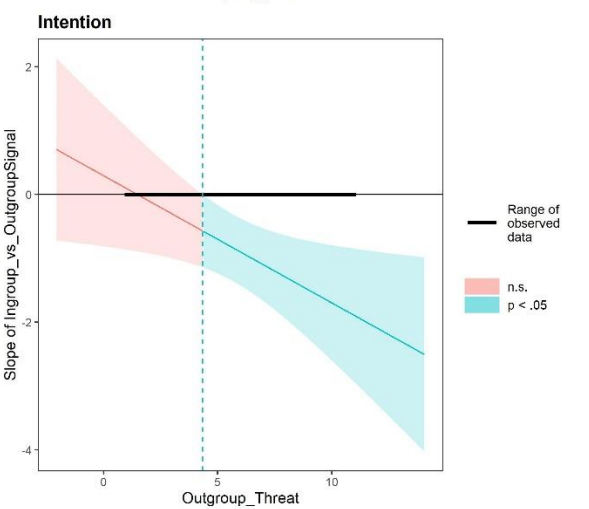
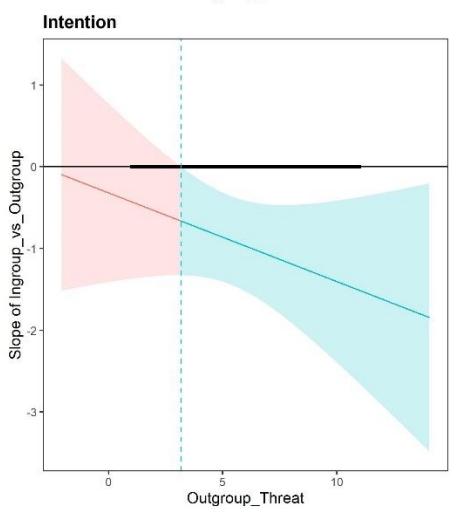
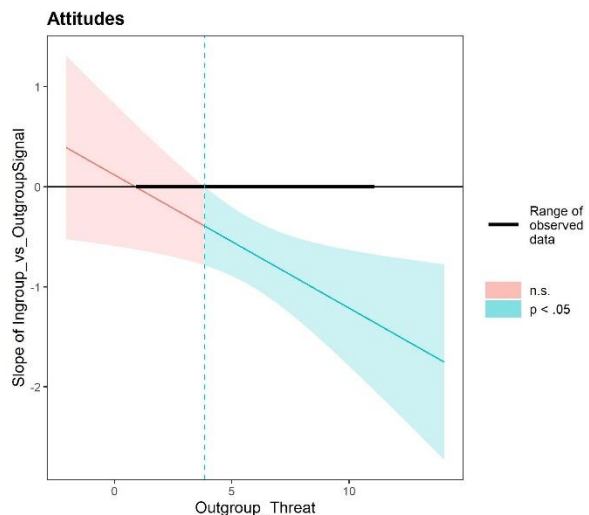
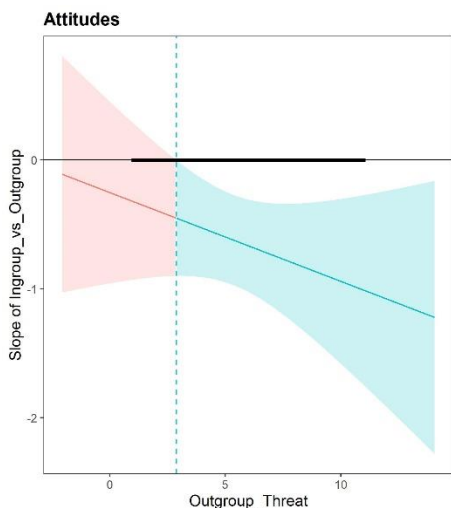
### Dependent variables: Experiment 1



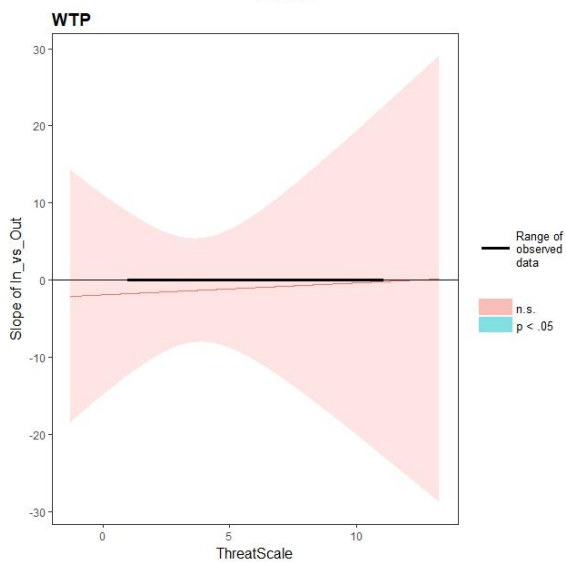
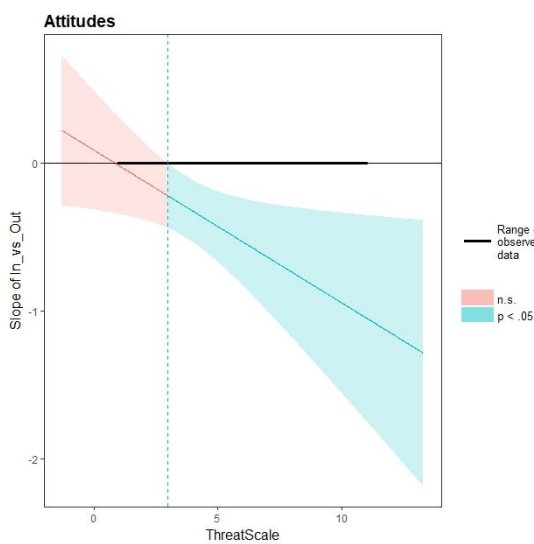
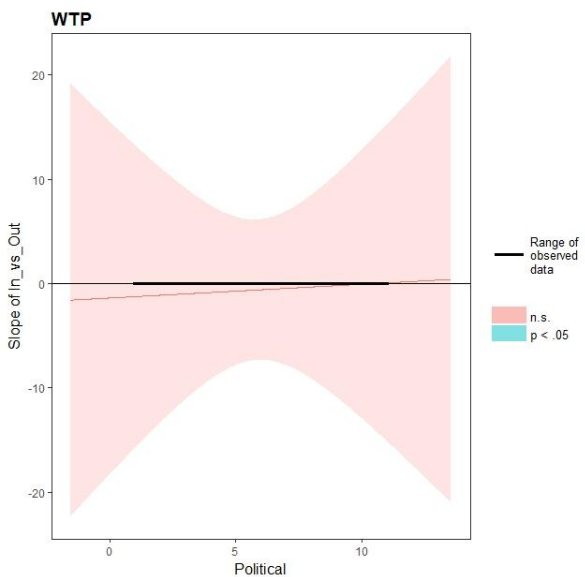
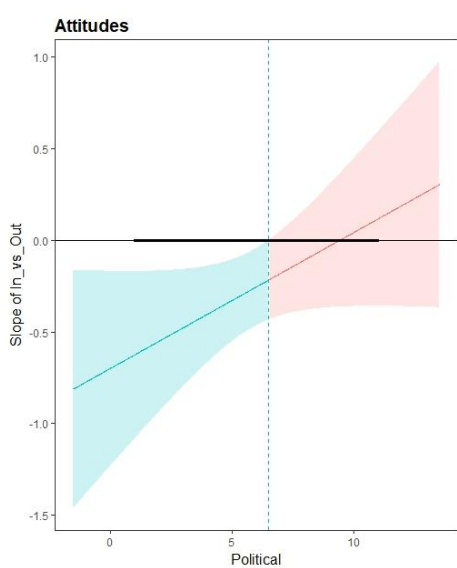


## Dependent variables Experiment 2:

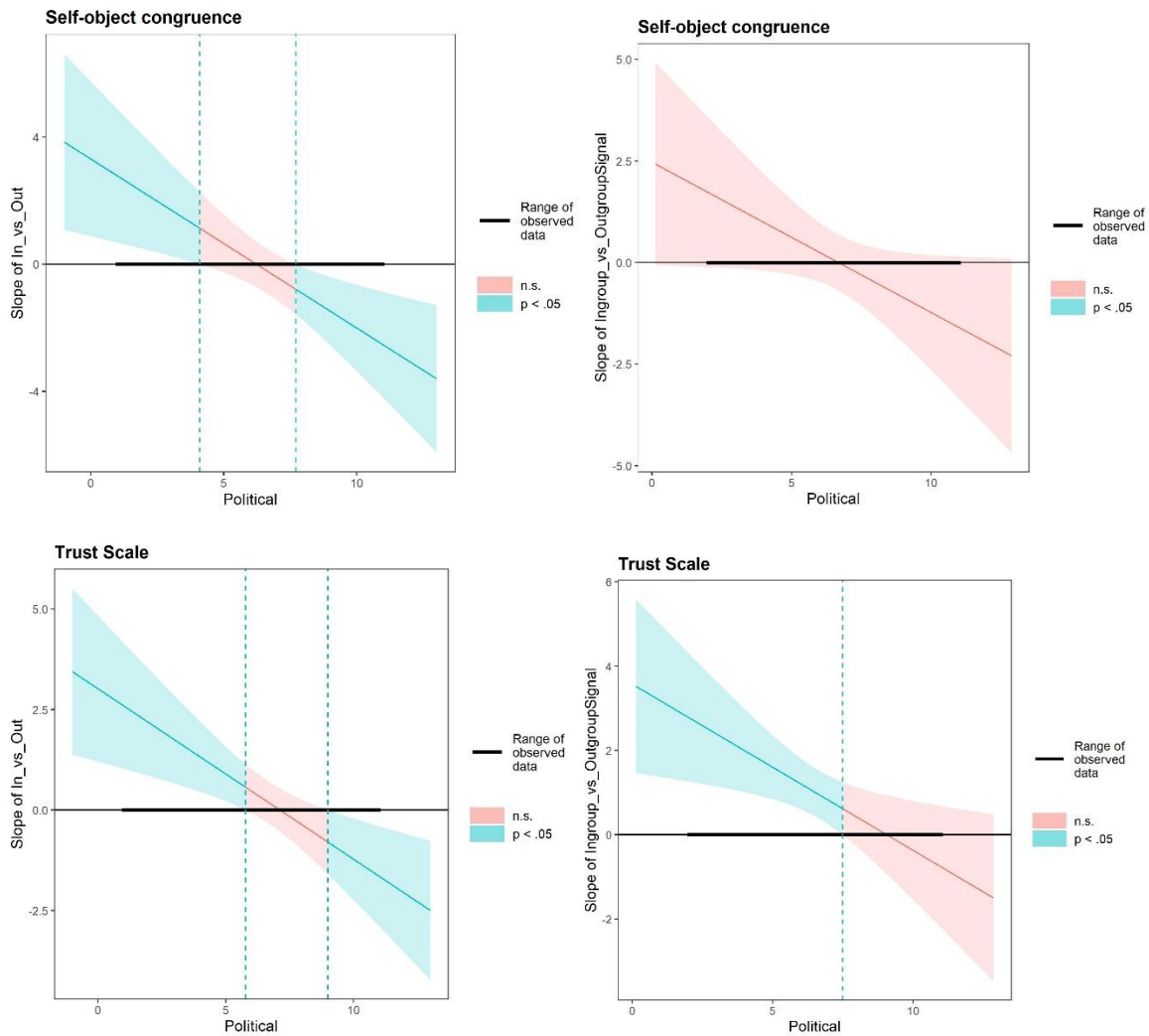




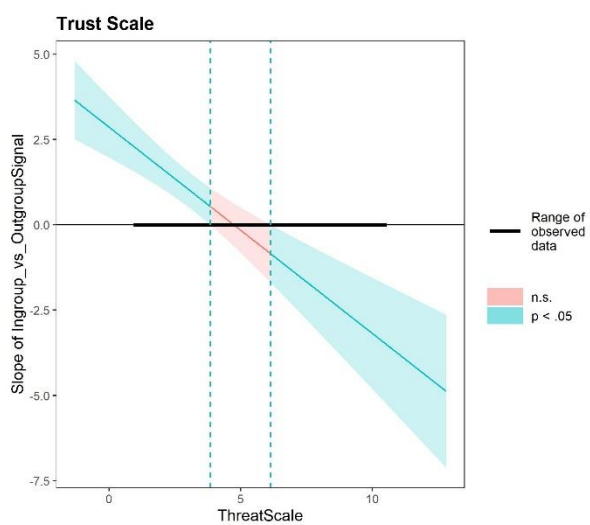
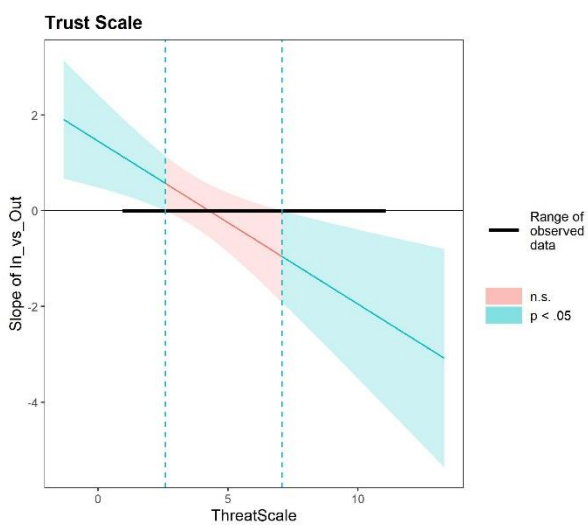
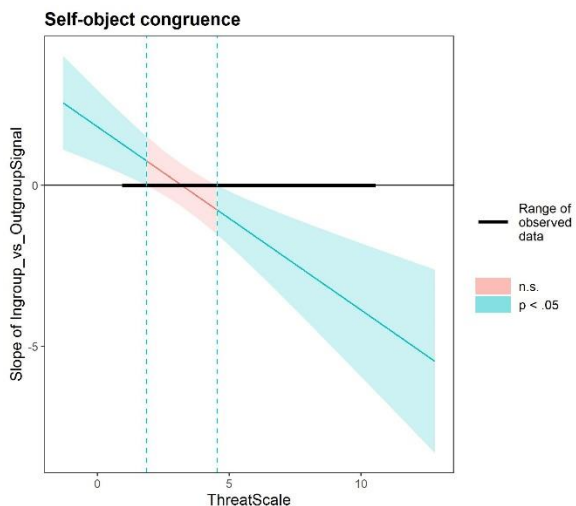
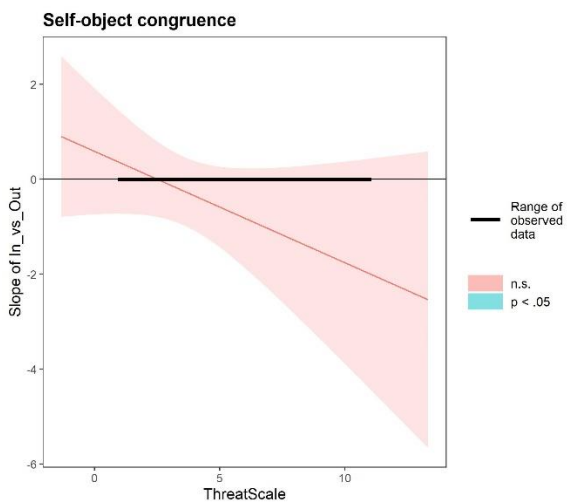
### Dependent variables: Experiment 3



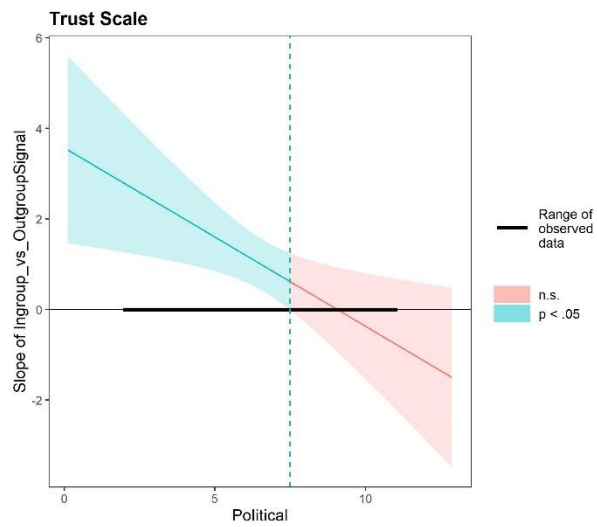
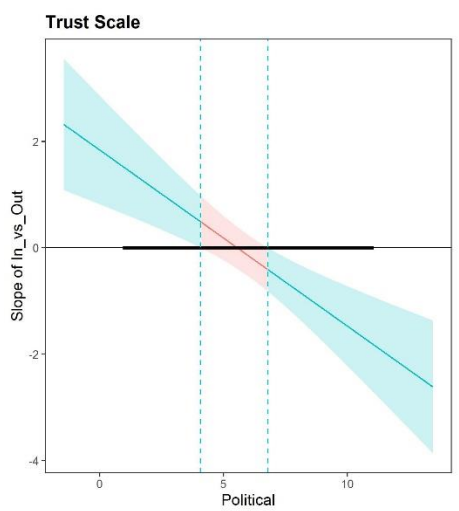
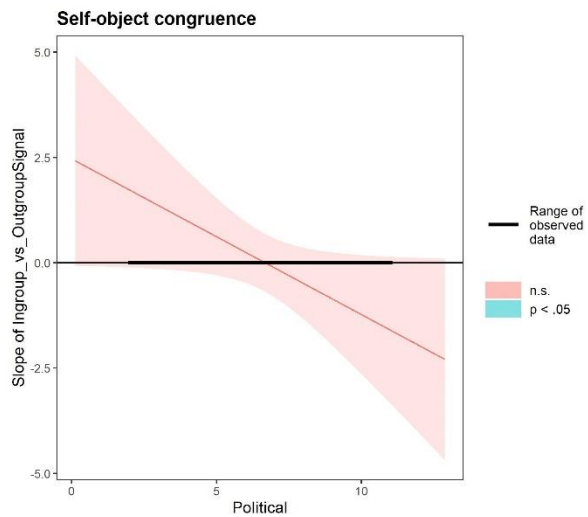
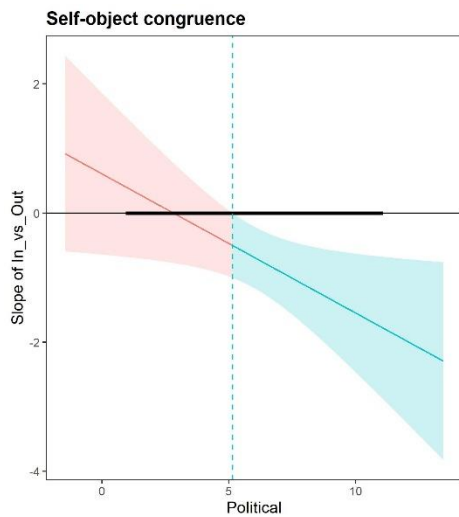
### Mediators: Experiment 1

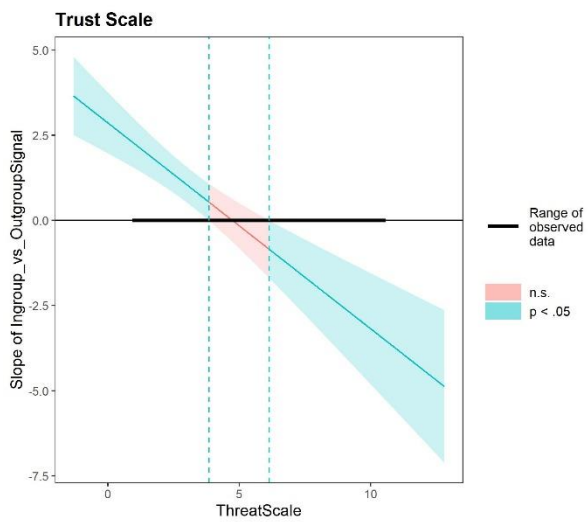
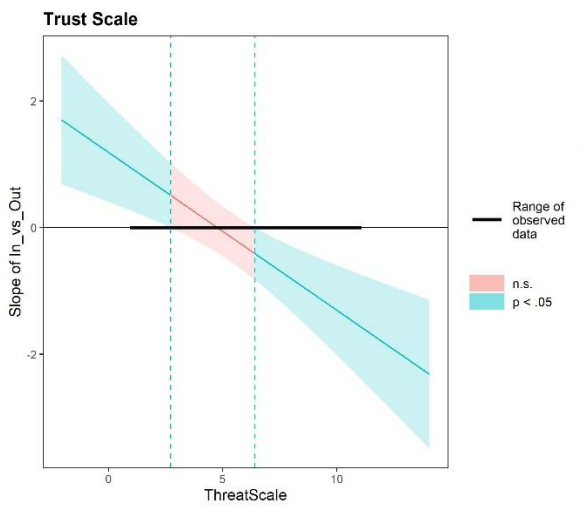
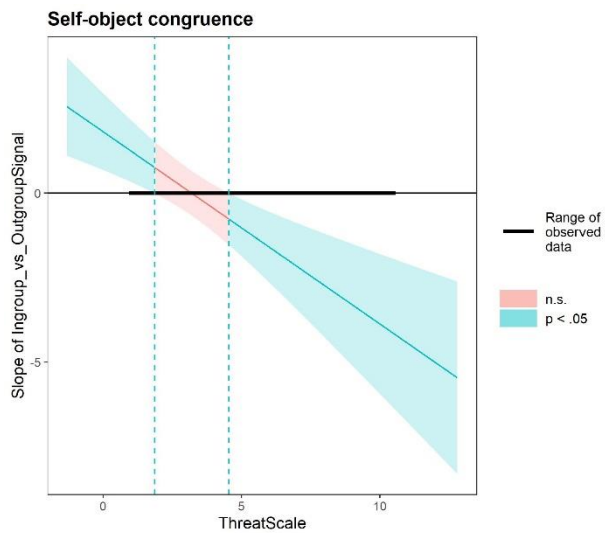
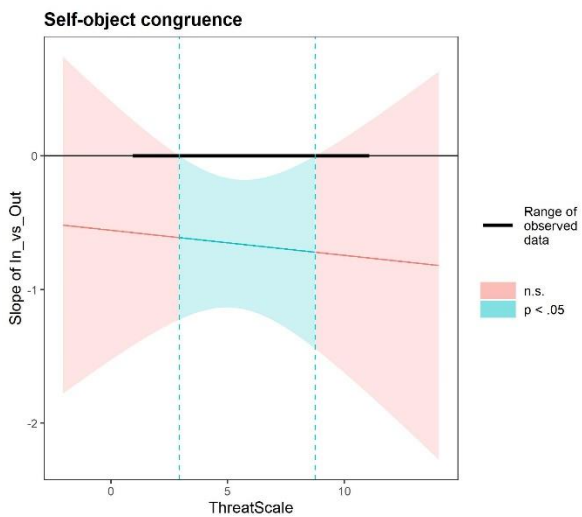




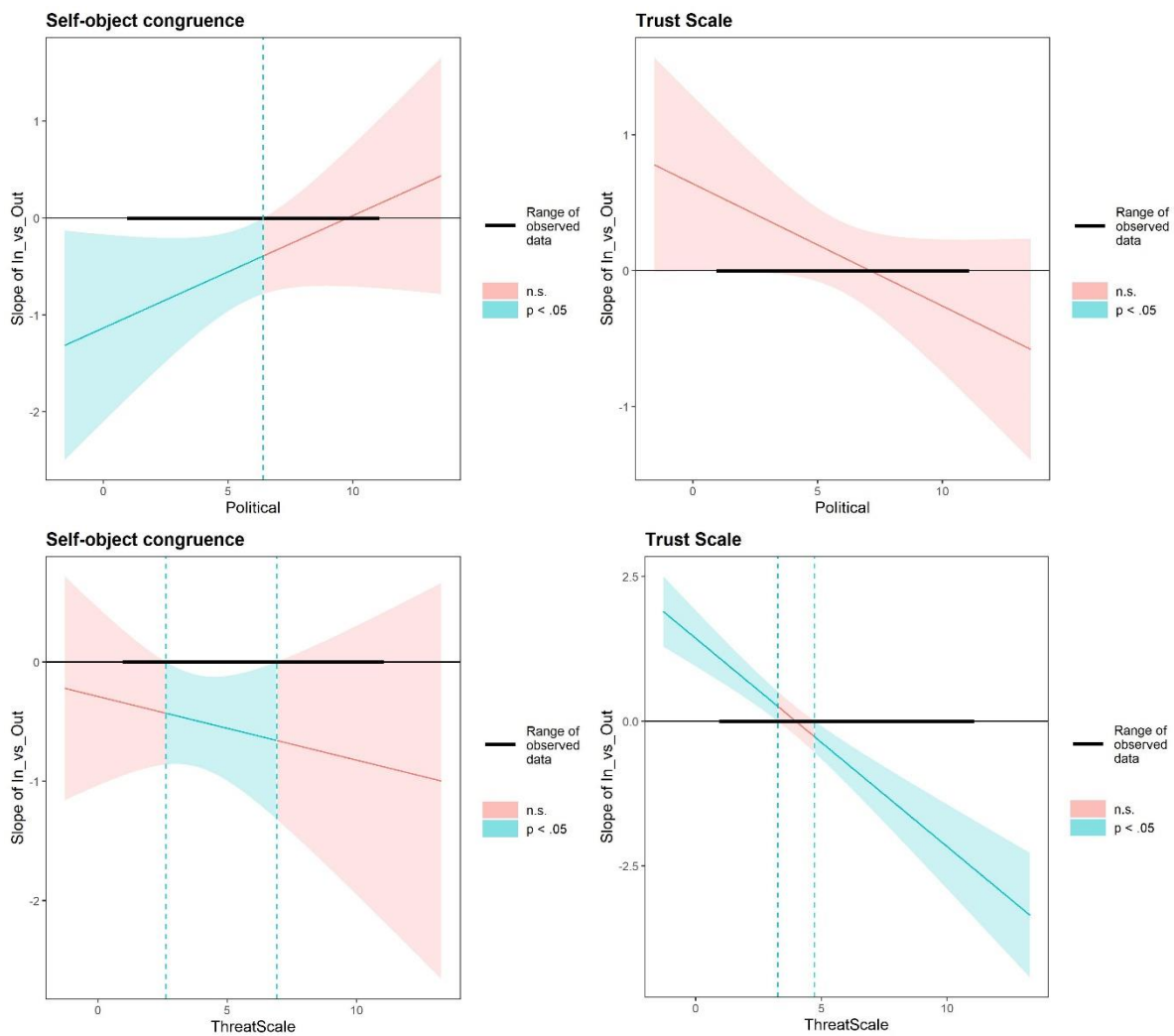


## Mediators: Experiment 2





### Mediators: Experiment 3



## Measurements

### Note about scales

In the questions posed to participants, all the 11-point Likert scales were anchored at 0 and 10 (e.g. 0: Did not like at all, 10: Liked very much). However, in our datasets they were coded as ranging from 1 to 11, which is how they are presented in this overview.

| <i>List of measures – Experiment 1</i> |                            |  |   |
|--|----------------------------|--|---|
| Variables                              | # of items<br>( $\alpha$ ) | Items  | Scale   |
| Dependent variables                    |                            |  |   |
| Attitudes towards apartment            | 5 ( $\alpha = .91$ )       | “In general, how much did you like this apartment?”  | 1 ( <i>Did not like at all</i> ) – 11 ( <i>Liked very much</i> )  |
|  |                            | “How attractive do you think this apartment would be to the average student?”  | 1 ( <i>Very unattractive</i> ) – 11 ( <i>Very attractive</i> )    |
|  |                            | “Based on your general impression, how do you believe this apartment has been rated by previous guests?”                             |   |
|  |                            | Cleanliness  | 1 ( <i>Very unclean</i> ) – 11 ( <i>Very clean</i> )              |
|  |                            | Standard   | 1 ( <i>Very bad standard</i> ) – 11 ( <i>Very good standard</i> ) |
|  |                            | Niceness   | 1 ( <i>Not at all nice</i> ) – 11 ( <i>Very nice</i> )            |
| Intentions to rent                     | 1                          | “If you were to make a decision here and now, how likely is it that you would choose this apartment?”                                | 1 ( <i>Completely unlikely</i> ) – 11 ( <i>Very likely</i> )      |
| Willingness to pay                     | 1                          | “This apartment is in the price range of 500-1500 NOK per night. How much would you be willing to pay for this apartment per night?” | Open text box   |

|   |                      |   |  |
|---|----------------------|---|--|
| Willingness to switch apartments        | 1                    | “How interested would you be in conducting a mutual home swap with [host] for a week-end?”  | 1 ( <i>Not at all interested</i> ) – 11 ( <i>Very interested</i> ) |
| Mediating variables                     |                      |   |  |
| Self-object congruence                  | 1                    | “I immediately felt that this apartment is ‘typical for me’.”   | 1 ( <i>Completely disagree</i> ) – 11 ( <i>Completely agree</i> )  |
| Host trustworthiness                    | 3 ( $\alpha = .84$ ) | “I think [host] can be trusted.”  | 1 ( <i>Completely disagree</i> ) – 11 ( <i>Completely agree</i> )  |
|   |                      | “I think [host] is someone who first and foremost cares about what is best for his guests.”   | 1 ( <i>Completely disagree</i> ) – 11 ( <i>Completely agree</i> )  |
|   |                      | “[Host] and I probably have similar values and principles.”   | 1 ( <i>Completely disagree</i> ) – 11 ( <i>Completely agree</i> )  |
| Need for information: Host              | 1                    | “I feel like I would need more information about the host to choose this apartment.”  | 1 ( <i>Completely disagree</i> ) – 11 ( <i>Completely agree</i> )  |
| Need for information: Apartment         | 1                    | “I feel like I would need more information about the apartment to make a choice.”   | 1 ( <i>Completely disagree</i> ) – 11 ( <i>Completely agree</i> )  |
| Need for information home swap: Service | 1                    | “I feel like I would need more information about the service to conduct a home swap.”   | 1 ( <i>Completely disagree</i> ) – 11 ( <i>Completely agree</i> )  |
| Need for information home swap: Host    | 1                    | “I feel like I would need more information about [host] to conduct a home swap.”  | 1 ( <i>Completely disagree</i> ) – 11 ( <i>Completely agree</i> )  |
| Perceived risk: Rent apartment          | 1                    | “How risky do you think it would be to choose this apartment without any more information?”   | 1 ( <i>Not very risky</i> ) – 11 ( <i>Very risky</i> )             |
| Perceived risk: Home swap               |                      | “How risky do you think it would be to conduct a mutual home swap with [host]?”   | 1 ( <i>Not very risky</i> ) – 11 ( <i>Very risky</i> )             |
| Moderators                              |                      |   |  |
| Political orientation                   | 1                    | “On a scale from 0-10, where 0 represents those who are all the way to the left politically, and 10 represents those who are all the way to the right politically, where would you place yourself?” | 1 ( <i>Left</i> ) – 11 ( <i>Right</i> )                            |

|                                    |                                     |  |  |
|------------------------------------|-------------------------------------|--|--|
| Out-group threat                   | 2 ( $\alpha = .93$ ,<br>$r = .89$ ) | “To what extent do you think Muslims pose a threat to Norwegians?”   | 1 ( <i>Not at all</i> ) – 11 ( <i>To a very large extent</i> )               |
|                                    |                                     | “To what extent do you think Muslims pose a threat to Western culture?”  | 1 ( <i>Not at all</i> ) – 11 ( <i>To a very large extent</i> )               |
| Stereotypes Muslims:<br>Warmth     | 3 ( $\alpha = .91$ )                | “Think about how Muslims are viewed by Norwegians in general. To what degree are Muslims perceived by most people to possess the following qualities?” | 1 ( <i>Not at all</i> ) – 11 ( <i>To a very large extent</i> )               |
|                                    |                                     | Warmth   |  |
|                                    |                                     | Friendly   |  |
|                                    |                                     | Honest   |  |
| Stereotypes Muslims:<br>Competence | 3 ( $\alpha = .83$ )                | “Think about how Muslims are viewed by Norwegians in general. To what degree are Muslims perceived by most people to possess the following qualities?” | 1 ( <i>Not at all</i> ) – 11 ( <i>To a very large extent</i> )               |
|                                    |                                     | Competent  |  |
|                                    |                                     | Confident  |  |
|                                    |                                     | Skilled  |  |
| Background variables               |                                     |  |  |
| Propensity to trust                | 2 ( $\alpha = .85$ ,<br>$r = .73$ ) | “I have a tendency to trust other people, even though I know little about them in advance.”  | 1 ( <i>Completely disagree</i> ) – 11 ( <i>Completely agree</i> )            |
|                                    |                                     | “Trusting other people is not hard” (Reversed)   | 1 ( <i>Completely disagree</i> ) – 11 ( <i>Completely agree</i> )            |
| Respondent country of birth        | 1                                   | “In which country were you born?”  | Option selection: <i>Norway</i> or <i>other</i> (text box for specification) |
| Respondent Norwegian identity      | 1                                   | “Please indicate to which degree the following statement fits for you: I view myself as Norwegian”   | 1 ( <i>Completely disagree</i> ) – 11 ( <i>Completely agree</i> )            |

|                        |   |  |   |
|------------------------|---|--|---|
| Experience with Airbnb | 1 | "Do you have previous experience with Airbnb?" | Option selection: 1. <i>Yes, as a host</i> , 2. <i>Yes, as a guest</i> , 3. <i>Yes, as both host and guest</i> , 4. <i>No</i> |
| Gender                 | 1 | "Please indicate your gender"                  | 1: Male, 2: Female  |
| Age                    | 1 | "Please indicate your age"                     | Open ended  |



| Table 9.2                                     |                            |  |  |
|---|----------------------------|--|--|
| <i>List of measures – Experiment 2</i>        |                            |  |  |
| Variables                                     | # of items<br>( $\alpha$ ) | Items  | Scale  |
| Dependent variables                           |                            |  |  |
| Attitudes towards apartment                   | 5 ( $\alpha = .92$ )       | “In general, how much did you like this apartment?”  | 1 ( <i>Did not like at all</i> ) – 11 ( <i>Liked very much</i> )   |
|   |                            | “How attractive do you think this apartment would be to the average Norwegian consumer?”   | 1 ( <i>Very unattractive</i> ) – 11 ( <i>Very attractive</i> )     |
|   |                            | “Based on your general impression, how do you believe this apartment has been rated by previous guests?”                             |  |
|   |                            | Cleanliness  | 1 ( <i>Very unclean</i> ) – 11 ( <i>Very clean</i> )               |
|   |                            | Standard   | 1 ( <i>Very bad standard</i> ) – 11 ( <i>Very good standard</i> )  |
|   |                            | Niceness   | 1 ( <i>Not at all nice</i> ) – 11 ( <i>Very nice</i> )             |
| Intentions to rent                            | 1                          | “If you were to make a decision here and now, how likely is it that you would choose this apartment?”                                | 1 ( <i>Completely unlikely</i> ) – 11 ( <i>Very likely</i> )       |
| Willingness to pay                            | 1                          | “This apartment is in the price range of 500-1500 NOK per night. How much would you be willing to pay for this apartment per night?” | Open text box  |
| Willingness to switch apartments (scenario 2) | 1                          | “How interested would you be in conducting a mutual home swap with [host] for a week-end?” <sup>a</sup>                              | 1 ( <i>Not at all interested</i> ) – 11 ( <i>Very interested</i> ) |
| Contamination-related dependent variables     |                            |  |  |
| Desired contact with apartment                | 3 ( $\alpha = .82$ )       | "Imagine renting this apartment. To which degree does it seem tempting to do the following activities?"                              |  |
|   |                            | Lie on the couch   | 1 ( <i>Absolutely not tempting</i> ) - 11 ( <i>Very tempting</i> ) |

|                                  |                      |   |  |
|----------------------------------|----------------------|---|--|
|                                  |                      | Prepare and eat dinner  | 1 ( <i>Absolutely not tempting</i> ) - 11 ( <i>Very tempting</i> ) |
|                                  |                      | Take a long bath  | 1 ( <i>Absolutely not tempting</i> ) - 11 ( <i>Very tempting</i> ) |
| Desire for professional cleaning | 1                    | "Usually, Airbnb apartments are prepared by the hosts themselves. How interested would you be in that this apartment would be cleaned by a professional cleaning firm before your stay?"            | 1 ( <i>Not very interested</i> ) - 11 ( <i>Very interested</i> )   |
| Mediating variables              |                      |   |  |
| Self-object congruence           | 1                    | "I immediately felt that this apartment is 'typical for me'."   | 1 ( <i>Completely disagree</i> ) – 11 ( <i>Completely agree</i> )  |
| Host trustworthiness             | 3 ( $\alpha = .89$ ) | "I think [host] can be trusted."  | 1 ( <i>Completely disagree</i> ) – 11 ( <i>Completely agree</i> )  |
|                                  |                      | "I think [host] is someone who first and foremost cares about what is best for his guests."   | 1 ( <i>Completely disagree</i> ) – 11 ( <i>Completely agree</i> )  |
|                                  |                      | "[Host] and I probably have similar values and principles."   | 1 ( <i>Completely disagree</i> ) – 11 ( <i>Completely agree</i> )  |
| Moderators                       |                      |   |  |
| Political orientation            | 1                    | "On a scale from 0-10, where 0 represents those who are all the way to the left politically, and 10 represents those who are all the way to the right politically, where would you place yourself?" | 1 ( <i>Left</i> ) – 11 ( <i>Right</i> )                            |
| Out-group threat                 | 4 ( $\alpha = .97$ ) | "To what extent do you think Muslims pose a threat to Western culture?"   | 1 ( <i>Not at all</i> ) – 11 ( <i>To a very large extent</i> )     |
|                                  |                      | "To what extent do you think Muslims pose a threat to Norwegian values?"  | 1 ( <i>Not at all</i> ) – 11 ( <i>To a very large extent</i> )     |
|                                  |                      | "To what extent do you think Somali people pose a threat to Western culture?"   | 1 ( <i>Not at all</i> ) – 11 ( <i>To a very large extent</i> )     |
|                                  |                      | "To what extent do you think Somali people pose a threat to Norwegian values?"  | 1 ( <i>Not at all</i> ) – 11 ( <i>To a very large extent</i> )     |
| Background variables             |                      |   |  |

|                           |                                     |   |   |
|---------------------------|-------------------------------------|---|---|
| Propensity to trust       | 2 ( $\alpha = .86$ ,<br>$r = .76$ ) | "I have a tendency to trust other people, even though I know little about them in advance." | 1 ( <i>Completely disagree</i> ) – 11 ( <i>Completely agree</i> )   |
|                           |                                     | "Trusting other people is not hard" (Reversed)  | 1 ( <i>Completely disagree</i> ) – 11 ( <i>Completely agree</i> )   |
| Respondent ethnicity      | 1                                   | "How would you describe your ethnic background?"  | Option selection: <i>Norway</i> or <i>other</i> (text box for specification)  |
| Attitude to Airbnb        | 1                                   | "When you go on holiday, how relevant would Airbnb be for you as an accommodation option?"  | 1 (Not relevant at all) - 11 (Very relevant)  |
| Experience with Airbnb    | 1                                   | "Do you have previous experience with Airbnb?"  | Option selection: 1. <i>Yes, as a host</i> , 2. <i>Yes, as a guest</i> , 3. <i>Yes, as both host and guest</i> , 4. <i>No</i> |
| Social desirability scale | 10                                  | "I have never intensely disliked anyone"  | Option selection: True or False   |
|                           |                                     | "I sometimes feel resentful when I don't get my way"  | Option selection: True or False   |
|                           |                                     | "No matter who I'm talking to, I'm always a good listener"                                  | Option selection: True or False   |
|                           |                                     | "There have been occasions when I took advantage of someone"                                | Option selection: True or False   |
|                           |                                     | "I'm always willing to admit it when I make a mistake"                                      | Option selection: True or False   |
|                           |                                     | "I sometimes try to get even, rather than forgive and forget"                               | Option selection: True or False   |
|                           |                                     | "There have been occasions when I felt like smashing things"                                | Option selection: True or False   |
|                           |                                     | "There have been times when I was quite jealous of the good fortune of others"              | Option selection: True or False   |
|                           |                                     | "I have never felt that I was punished without cause"                                       | Option selection: True or False   |
|                           |                                     | "I have never deliberately said something that hurt someone's feelings"                     | Option selection: True or False   |
| Gender, Age, Zipcode      |                                     | Pulled from panel company's records   |   |

| Table 9.3                              |                            |  |   |
|--|----------------------------|--|---|
| <i>List of measures – Experiment 3</i> |                            |  |   |
| Variables                              | # of items<br>( $\alpha$ ) | Items  | Scale   |
| Dependent variables                    |                            |  |   |
| Choice                                 | 1                          | “If you were to win the trip to London: Which alternative would you prefer as a part of your prize?”   | 0: <i>The hotel room</i> , 1: <i>The Airbnb apartment</i>         |
| Attitudes towards apartment            | 5 ( $\alpha = .88$ )       | “In general, how much did you like the Airbnb apartment?”  | 1 ( <i>Did not like at all</i> ) – 11 ( <i>Liked very much</i> )  |
|  |                            | “How attractive do you think this Airbnb apartment would be to the average Norwegian consumer?”  | 1 ( <i>Very unattractive</i> ) – 11 ( <i>Very attractive</i> )    |
|  |                            | “Based on your general impression, how do you believe this Airbnb apartment has been rated by previous guests?”                                      |   |
|  |                            | Cleanliness  | 1 ( <i>Very unclean</i> ) – 11 ( <i>Very clean</i> )              |
|  |                            | Standard   | 1 ( <i>Very bad standard</i> ) – 11 ( <i>Very good standard</i> ) |
|  |                            | Niceness   | 1 ( <i>Not at all nice</i> ) – 11 ( <i>Very nice</i> )            |
| Willingness to pay                     | 1                          | “The Airbnb apartment is in the price range of 1000-2000 NOK per night. How much would you normally be willing to pay for this apartment per night?” | Open text box   |
| Mediating variables                    |                            |  |   |
| Self-object congruence                 | 1                          | “I immediately felt that this apartment is ‘typical for me’.”  | 1 ( <i>Completely disagree</i> ) – 11 ( <i>Completely agree</i> ) |
| Host trustworthiness                   | 3 ( $\alpha = .83$ )       | “I think [host] can be trusted.”   | 1 ( <i>Completely disagree</i> ) – 11 ( <i>Completely agree</i> ) |
|  |                            | “I think [host] is someone who first and foremost cares about what is best for his guests.”  | 1 ( <i>Completely disagree</i> ) – 11 ( <i>Completely agree</i> ) |
|  |                            | “I think [host] and I have a lot in common.”   | 1 ( <i>Completely disagree</i> ) – 11 ( <i>Completely agree</i> ) |

|  |                      |   |   |
|--|----------------------|---|---|
| Moderators                                 |                      |   |   |
| Political orientation                      | 1                    | “On a scale from 0-10, where 0 represents those who are all the way to the left politically, and 10 represents those who are all the way to the right politically, where would you place yourself?” | 1 ( <i>Left</i> ) – 11 ( <i>Right</i> )   |
| Perceived threat of Muslims                | 4 ( $\alpha = .90$ ) | “To what extent do you think Somali people pose a threat to Western culture?”   | 1 ( <i>Not at all</i> ) – 11 ( <i>To a very large extent</i> )  |
|  |                      | “To what extent do you think Somali people pose a threat to Norwegian values?”  | 1 ( <i>Not at all</i> ) – 11 ( <i>To a very large extent</i> )  |
|  |                      | “To what extent do you think Somali people make it more difficult for Norwegians to get jobs?”  | 1 ( <i>Not at all</i> ) – 11 ( <i>To a very large extent</i> )  |
|  |                      | “To what extent do you think Somali people pose a threat to the Norwegian economy?”   | 1 ( <i>Not at all</i> ) – 11 ( <i>To a very large extent</i> )  |
| Background variables                       |                      |   |   |
| Respondent ethnicity                       | 1                    | “How would you describe your ethnic background?”  | Option selection: <i>Norway</i> or <i>other</i> (text box for specification)  |
| Attitude to Airbnb                         | 1                    | "When you go on holiday, how relevant would Airbnb be for you as an accommodation option?"  | 1 (Not relevant at all) - 11 (Very relevant)  |
| Experience with Airbnb                     | 1                    | "Do you have previous experience with Airbnb?"  | Option selection: 1. <i>Yes, as a host</i> , 2. <i>Yes, as a guest</i> , 3. <i>Yes, as both host and guest</i> , 4. <i>No</i> |
| Reason for choice of Airbnb vs. hotel room | 1                    | “Can you briefly describe the background of your choice?”   | Open text box   |
| Gender                                     | 1                    | “Are you a man or a woman?”   | 1: <i>Man</i> , 2: <i>Woman</i>   |
| Age  | 1                    | “What is your age?”   | Open text box   |
| Zipcode                                    | 1                    | “What is your zipcode?”   |   |

| Table 9.4   |              |       |              |       |              |       |
|---|--------------|-------|--------------|-------|--------------|-------|
| <i>Means and standard deviations for the main measures (dependent, mediating and moderating variables) in the three experiments</i> |              |       |              |       |              |       |
|   | Experiment 1 |       | Experiment 2 |       | Experiment 3 |       |
|   | Mean         | SD    | Mean         | SD    | Mean         | SD    |
| Attitudes   | 7.04         | 1.47  | 6.57         | 1.77  | 8.47         | 1.52  |
| WTP   | 77.24        | 24.07 | 76.39        | 42.04 | 124.46       | 48.41 |
| Intention/Choice  | 6.05         | 2.29  | 5.08         | 2.69  | 33.6 (%)     | -     |
| Host trustworthiness  | 6.96         | 1.69  | 6.51         | 2.07  | 6.87         | 1.85  |
| Self-object congruence  | 5.09         | 2.09  | 4.26         | 2.40  | 5.63         | 2.78  |
| Political orientation   | 6.69         | 1.95  | 5.96         | 2.46  | 5.87         | 2.54  |
| Out-group threat  | 3.41         | 2.29  | 5.47         | 3.03  | 3.78         | 2.29  |

| Table 9.5  |      |      |
|--|------|------|
| <i>Means and standard deviations for additional measures in Experiment 1</i> |      |      |
|  | Mean | SD   |
| Willingness to switch apartments   | 6.34 | 3.03 |
| Need for information: Host   | 6.34 | 2.97 |
| Need for information: Apartment  | 9.10 | 1.87 |
| Need for information home swap: Service                                      | 8.36 | 2.27 |
| Need for information home swap: Host   | 8.52 | 2.11 |
| Perceived risk: Rent apartment   | 7.23 | 2.15 |
| Perceived risk: Home swap  | 6.16 | 2.06 |
| Stereotypes Muslims: Warmth  | 6.24 | 1.88 |
| Stereotypes Muslims: Competence  | 6.65 | 1.55 |
| Propensity to trust  | 6.15 | 2.07 |

| Table 9.6  |      |      |
|--|------|------|
| <i>Means and standard deviations for additional measures in Experiment 2</i> |      |      |
|  | Mean | SD   |
| Willingness to switch apartments   | 4.93 | 3.29 |
| Desired contact with apartment   | 4.73 | 2.31 |
| Desire for professional cleaning   | 6.96 | 2.83 |
| Propensity to trust  | 6.37 | 2.34 |
| Attitude to Airbnb   | 4.57 | 3.00 |

| Table 9.7   |      |      |
|---|------|------|
| <i>Means and standard deviations for additional measure in Experiment 3</i> |      |      |
|   | Mean | SD   |
| Attitude to Airbnb  | 5.45 | 2.98 |



|                        |                     | Attitudes | Intention | Willingness to pay | Host trustworthiness | Self-object congruence | Outgroup threat | Political orientation |
|------------------------|---------------------|-----------|-----------|--------------------|----------------------|------------------------|-----------------|-----------------------|
| Attitudes              | Pearson Correlation | 1         | .712**    | .482**             | .555**               | .679**                 | -.248**         | -.004                 |
|                        | Sig. (2-tailed)     |           | .000      | .000               | .000                 | .000                   | .000            | .957                  |
| Intention              | Pearson Correlation | .712**    | 1         | .471**             | .475**               | .628**                 | -.198**         | -.012                 |
|                        | Sig. (2-tailed)     | .000      |           | .000               | .000                 | .000                   | .004            | .856                  |
| Willingness to pay     | Pearson Correlation | .482**    | .471**    | 1                  | .377**               | .382**                 | -.051           | .024                  |
|                        | Sig. (2-tailed)     | .000      | .000      |                    | .000                 | .000                   | .458            | .728                  |
| Host trustworthiness   | Pearson Correlation | .555**    | .475**    | .377**             | 1                    | .460**                 | -.261**         | -.056                 |
|                        | Sig. (2-tailed)     | .000      | .000      | .000               |                      | .000                   | .000            | .417                  |
| Self-object congruence | Pearson Correlation | .679**    | .628**    | .382**             | .460**               | 1                      | -.100           | -.034                 |
|                        | Sig. (2-tailed)     | .000      | .000      | .000               | .000                 |                        | .145            | .618                  |
| Outgroup threat        | Pearson Correlation | -.248**   | -.198**   | -.051              | -.261**              | -.100                  | 1               | .250**                |
|                        | Sig. (2-tailed)     | .000      | .004      | .458               | .000                 | .145                   |                 | .000                  |
| Political orientation  | Pearson Correlation | -.004     | -.012     | .024               | -.056                | -.034                  | .250**          | 1                     |
|                        | Sig. (2-tailed)     | .957      | .856      | .728               | .417                 | .618                   | .000            |                       |


\*\* . Correlation is significant at the 0.01 level (2-tailed).

|  |                     | Attitudes | Intention | Willingness to pay | Host trustworthiness | Self-object congruence | Outgroup threat | Political orientation |
|--|---------------------|-----------|-----------|--------------------|----------------------|------------------------|-----------------|-----------------------|
| Attitudes  | Pearson Correlation | 1         | .705**    | .376**             | .661**               | .669**                 | -.185**         | -.119**               |
|  | Sig. (2-tailed)     |           | .000      | .000               | .000                 | .000                   | .000            | .004                  |
| Intention  | Pearson Correlation | .705**    | 1         | .342**             | .526**               | .688**                 | -.154**         | -.086*                |
|  | Sig. (2-tailed)     | .000      |           | .000               | .000                 | .000                   | .000            | .038                  |
| Willingness to pay   | Pearson Correlation | .376**    | .342**    | 1                  | .294**               | .357**                 | -.112**         | -.091*                |
|  | Sig. (2-tailed)     | .000      | .000      |                    | .000                 | .000                   | .007            | .027                  |
| Host trustworthiness   | Pearson Correlation | .661**    | .526**    | .294**             | 1                    | .533**                 | -.283**         | -.189**               |
|  | Sig. (2-tailed)     | .000      | .000      | .000               |                      | .000                   | .000            | .000                  |
| Self-object congruence                                       | Pearson Correlation | .669**    | .688**    | .357**             | .533**               | 1                      | -.167**         | -.118**               |
|  | Sig. (2-tailed)     | .000      | .000      | .000               | .000                 |                        | .000            | .004                  |
| Outgroup threat  | Pearson Correlation | -.185**   | -.154**   | -.112**            | -.283**              | -.167**                | 1               | .528**                |
|  | Sig. (2-tailed)     | .000      | .000      | .007               | .000                 | .000                   |                 | .000                  |
| Political orientation  | Pearson Correlation | -.119**   | -.086*    | -.091*             | -.189**              | -.118**                | .528**          | 1                     |
|  | Sig. (2-tailed)     | .004      | .038      | .027               | .000                 | .004                   | .000            |                       |
| **. Correlation is significant at the 0.01 level (2-tailed). |                     |           |           |                    |                      |                        |                 |                       |
| *. Correlation is significant at the 0.05 level (2-tailed).  |                     |           |           |                    |                      |                        |                 |                       |


| Table 9.10   |                     |           |                    |                      |                        |                 |                       |
|--|---------------------|-----------|--------------------|----------------------|------------------------|-----------------|-----------------------|
| <i>Correlations between all main variables (dependent, mediating and moderating variables) in Experiment 3</i> |                     |           |                    |                      |                        |                 |                       |
|  |                     | Attitudes | Willingness to pay | Host trustworthiness | Self-object congruence | Outgroup threat | Political orientation |
| Attitudes  | Pearson Correlation | 1         | .359**             | .541**               | .547**                 | -.161**         | -.037                 |
|  | Sig. (2-tailed)     |           | .000               | .000                 | .000                   | .000            | .298                  |
| Willingness to pay   | Pearson Correlation | .359**    | 1                  | .263**               | .308**                 | -.101**         | -.024                 |
|  | Sig. (2-tailed)     | .000      |                    | .000                 | .000                   | .004            | .500                  |
| Host trustworthiness   | Pearson Correlation | .541**    | .263**             | 1                    | .533**                 | -.114**         | .016                  |
|  | Sig. (2-tailed)     | .000      | .000               |                      | .000                   | .001            | .642                  |
| Self-object congruence   | Pearson Correlation | .547**    | .308**             | .533**               | 1                      | -.069*          | .054                  |
|  | Sig. (2-tailed)     | .000      | .000               | .000                 |                        | .049            | .125                  |
| Outgroup threat  | Pearson Correlation | -.161**   | -.101**            | -.114**              | -.069*                 | 1               | .440**                |
|  | Sig. (2-tailed)     | .000      | .004               | .001                 | .049                   |                 | .000                  |
| Political orientation  | Pearson Correlation | -.037     | -.024              | .016                 | .054                   | .440**          | 1                     |
|  | Sig. (2-tailed)     | .298      | .500               | .642                 | .125                   | .000            |                       |
| **. Correlation is significant at the 0.01 level (2-tailed).   |                     |           |                    |                      |                        |                 |                       |
| *. Correlation is significant at the 0.05 level (2-tailed).  |                     |           |                    |                      |                        |                 |                       |

## Experimental stimuli

**Figure 10.1: Experimental stimuli from Experiment 1, apartment information, ingroup host condition**




[Oversikt](#) [Anmeldelser](#) [Verten](#) [Beliggenhet](#)




Martin

**Nice Apartment in the Centre of Copenhagen**


København, Danmark




Helt hjem/leilighet



1 Gjest



1 Soverom



1 seng

---


**Om dette utleiestedet**

The apartment is situated in the central area Indre By in Copenhagen, close to Tivoli and everything the city has to offer. 10 minute walk to the train station.


The apartment is fully equipped, with a kitchen, living room and one bedroom.

Photo accreditation: *The Postnational Monitor, 2011*

**Figure 10.2: Experimental stimuli from Experiment 1, apartment information, outgroup host condition**




**Oversikt** Anmeldelser Verten Beliggenhet




Ahmed

**Nice Apartment in the Centre of Copenhagen**


København, Danmark




Helt hjem/leilighet



1 Gjest



1 Soverom



1 seng

---

**Om dette utleiestedet**

The apartment is situated in the central area Indre By in Copenhagen, close to Tivoli and everything the city has to offer. 10 minute walk to the train station.

The apartment is fully equipped, with a kitchen, living room and one bedroom.

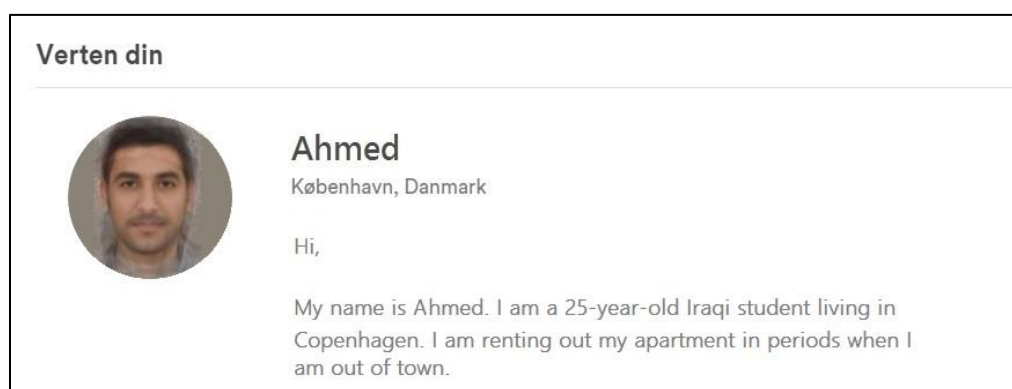
*Photo accreditation: The Postnational Monitor, 2011*

**Figure 10.3: Experimental stimuli from Experiment 1, host information, ingroup host condition**



*Photo accreditation: The Postnational Monitor, 2011*

**Figure 10.4: Experimental stimuli from Experiment 1, host information, outgroup host condition**




*Photo accreditation: The Postnational Monitor, 2011*

**Figure 10.5: Experimental stimuli from Experiment 1, host information, ingroup-signaling outgroup host condition**




*Photo accreditation: The Postnational Monitor, 2011*

**Figure 10.6: Experimental stimuli from Experiment 2, apartment information, ingroup host condition**




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Martin

## Nice Apartment in the Centre of Copenhagen


København, Danmark




Helt hjem/leilighet



1 Gjest



1 Soverom



1 seng

---


### Om dette utleiestedet

The apartment is situated in the central area Indre By in Copenhagen, close to Tivoli and everything the city has to offer. 10 minute walk to the train station.


The apartment is fully equipped, with a kitchen, living room and one bedroom.

Photo accreditation: Stockphotos

**Figure 10.7: Experimental stimuli from Experiment 2, apartment information, outgroup host condition and ingroup-signaling outgroup host condition**





**Oversikt** Anmeldelser Verten Beliggenhet





**Nice Apartment in the Centre of Copenhagen**  
København, Danmark

Abdi

  
Helt hjem/leilighet

  
1 Gjest

  
1 Soverom

  
1 seng

---

**Om dette utleiestedet**

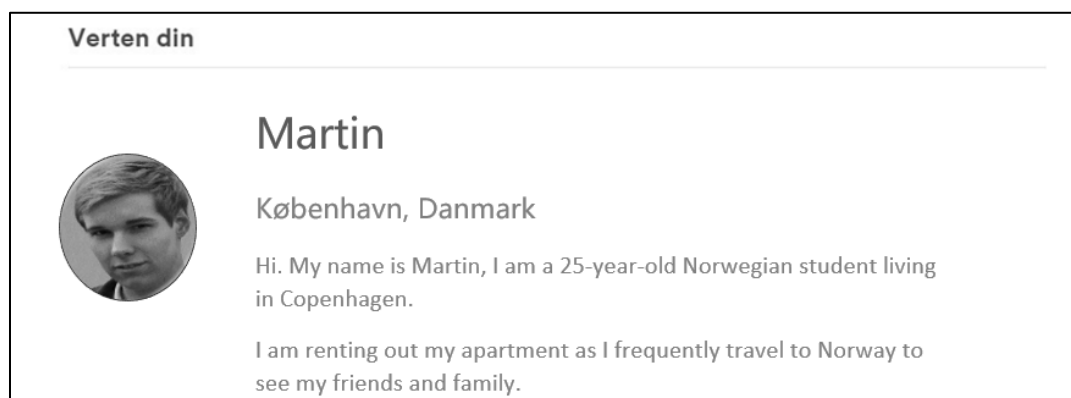
The apartment is situated in the central area Indre By in Copenhagen, close to Tivoli and everything the city has to offer. 10 minute walk to the train station.

The apartment is fully equipped, with a kitchen, living room and one bedroom.

Photo accreditation: Photo by G.A. Hussein (Flickr). Link to photographer's profile: <https://www.flickr.com/photos/guuleed/>. Link to photo: <https://www.flickr.com/photos/guuleed/135473016/>. Creative commons license: Attribution-NonCommercial-ShareAlike 2.0 Generic (CC BY-NC-SA 2.0). <https://creativecommons.org/licenses/by-nc-sa/2.0/>. The photo was adapted for research purposes: background modified to grey, photo cropped to face.

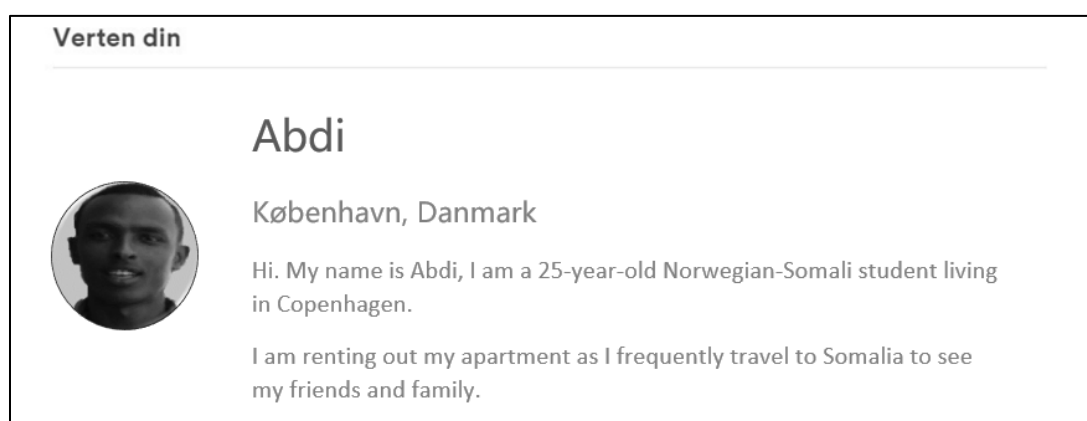


**Figure 10.8: Experimental stimuli from Experiment 2, host information, ingroup host condition**



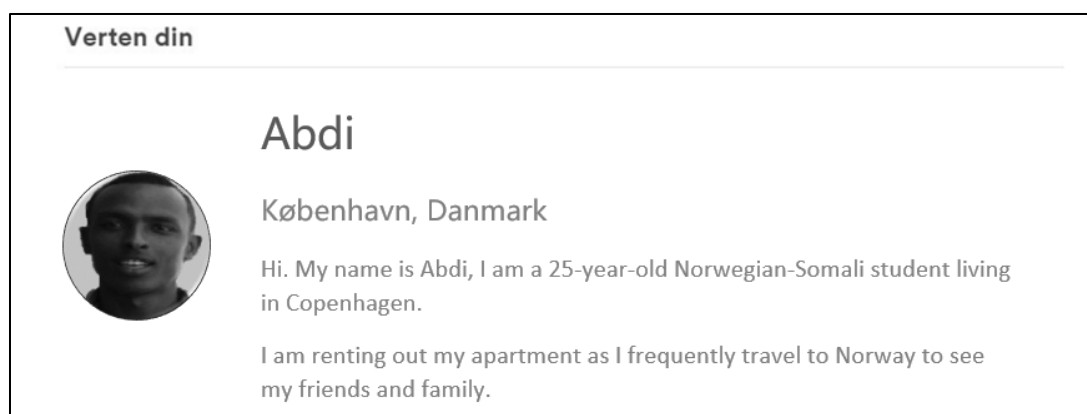
*Photo accreditation: Stockphotos*

**Figure 10.9: Experimental stimuli from Experiment 2, host information, outgroup host condition**




*Photo accreditation: Photo accreditation: Photo by G.A. Hussein (Flickr), CC BY-NC-SA 2.0.*

**Figure 10.10: Experimental stimuli from Experiment 2, host information, ingroup-signaling outgroup host condition**



*Photo accreditation: Photo accreditation: Photo by G.A. Hussein (Flickr), CC BY-NC-SA 2.0.*

**Figure 10.11: Experimental stimuli in Experiment 3, ingroup host – no rating condition**



**Guest reviews:**


**This property has not yet received any reviews**

Luxurious apartment in central London, close to Piccadilly Circus and Leicester Square underground stations. Covent Garden and theater area within walking distance.

The apartment has a large bedroom, a fully equipped kitchen and bathroom with all essentials (towels, soaps, hairdryer etc.). Free Wi-Fi is included.

You will have access to the entire apartment, and will not be sharing any spaces with others.

**Your host: Martin**




London, England

Hi. My name is Martin, I am a 29-year-old Norwegian living and working in London.

I am renting out my apartment on Airbnb as I frequently travel to Norway to see my friends and family.

*Photo accreditation: Ma, Correll, & Wittenbrink (2015). The Chicago Face Database: A Free Stimulus Set of Faces and Norming Data. Behavior Research Methods, 47, 1122-1135.*

**Figure 10.12: Experimental stimuli in Experiment 3, ingroup host – mediocre rating condition**



**Guest reviews:**

**3.5** ★★★★★

Luxurious apartment in central London, close to Piccadilly Circus and Leicester Square underground stations. Covent Garden and theater area within walking distance.

The apartment has a large bedroom, a fully equipped kitchen and bathroom with all essentials (towels, soaps, hairdryer etc.). Free Wi-Fi is included.


You will have access to the entire apartment, and will not be sharing any spaces with others.

**Your host: Martin**

London, England


Hi. My name is Martin, I am a 29-year-old Norwegian living and working in London.

I am renting out my apartment on Airbnb as I frequently travel to Norway to see my friends and family.



*Photo accreditation: Ma, Correll, & Wittenbrink (2015). The Chicago Face Database: A Free Stimulus Set of Faces and Norming Data. Behavior Research Methods, 47, 1122-1135.*

**Figure 10.13: Experimental stimuli in Experiment 3, ingroup host – top rating condition**



**Guest reviews:**

5.0 ★★★★★


Luxurious apartment in central London, close to Piccadilly Circus and Leicester Square underground stations. Covent Garden and theater area within walking distance.

The apartment has a large bedroom, a fully equipped kitchen and bathroom with all essentials (towels, soaps, hairdryer etc.). Free Wi-Fi is included.

You will have access to the entire apartment, and will not be sharing any spaces with others.

**Your host: Martin**

London, England




Hi. My name is Martin, I am a 29-year-old Norwegian living and working in London.

I am renting out my apartment on Airbnb as I frequently travel to Norway to see my friends and family.

*Photo accreditation: Ma, Correll, & Wittenbrink (2015). The Chicago Face Database: A Free Stimulus Set of Faces and Norming Data. Behavior Research Methods, 47, 1122-1135.*



**Figure 10.14: Experimental stimuli in Experiment 3, outgroup host – no rating condition**



**Guest reviews:**

**This property has not yet received any reviews**


Luxurious apartment in central London, close to Piccadilly Circus and Leicester Square underground stations. Covent Garden and theater area within walking distance.

The apartment has a large bedroom, a fully equipped kitchen and bathroom with all essentials (towels, soaps, hairdryer etc.). Free Wi-Fi is included.

You will have access to the entire apartment, and will not be sharing any spaces with others.

**Your host: Abdi**

London, England




Hi. My name is Abdi, I am a 29-year-old Norwegian-Somali living and working in London.

I am renting out my apartment on Airbnb as I frequently travel to Somalia to see my friends and family.

*Photo accreditation: Ma, Correll, & Wittenbrink (2015). The Chicago Face Database: A Free Stimulus Set of Faces and Norming Data. Behavior Research Methods, 47, 1122-1135.*

**Figure 10.15: Experimental stimuli in Experiment 3, outgroup host – mediocre rating condition**



**Guest reviews:**


3.5 ★★★★★

Luxurious apartment in central London, close to Piccadilly Circus and Leicester Square underground stations. Covent Garden and theater area within walking distance.

The apartment has a large bedroom, a fully equipped kitchen and bathroom with all essentials (towels, soaps, hairdryer etc.). Free Wi-Fi is included.

You will have access to the entire apartment, and will not be sharing any spaces with others.

**Your host: Abdi**




London, England

Hi. My name is Abdi, I am a 29-year-old Norwegian-Somali living and working in London.

I am renting out my apartment on Airbnb as I frequently travel to Somalia to see my friends and family.

*Photo accreditation: Ma, Correll, & Wittenbrink (2015). The Chicago Face Database: A Free Stimulus Set of Faces and Norming Data. Behavior Research Methods, 47, 1122-1135.*

**Figure 10.16: Experimental stimuli in Experiment 3, outgroup host – top rating condition**



**Guest reviews:**

5.0 ★★★★★

Luxurious apartment in central London, close to Piccadilly Circus and Leicester Square underground stations. Covent Garden and theater area within walking distance.

The apartment has a large bedroom, a fully equipped kitchen and bathroom with all essentials (towels, soaps, hairdryer etc.). Free Wi-Fi is included.

You will have access to the entire apartment, and will not be sharing any spaces with others.

**Your host: Abdi**

London, England

Hi. My name is Abdi, I am a 29-year-old Norwegian-Somali living and working in London.

I am renting out my apartment on Airbnb as I frequently travel to Somalia to see my friends and family.

*Photo accreditation: Ma, Correll, & Wittenbrink (2015). The Chicago Face Database: A Free Stimulus Set of Faces and Norming Data. Behavior Research Methods, 47, 1122-1135.*

**Figure 10.17: Experimental stimuli in Experiment 3, hotel room, same across all experimental conditions**



**Guest reviews:**

3.5 ★★★★★

The hotel is located in Kensington, just a few minutes' walk from Gloucester Road Underground Station. Knightsbridge, Harrods, Royal Albert Hall and museums within 10 minutes walking distance.

The bright, modern rooms each have an LCD TV, air conditioning, a refrigerator and high-speed internet access.



### **Reflection section Article 1**

This section includes additional reflections about the content and methodological choices of Article 1. This section was created as part of the work with the doctoral thesis, and is therefore not a part of the published article or the supplemental online materials published along with the article.

#### **In-group/out-group manipulation and potential confounds**

In our experiments, we aimed to manipulate the group categorization of Airbnb hosts by participants. We varied host ethnicity in such a way that we assumed our participants would categorize the in-group host as in-group and the out-group host as out-group. As we mention in the published paper, one improvement that could have been made to our design would be to include manipulation checks measuring whether participants actually categorized the hosts in the expected manner. This could have allowed us a more precise understanding of the results. For instance, there is a possibility that political orientation affects categorization processes, e.g. by some left-leaning individuals categorizing ethnic minorities as in-group, or closer to their in-group, compared to right-leaning individuals. If we had included a manipulation check, we would have been able to test for this alternative explanation of the moderation effects in the paper.

There are also some further limitations to our manipulation and analyses that warrant discussion. Firstly, although all our participants were inhabitants of Norway and Norwegian-speaking, we did not exclude participants with a non-Norwegian background. We did measure participants' ethnic background, either asking them about their birth country (Experiment 1) or their ethnic background (Experiment 2 and 3), and found that 5-8% of participants reported a non-Norwegian birth country (Experiment 1) or ethnicity (Experiments 2 and 3). We decided to include these participants in analyses for two reasons: 1) Since participants lived in Norway, we expected most participants to share a certain Norwegian in-group identity, and

the biases associated with this identity, despite having a mixed or immigrant identity themselves. 2) The percentage of participants with minority backgrounds was very low, and consisted of a group with varying types of other ethnic backgrounds (Western and non-Western, from countries with different religious majorities etc.). Therefore, we did not expect these participants to affect the overall results in a systematic way.

The assumptions we made about minority participants may or may not hold, and it could therefore be interesting to investigate some of the results excluding these participants, as a non-registered explorative analysis, to test the robustness of our findings. The results revealing negative discrimination of the out-group host should not be expected to be affected by participants with a minority identity being included in the analyses. This is because the potential effect of excluding them should be to strengthen the out-group effect. However, the results of reverse discrimination could potentially be driven by participants seeing the out-group host as closer to their own in-group.

To test these assumptions empirically, I have conducted a set of analyses excluding participants with a non-Norwegian birth country (Experiment 1) or ethnicity (Experiment 2 and 3), where I estimated the interaction effect of political orientation and out-group threat with the in-group vs. out-group manipulation on the host trustworthiness measures. I chose the trustworthiness measure as the outcome variable for these analyses because this was the measure where we identified most of the reverse discrimination effects referred to in the paper. Results (see the online result file: <https://osf.io/5cbgf>) show that we still find reverse discrimination by left-leaning and low-threat participants in all three studies when excluding non-Norwegian participants. I chose not to conduct moderation analyses including ethnic background as a moderating factor because of the low number of minority participants.

Another characteristic of our manipulation is that it contains several dimensions that could affect group categorization, such as immigrant status, (assumed) religion, and skin tone.

This design choice was made to test the potential impact of a stereotypical in-group vs. out-group distinction in Scandinavian society, in the context of access-based consumption in the home rental market. However, this design does not allow us to pinpoint exactly which of these specific dimensions that give rise to the general bias we observe. A more precise manipulation could have been achieved by for instance only varying skin tone, or by comparing a non-immigrant Norwegian host with an immigrant host, keeping skin tone and name constant. Using such a manipulation, one would most likely need a much larger sample due to a larger number of conditions, and due to a smaller expected effect size compared to the combined out-group manipulation that we used in this research.

### **Gender effects**

Previous research has found gender to interact with ethnic discrimination. The concrete pattern of discrimination varies across studies, but a meta-analysis of correspondence studies encompassing over 300 effect estimates found that in general, minority male individuals face the most severe discrimination (Flage, 2018). We chose to only present male hosts in our experiments based on findings that Arab/Middle-Eastern males were vulnerable for discrimination in a Scandinavian context (Lange, 2000; Ahmed & Hammarstedt, 2008). The choice was therefore made both to preserve a large sample size per condition to maximize statistical power given available resources, and to study a basic form of the phenomenon where we would expect an especially robust and consequential effect (i.e., targeting males). This also improves statistical power since power is a function of both the sample size and the expected effect size (Cohen, 1992). That is, we assumed discrimination would likely be there for female hosts too, but that it might be more subtle. This assumption is however an empirical question that the current research did not test empirically.

By only examining discrimination of male hosts, we agree that it limits the generalizability of our findings. This could have been outlined in the paper, by stating more

explicitly that we identified discrimination of male minority hosts, not minority hosts in general. However, by keeping gender constant, we do not expect host gender to drive any of our results, although we would probably predict a smaller effect size for female out-group hosts. We also did not find any reason to expect host gender to interact with the mitigation interventions that were tested. Had we expected, for instance, that adding third-party reviews to a host profile would only reduce discrimination of male minority hosts, there would have been more of a reason to include gender as an independent variable in the experiment.

Another limitation of only including male hosts in our manipulation is that it prevents us from examining potential interaction effects between host and participant gender. In Experiment 3, as described in the paper, women participants were the drivers of the negative out-group discrimination. Although we did not find significant interaction by gender in Experiment 1 and 2, it would have been interesting to examine whether host gender would interact with participant gender in Experiment 3.

### **Common in-group identity**

In Experiment 1 and 2, we build on the common identity model, which theorizes that by highlighting a superordinate common identity, one may mitigate intergroup conflict and bias (Gartner, Dovidio, & Bachman, 1996). We also looked to the research on multiple identities that shows that highlighting another's multiple identities can have the same positive effects (Crisp & Hewstone, 2007). As this research is only mentioned briefly, I will elaborate about the theoretical background for these manipulations here.

The initial research within the common ingroup identity model indicated that one way to mitigate intergroup bias was to highlight a superordinate common identity instead of the distinct subordinate identities people have (Gartner, Dovidio, & Bachman, 1996). For example, one may foster a common identity among students from different universities by

highlighting that they are all university students. Another approach within the common identity framework is to present people with dual identities, e.g. as both university students and Harvard students (Dovidio, Gaertner, & Saguy, 2008). Which approach is more effective in mitigating conflict and bias has been found to vary across intergroup contexts (ibid). We chose to apply a dual identity manipulation because we were interested in whether discrimination could be reduced by *adding* an in-group signal, without removing the out-group identity. However, there seems to be a tendency for dual identity manipulations to be more effective in improving out-group attitudes in disadvantaged groups, whereas common identity manipulations seem more effective in improving out-group attitudes in advantaged groups (Dovidio, Gaertner, & Saguy, 2008; Glasford & Dovidio, 2011). This could perhaps explain why our in-group signaling manipulations were not effective in reducing discrimination.

### **Internal meta-analysis**

As explained in the results section of our paper, we conducted an internal meta-analysis for the main effects studied in the paper. The goal of the meta-analysis was simply to summarize findings on the main outcome variables (attitudes, intentions and willingness to pay) across the three experiments, providing a combined estimate of the average effect size for each outcome variable in the full sample. For two of the outcome variables (attitudes towards the Airbnb apartment and willingness to pay for the Airbnb apartment) measures were identical for all three experiments. In Experiment 1 and 2, we measured intentions to rent, whereas in Experiment 3, intentions were not measured, as we instead recorded participant's *choice* between a hotel room and an Airbnb apartment. We therefore had to decide whether to exclude these variables from the internal meta-analysis, meta-analyze only the two effect sizes measuring intentions, or combine the intentions and choice measures in the meta-analysis. We chose the latter because we thought this would provide the best

summary of the main results. Nevertheless, all effect sizes from the three studies are reported in Table 11, and the reader could thus easily judge how the meta-analytic effect size was affected by each experiment's effect size.

The fixed effects approach was chosen because the meta-analysis was conducted using identical or quite similar outcome measures in a similar cultural context, where we assumed that most of the variance in effect sizes across studies should be due to sampling variation. We based our choice of a fixed effects approach on the arguments presented by Goh, Hall, & Rosenthal (2016, p. 538-539): "Fixed effects are usually used when the author believes there is one true population ES, which is most likely when studies are similar methodologically." and "Given that studies within a manuscript are often very similar in their methods and the goal is to summarize those studies, some researchers might opt for the fixed approach." We regarded our three studies as methodologically similar, and therefore thought a fixed effects model would be most appropriate for the goal of our meta-analysis, which was to summarize our main findings across all three studies.

We did not conduct heterogeneity tests, as these tests have low power when based on a low number of effect sizes (Huedo-Medina, Sánchez-Meca, Marín-Martínez, & Botella, 2006), and therefore are not necessarily recommended for mini-meta-analyses such as the one presented in our paper (Goh, Hall, & Rosenthal, 2016).

### **Sample representativeness**

In Experiment 2 and 3, we refer to our samples as nationally representative. In the paper, we specify that representativeness was achieved in terms of age, gender and geographical location of participants. In the supplemental materials we present age, gender and location statistics and compare this with statistics for the Norwegian population as a whole, showing that the sample reflects the population on these dimensions. We thus argue

that our sample is nationally representative in terms of these dimensions. On other dimensions, such as education level, income level, health status and vocation, we cannot be sure that our sample mirrors the larger population as we did not purposely recruit for representativeness on these dimensions. Our data was collected through a market research agency, and just as it tends to be difficult for researchers to recruit certain subsets of the population, it is likely that the consumer panel recruited by such agencies have certain remaining biases. For instance, people with severe health issues or lack of internet access are probably less likely to participate in consumer panels such as the one we relied on for our data collection. We can therefore not claim that our sample perfectly reflects the Norwegian population, but we see our sample as nationally representative on some key dimensions, which we see as a strength compared to the convenience samples that are often used in psychology and behavioral social science (e.g., university student), having low representativeness.

### **Limitations of the mediational analyses**

The paper presents a research model that includes mediational effects, with hypotheses stating that the proposed mediators (self-congruence and host trustworthiness) might explain some of the proposed causal relationship between the independent variable (host group membership) and the dependent variables (apartment attitudes, willingness to pay and intentions/choice to rent). In order to identify the indirect effect through the proposed mediators, we manipulated the independent variable, and measured levels of both mediating and dependent variables. The manipulation of the independent variable allows us to conduct a causal analysis of the relationship between the independent variable and the mediators. However, there are several limitations with the mediational hypotheses and analyses that could have been elaborated in the paper.

Since the mediating variables themselves are not experimentally manipulated, we cannot exclude the possibility of unidentified third variables causing both the mediator and the dependent variables, or that the causal relationship between the mediator and the dependent variable is the opposite of our theoretical model (i.e., change in the dependent variable is causing the mediator change). Our research design is thus not sufficient for causally testing all the links present in our research model. Common to most mediational results in the research literature, we use statistical mediation analysis to examine whether the results are *consistent* with the specific model and predictions we want to test, rather than relying on simple main effects alone without examining their potential interplay (Hayes, 2017). However, we agree that such mediation findings cannot speak directly to whether there actually exist a causal relationship between the mediator and dependent variable in the proposed direction, whether our model is the best possible conceptualization of the causal process, or whether our proposed model is *better* than other alternative mediation models that could also be proposed (see e.g., Fiedler, Schott, & Meiser, 2011). We therefore agree that the mediation results should have been reported and discussed in more tentative terms, as suggestive evidence, in the published paper.

For the self-congruence mediator, we found a consistent pattern of indirect effects on the dependent variables when conducting mediation analyses. However, this variable is conceptually quite close to the dependent variables (especially apartment attitudes). While the self-congruence measure asks participants if they feel like the apartment is “typically them”, the dependent measures asks about whether they like and value the apartment. It is possible that the effect of host group membership on e.g. attitudes is independent of self-congruence, but that host group membership affects another, unobserved variable that in turn affects both self-congruence and attitudes. Another possible alternative to our model is that host group membership affects attitudes, which in turn affects self-congruence. Although there is some



experimental evidence from previous research showing a causal effect of self-congruence on product attitudes (Escalas & Bettman, 2005), quite a lot of previous research is correlational and/or conducted with small sample sizes. Therefore, our conclusion that self-congruence serves as a mediator should be interpreted with caution, since the model path from the mediator variable to the dependent variable is estimated with correlational data.

For the host trustworthiness mediator, our findings in the paper are more subtle than for the self-congruence mediator. We find a pattern of moderated mediation, with the indirect effects through trustworthiness depending on participants' political orientation and out-group threat perceptions. In addition to suffering from the same weaknesses pertaining to the mediation analyses as discussed for self-congruence, there are also problems with statistical power for the moderation analyses. This point is discussed further below. For the mediation findings, we must be open to the possibility that the relationship between host trustworthiness and the dependent measures is not causal in the direction our research model proposes. We cannot rule out that there might be a third variable causing both trustworthiness judgements of the host and evaluations of the apartment (the dependent variables). Some experimental research exists showing that host trustworthiness has a causal effect on Airbnb rental intentions and pricing (Ert, Fleischer, & Magen, 2016), but this has not been studied extensively. We also cannot rule out the possibility of reverse causation, with the dependent variables causing variation in the trustworthiness measure. Our findings of moderated mediation through the host trustworthiness variable should be interpreted in light of these caveats.

Even though we did not directly manipulate host trustworthiness, in Experiment 3 we tested the effect of varying third-party information about quality, by adding review scores to the Airbnb ad. We label this manipulation a "trust cue", and although our hypotheses do not specify it, we expected the manipulation to affect host trustworthiness rating. However, host

trustworthiness ratings were not affected by the presence of reviews (vs. no reviews), or by the level of reviews (mediocre vs. full score). We found this somewhat puzzling. One potential explanation could be that the reviews exert their effect by making host judgements less relevant to the decision. If participants feel they can trust the reviews, they might not need to incorporate host trustworthiness in their assessment of the apartment.

In sum, the findings from the mediational analyses should be interpreted as more tentative than the findings from analyses of the main effects of the experimental manipulation. In the manuscript, we could have made this more clear, and we could have avoided some examples of causal language. Even if we had manipulated the mediating variables, there would still have been issues with claiming a causal mediational process, as pointed out by Bullock, Green, & Ha (2010). In general, it is a difficult task to establish with confidence the nature of psychological processes, and there is a risk that statistical mediation models are awarded more causal interpretations than warranted. An approach that would have required fewer assumptions would have been to present correlation tables with all measured variables instead of mediation results. A file rendering correlation tables for all three experiments has therefore been made available at the project's OSF page: <https://osf.io/abew9>.

### **Statistical power**

For each of the experiments in the paper, power analyses guided our choices of sample size. Although perhaps not stated clearly enough in the methods sections, power analyses were conducted focusing on main effects. Ideally, since our hypotheses also included hypotheses of moderation, we should have powered our experiment for the expected interaction effects as well, which would have meant recruiting larger samples. The reason we did not base our power analyses on interaction effects were partly the conventions in published research at the time of conducting the experiments, but also a trade-off with budget constraints. In Experiment 3, we did however increase power for main effects to 90%, as

opposed to 80% for the two other experiments, an improvement that also improves power for moderation analyses in this experiment. Although this type of power calculation still appears to be common in the research literature, we agree that we should have acknowledged it more explicitly in the paper, with the related limitations it creates for the reliability and precision of our moderation analyses relying on interaction effects rather than simple main effects.

### **Reporting and interpreting results**

In the reporting of results in the paper, both statistical significance and effect sizes are reported for all statistical analyses. However, in conclusions and interpretations, quite a lot of focus is given to significance, and less to effect sizes and confidence intervals. Reporting and interpreting statistical significance is not per definition a good or bad practice; the value of this reporting format depends on which types of questions one is interested in (for a defense of correctly used significance testing, see e.g., Lakens, 2021). An important weakness of significance testing is that it says nothing about the practical impact of the effects. Since our paper targets a practical, real-life problem, focusing more on effect sizes in the reporting could have strengthened the paper. We could for instance have discussed how the effect size for the main discrimination effect is small in statistical terms, but still impactful and important if transferred to a large-scale setting such as all Airbnb rentals. In Experiment 3, there is more focus on the size of the effect of the manipulation because we included a choice variable as a dependent variable.

A greater focus on effect sizes and confidence intervals would also have helped to calibrate confidence in findings from both moderation and mediation analyses. For many of the moderation and mediation results that are reported as significant, the confidence intervals are relatively wide, and almost include zero. Although all this information is available to readers, the paper could have been strengthened by a more balanced reporting including not

only the pre-registered tests of statistical significance, but also a richer reporting and discussion of effect sizes and confidence intervals for those effects.

### **Variable order and independence of moderators**

In our experiments, we presented the participants with the experimental manipulation before recording any of the measured variables, including moderators. Specifically, we chose to measure dependent measures first (directly after presenting the manipulation), then mediating variables, then moderating variables and demographics. A potential pitfall of measuring the moderating variables, and doing so after the manipulation, could be that the manipulation had an effect on the moderators. We chose this design because the alternative, presenting the moderating measure before the manipulation, could have had sensitizing “priming” effects on participants, and thus confounded the manipulation. In the choice between these two potential weaknesses, we prioritized to ensure a clean manipulation, and accepted the risk that comes with measuring the moderators at a later point. After the current dissertation research was planned and conducted, a new paper examined the role of so-called post-treatment bias across a series of six experiments, and found no evidence that measuring the moderator first influences the estimated treatment effect being observed later in the experiment (Sheagley & Clifford, 2023). If we had known this when conducting the different experiments in the current dissertation research, we would probably have opted to place the moderator *first*. As we did not know this at the time, we prioritized getting a clean and “untainted” estimate of the causal main effects, measuring moderator variables in the end.

Unfortunately, we did not test for the independence of moderators as part of our analyses. I have now conducted tests of mean differences between the in-group vs. out-group manipulation. These results show that there is indeed a small but statistically significant difference in participants’ out-group threat in Experiment 2 and 3, and in political orientation in Experiment 2. Specifically, participants in the out-group condition report lower out-group

threat than those in the in-group condition in both Experiment 2 and 3. Additionally, participants in the out-group condition report to be more politically left-oriented than participants in the in-group condition in Experiment 2.

These findings mean that the out-group threat variable is not entirely independent of the manipulation in Experiment 2 and 3, and the political orientation variables is not entirely independent of the manipulation in Experiment 2. For both moderators in Experiment 1, and the political orientation variable in Experiment 3, the assumption of independence held. Lack of independence was thus a problem for roughly half of the moderation tests conducted in the paper, with the other half being unaffected by this issue. This, in addition to the lack of sufficient statistical power for moderation analyses, mean that results from these analyses should be interpreted with care.

### **Scale construction**

Most of the scales used to measure our dependent, mediating and moderating variables were constructed by the authors. In general, we aimed for our measures to have a high degree of face validity. For instance, the “intention to rent” variable was measured by a single question: “If you were to make a decision here and now, how likely is it that you would choose this apartment?” In this and other cases, we were interested in the concrete answers on the actual questions, more so than using the questions as a way to get at a latent concept. We did not conduct pre-testing of the measurement scales, but based scale construction on discussions in the author team, with feedback and input from other colleagues. For as many measures as we could, we adapted items and scales from previous research (see table below).

| Measure | Adapted from |
|---------|--------------|
|---------|--------------|

|                                    |   |
|------------------------------------|---|
| Attitudes towards Airbnb apartment | Batra & Athola (1991), Haley & Case (1979), Singh & Spears (2004) |
| Intention to rent Airbnb apartment | Bergkvist & Langner (2017)  |
| Willingness to pay                 | Homburg, Koschate, & Hoyer (2005)                                 |
| Self-congruence                    | Escalas & Bettman (2005)  |
| Trustworthiness                    | McKnight, Choudhury, and Kacmarc (2002)                           |
| Political orientation              | Inglehart and Klingemann (1976)                                   |
| Out-group threat                   | Hackel, Looser, and Van Bavel (2014)                              |

### References for reflection section

- Ahmed, A. M., & Hammarstedt, M. (2008). Discrimination in the rental housing market: A field experiment on the Internet. *Journal of Urban Economics*, 64(2), 362-372.
- Batra, R. & Athola, O. T. (1991). Measuring the hedonic and utilitarian sources of consumer attitudes. *Marketing Letters* 2(2), 159-170.
- Bergkvist, L. & Langner, T. (2017). Construct Measurement in Advertising Research. *Journal of Advertising* 46(1), 129-140.
- Bullock, J. G., Green, D. P., & Ha, S. E. (2010). Yes, but what's the mechanism? (don't expect an easy answer). *Journal of personality and social psychology*, 98(4), 550–558. <https://doi.org/10.1037/a0018933>.
- Cohen, J. (2016). A power primer. In A. E. Kazdin (Ed.), *Methodological issues and strategies in clinical research* (pp. 279–284). American Psychological Association. <https://doi.org/10.1037/14805-018>
- Crisp, R. J., & Hewstone, M. (2007). Multiple social categorization. *Advances in experimental social psychology*, 39, 163-254.
- Dovidio, J. F., Gaertner, S. L., & Saguy, T. (2008). Another view of “we”: Majority and minority group perspectives on a common ingroup identity. *European review of social psychology*, 18(1), 296-330.
- Ert, E., Fleischer, A., & Magen, N. (2016). Trust and reputation in the sharing economy: The role of personal photos in Airbnb. *Tourism management*, 55, 62-73.
- Escalas, J. E., & Bettman, J. R. (2005). Self-construal, reference groups, and brand meaning. *Journal of Consumer Research*, 32, 378–389.

- Fiedler, K., Schott, M., & Meiser, T. (2011). What mediation analysis can (not) do. *Journal of Experimental Social Psychology, 47*(6), 1231-1236.
- Flage, A. (2018). Ethnic and gender discrimination in the rental housing market: Evidence from a meta-analysis of correspondence tests, 2006–2017. *Journal of Housing Economics, 41*, 251-273.
- Gaertner, S. L., Dovidio, J. F., & Bachman, B. A. (1996). Revisiting the contact hypothesis: The induction of a common ingroup identity. *International Journal of Intercultural Relations, 20*(3-4), 271-290.
- Glasford, D. E., & Dovidio, J. F. (2011). E pluribus unum: Dual identity and minority group members' motivation to engage in contact, as well as social change. *Journal of Experimental Social Psychology, 47*(5), 1021-1024.
- Goh, J. X., Hall, J. A., & Rosenthal, R. (2016). Mini meta-analysis of your own studies: Some arguments on why and a primer on how. *Social and Personality Psychology Compass, 10*(10), 535-549.
- Hackel, L. M., Looser, C. E., & Van Bavel, J. J. (2014). Group membership alters the threshold for mind perception: The role of social identity, collective identification, and intergroup threat. *Journal of Experimental Social Psychology, 52*, 15-23.
- Haley, R. I. & Case, P. B. (1979). Testing Thirteen Attitude Scales for Agreement and Brand Discrimination. *Journal of Marketing 43*(4), 20-32.
- Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford publications.



- Homburg, C., Koschate, N. & Hoyer, W. D. (2005). Do Satisfied Customers Really Pay More? A Study of the Relationship Between Customer Satisfaction and Willingness to Pay. *Journal of Marketing* 69(2), 84-96.
- Huedo-Medina, T. B., Sánchez-Meca, J., Marín-Martínez, F., & Botella, J. (2006). Assessing heterogeneity in meta-analysis: Q statistic or I<sup>2</sup> index?. *Psychological methods*, 11(2), 193–206. <https://doi.org/10.1037/1082-989X.11.2.193>.
- Inglehart, R., & Klingemann, H. D. (1976). Party identification, ideological preference and the left-right dimension among Western mass publics. *Party identification and beyond*, 243-273. Wiley: London.
- Lakens, D. (2021). The Practical Alternative to the p Value Is the Correctly Used p Value. *Perspectives on Psychological Science*, 16(3), 639-648.  
<https://doi.org/10.1177/1745691620958012>
- Lange, A. (2000). *Diskriminering, integration och etniska relationer*. Norrköping: Integrationsverket.
- McKnight, D. H., Choudhury, V., & Kacmar, C. (2002). The impact of initial consumer trust on intentions to transact with a web site: a trust building model. *Journal of strategic information systems*, 11(3-4), 297-323.
- Sheagley, G., & Clifford, S. (2023). No evidence that measuring moderators alters treatment effects. *American Journal of Political Science*, online first publication.  
<https://doi.org/10.1111/ajps.12814>
- Singh, S. N. & Spears, N. (2004). Measuring Attitude toward the Brand and Purchase Intentions. *Journal of Current Issues and Research in Advertising* 26(2), 53-66.

**Article 2: Access vs. ownership: Are strongly identified consumers prepared to make the switch?**

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**Data statement**

All data collected for this article will be made publically available on the project's OSF page at the time of publication: <https://osf.io/235bk/>

### **Abstract**

Most knowledge of the effects of identity on consumption comes from research on purchasing behavior, where the consumer gains permanent ownership over a product. But little is known about how identity affects consumption in situations where the product is accessed instead of owned. This paper investigates how identity and self-relevance relates to consumer preferences for access-based consumption versus ownership. We focus on consumption within the area of fashion, as this is a domain with a growing popularity of access-based services that possesses high symbolic and identity-related value to consumers. Our set of studies (N = 2398), indicate that there is a small positive relationship between identification with fashion and preferring ownership to access in the clothing domain, but that this relationship can differ depending on situational factors such as the number of consumption events. Different theoretical explanations for this finding are discussed.

*Keywords:* Access-based consumption, identity, variety seeking, fashion rental

**Access vs. ownership: Are strongly identified consumers prepared to make the switch?**

Imagine trying out a product and feeling like it is not very “you”, or conversely, discovering an object that immediately feels right, thinking “yes, this is me!” Many consumers can relate to these experiences. Prior research on the role of identity in consumption has demonstrated the many ways consumer identities are tied to objects we either own or aspire to own. Objects we own are perceived as integral to our sense of self (Belk, 1988), and we prefer objects that help us express desired identities and reject undesired ones (Escalas & Bettman, 2005). Research on brands, brand relationships and brand communities positions long-term ownership as the ideal end-state of a consumer-brand relationship (Fournier, 1998; Muniz & O’Guinn, 2001). It follows that ownership, being the ideal and dominant consumption mode, has been setting the stage for research on identity and consumption. Over the last decade, however, *access-based consumption* has become ubiquitous. Access-based consumption refers to transactions that may be market-mediated, but where no transfer of ownership takes place (Bardhi & Eckhardt, 2012). Examples range from car-rental services like Zipcar and Getaround to clothing rental services like Rent the Runway or By Rotation, to ski rental through Skibutlers. Several authors have asked whether access can offer the same kinds of consumer value as ownership, and have pointed to a lack of empirical research on identity-related value in access-based consumption (Bardhi & Eckhardt, 2017; Eckhardt et al., 2019; Lamberton & Goldsmith, 2020). The research presented in this article attempts to fill this gap by investigating how identity and self-relevance influence consumer preferences for access-based consumption versus ownership. We focus on consumption within the area of fashion, as this is a domain that both possesses high symbolic and identity-related value to consumers (Naderi, 2013), and where there is a growing popularity of access-based services (Pantano & Stylos, 2020).

**Identity relevance and access-based consumption**

Bardhi & Eckhardt (2017) offer a useful framework for analyzing different consumption modes by introducing the dimension of *liquid vs. solid consumption*. Liquid consumption is defined as ephemeral, access based and dematerialized, whereas solid consumption is defined as enduring, ownership-based and material. As an example, consumption through a digital platform (e.g. Spotify) can be characterized as liquid because it is ephemeral, dematerialized and access-based, whereas buying a physical record that one owns for a long time can be seen as an instance of solid consumption. According to this framework, consumers will value different factors depending on whether they are evaluating the consumption from a liquid or solid perspective. For instance, consumers living a globally nomadic lifestyle have been found to operate within a liquid logic, and they derive consumer value from flexibility, lightness, immateriality and ephemerality (Bardhi, Eckhardt, & Arnould, 2012). Conversely, within a solid perspective, consumption is valued for its physical presence, its endurance, and whether it serves as reminders or connections to people, places and memories. Because of these characteristics, solid consumption is seen as more apt at providing identity-based value (e.g. signaling or constructing identity).

Access-based consumption is seen as a characteristic of liquid consumption because consumers seem to value it for mostly liquid reasons: flexibility, convenience, and avoiding burdens associated with ownership (Bardhi & Eckhardt, 2012; Gullstrand Edbring, Lehner, & Mont, 2016; Lawson, Gleim, Perren, & Hwang, 2016). Research on rentals (a form of access-based consumption) shows that the main motivations consumers have for using rental services are to satisfy temporary situation-specific needs, to “try something out” before committing to ownership, or in some cases because ownership is too expensive (Durgee & Connor, 1995). For items seen as personal or highly symbolic, consumers report aversion to rental, both because rental would inhibit the formation of close emotional attachments to such products, and thus lower their value, and because renting highly symbolic items could be seen as

putting on a façade and being overly pretentious (ibid). Research on car sharing, a more recent form of access-based consumption, similarly shows that users appreciate the service for the flexibility and convenience it provides (high *use value*), but that they do not identify with either the cars or the service brand (low *sign value*; Bardhi & Eckhardt, 2012).

Both the temporary nature of access, as well as differences in costs involved in ownership vs. access, can underlie the differences in values consumers experience from these forms of consumption. In addition to buying being more permanent and thus facilitating more emotional attachment between product and person, buying is also a higher and more permanent financial and practical investment, and therefore a more costly signal of commitment to the product domain. Several previous studies have found that strongly identified consumers value the symbolic or self-diagnostic potential of products, which leads strong identifiers to prefer manual vs. automatic (Leung, Paolacci, & Puntoni, 2018) and material vs. immaterial (Leung, Cito, Paolacci, & Puntoni, 2022) products. Similar to how strongly identified consumers may resist products that “automatize away” or “dematerialize” their self-diagnostic potential (Leung et al., 2018), we expect strongly identified consumers to resist access because it lacks sign value compared to ownership. This leads us to expect that a high level of identification with a product domain will be related to a stronger relative preference for buying vs. accessing products within that domain.

Hypothesis 1: Consumers who strongly identify with a consumption domain will be relatively less interested in access-based consumption and more interested in ownership, for consumption choices within the domain.

### **The moderating effect of variety seeking**

Previous research has found that the relationship between identity and dimensions of solid consumption can be moderated. For instance, product transience was found to moderate

the effect of identification on preference for material products (Leung et al., 2022). When it comes to the identification-acquisition mode relationship, we expect variety seeking to play a similar role.

Research shows that variety seeking behavior can be a way for people to create a socially acceptable, but distinct, personal identity (McAlister & Pessemier, 1982). This is in part because some identities can be signaled not only with enduring commitment to identity-relevant products and belongings, but also through displays of being familiar with and adopting new trends and developments within the domain. For instance, an Apple fan might want to acquire the latest iPhone model, although this means ending their enduring relationship to the previous model.

We expect that when people experience a high need for variety, those who identify strongly with a domain will respond with more variety seeking behavior than people who do not identify with the domain. This is because displaying variety can offer symbolic value that is worth more to strong identifiers than to the non-identified. Relatedly, previous research has shown that materialistic consumers, who as a baseline prefer ownership to access, can be swayed to prefer access when the need for uniqueness is strong (Akbar, Mai, & Hoffmann, 2016). Moreover, analysis of Twitter data has recently documented that the need to wear something new and varied for different special events is a prominent motive among Rent the Runway customers (Pantano & Stylos, 2020). We therefore expect the tendency for strongly identified individuals to prefer ownership to be attenuated when the consumer faces a trade-off between an ownership-based low-variety option versus an access-based high-variety option.

Hypothesis 2: Need for variety will moderate the relationship between identification and acquisition mode preferences. When need for variety is high, strongly identified consumers will be more likely to trade off ownership for access.

## The current research

Across five studies, we test whether, how and when identity relevance relates to preferring ownership vs. access-based consumption in the context of clothing. Study 1 examines the basic relationship between identity relevance and consumption mode preferences (preference for ownership vs. access). Studies 2A and 2B find that neither a priming manipulation nor trait level variety seeking moderated the relationship between identity relevance and consumption mode preference. Studies 3 and 4 (both preregistered) establish a moderating effect of situationally-induced need for variety.

### Study 1

The main aim of Study 1 was to examine the relationship between identity relevance and acquisition mode preferences. We conducted a scenario-based survey, measuring participants' identity relevance and preferences to buy vs. rent in the context of formal wear.

### Methods

Study 1 was conducted as part of a bundle of studies in the behavioral research lab of a large US university. 137 subjects participated, of which 73 % were students and 27 % were non-student community members ( $M_{age} = 27.1$ ,  $SD = 10.2$ , 60 % female)<sup>10</sup>.

*Identity relevance* was measured with a scale consisting of 12 items, tapping four dimensions of domain self-relevance derived from Sirgy (1985): the real private self (e.g. "Being interested in fashion is important to who I am."), the ideal private self (e.g. "I would like to be a kind of person who is into fashion."), the real public self (e.g. "People who know me think of me as a fashion-person.") and the ideal public self (e.g. "I would like others to

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<sup>10</sup> In addition to these participants, another sample of participants run in parallel were assigned to answer question within the skiing domain. Results for this domain is not presented as part of this paper, but is available in the MDA.



think of me of someone who is into fashion.”). Together, we expected these four subscales to form a comprehensive measure of whether a domain was identity-relevant or not<sup>11</sup>.

*Acquisition mode preference* was measured by presenting participants with the following hypothetical scenario:

Imagine that you for some reason need an outfit for a formal event, e.g. a wedding, or a formal work event, and you do not have anything in your current wardrobe to fit the occasion. In addition to the option of buying an outfit, there are also services that allow you to rent high-end formal wear (dresses, suits, tuxedos etc.) for a sum well below the retail price.

Participants were then asked: “How would you prefer to access formal wear in this scenario?” Answers were given on a scale ranging from 1 (Strongly prefer renting formal wear) to 9 (Strongly prefer buying formal wear), with a midpoint of 5 (Neutral). See the Methodological Detail Appendix (MDA) for a full overview of measures.

## **Results**

In order to examine whether participants’ degree of identification with the fashion domain was related to their preference for buying (vs. renting) formal wear, we estimated a simple linear regression model, controlling for participants’ frequency of using formal wear. We added this control variable<sup>12</sup> because it could potentially increase participants’ preference for purchasing this type of clothing, since they would have more use for them compared to participants rarely using formal clothes. The results showed a significant positive relationship between participants’ identity relevance and their preference to buy (vs. rent) formal wear, and that this relationship was robust when controlling for the frequency of using formal wear

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<sup>11</sup> The scale was pretested ( $n = 202$ ) within different consumption domains and found to possess high internal reliability (Cronbach’s  $\alpha = 0.97$ ).

<sup>12</sup> We tested for potential collider bias, and present these results in the appendix.

( $b = 0.35$ ,  $SE = 0.13$ ,  $t(134) = 2.78$ ,  $p = .006$ ). However, as the regression coefficient indicates, the relationship does not appear particularly strong, and the explained variance of the model is low ( $r^2 = 0.09$ ). Table 1 presents the regression results.

Table 1

*Regression results Study 1*

|                       | Model 1                  |
|-----------------------|--------------------------|
| (Intercept)           | 3.58 ***<br>[2.66, 4.50] |
| Identity relevance    | 0.35 **<br>[0.11, 0.59]  |
| Formal wear frequency | 0.01 *<br>[0.00, 0.03]   |
| N                     | 137                      |
| R <sup>2</sup>        | 0.09                     |

*Note.* Brackets indicate upper and lower levels of 95% confidence intervals for regression coefficients. \*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ .

## Discussion Study 1

Study 1 served to confirm that there is a positive relationship between identity relevance of clothing and the preference to buy vs. rent clothes for a formal event. However, the relationship seems relatively modest. We were therefore interested in collecting more data on this relationship, as well as testing our moderation hypotheses. To test our hypothesis that need for variety would moderate the relationship between identity relevance and buying vs. renting preference, we conducted Studies 2A and 2B.

## Study 2

In Study 2, the goal was to expand on the finding in Study 1 by investigating our proposed boundary condition, namely need for variety. We expected that a high need for variety would weaken the association between identification and buying preference, making strong identifiers more positive to renting instead of buying.

### **Study 2A**

In order to test whether need for variety would weaken the association between identification and buying preference, we designed Study 2A as an experiment where need for variety was manipulated. Specifically, Study 2A examined whether an increased *focus on consistency* would strengthen the effect of identity relevance on preference to buy (vs. rent), whereas a *focus on change* would weaken (and possibly reverse) the effect of identity relevance on preference to buy (vs. rent).

### **Method**

**Sample.** In Study 2A, we recruited a women-only sample ( $n = 395$ ) through the Amazon Mechanical Turk platform. Women were chosen as we expected the concept of variety seeking as more relevant to women than to men. This because women's options when it comes to formal wear includes a larger variety than men's (in general). Participants were US citizens, and a majority (61%) of participants reported a household income below the US median income. Roughly half of the participants (52%) had completed four or more years of higher education. Participants' mean age was 41.3 ( $SD = 12.4$ ). The sample was thus diverse, with low-income participants slightly over-represented. Out of the total sample of 395 participants, 195 were randomly assigned to the consistency condition, and 200 to the change condition.

**Procedure.** We experimentally manipulated focus on change vs. consistency through an essay-writing task. Participants in the *change group* were asked to write about the benefits

of a person changing and evolving over time, whereas participants in the *consistency group* were asked to write about the benefits of a person being consistent over time. All participants were encouraged to write at least one hundred words.

As a manipulation check, we included a set of questions measuring how important participants felt that changing, evolving, being consistent and being stable was in the domain of fashion. We expected participants in the change group to report higher perceived importance of change, and lower perceived importance of consistency, and vice versa for the consistency group.

As in Study 1, we measured identity relevance, but this time with a shortened version of the scale. As the items turned out to be highly intercorrelated in Study 1 (average  $r$  from Study 1 = 0.7), we believed a lower number of items would be sufficient. We therefore selected one item to represent each of the theorized dimensions (private real self, private ideal self, social real self, social ideal self) based on the item displaying high factor loadings with the single factor (See Table 2 for the selected items, and the appendix for factor analysis results).

Table 2

*Identity relevance scale*

| Identity dimension | Item  | Factor loading <sup>a</sup> |
|--------------------|---|-----------------------------|
| Private real self  | Being interested in fashion is important to who I am                | 0.89                        |
| Private ideal self | Having an interest in fashion is a part of how I want to see myself | 0.92                        |
| Social real self   | I think other people perceive me as a fashion-person                | 0.92                        |
| Social ideal self  | I would like others to think of me of someone who is into fashion   | 0.90                        |

Note. <sup>a</sup> Factor loadings resulting from an exploratory factor analysis using maximum likelihood estimation, with data from Study 1.

Our dependent variable was measured by presenting participants with a similar renting vs. buying scenario as in Study 1, and asking about their preference for renting (1) vs. buying

(9) formal wear. However, a slight change was made in the scenario compared to in Study 1. Instead of asking participants to imagine going to a single formal event, we now asked participants to imagine going to three formal events. The purpose of this change was to allow for the desire for variety/change to have a greater impact. A concern with the one-event scenario would have been that we would not be able to detect effects of different levels of focus on change, because the scenario did not allow for displays of change. Therefore, we asked participants to imagine going to three formal events, and having to either buy one outfit, or rent three different outfits.

## Results

First, we examined the effect of the manipulation on the two manipulation check scales: the importance of change scale ( $\alpha = 0.94$ ) and the importance of stability scale ( $\alpha = 0.92$ )<sup>13</sup>. There was no effect of the manipulation on the manipulation checks (importance of change scale:  $t(387.30) = -0.738, p = 0.461$ , importance of stability scale:  $t(387.51) = -0.301, p = 0.763$ ). Thus, writing about the importance of consistency or change did not seem to affect participants' judgements of the importance of change and stability in the fashion domain.

As the experimental manipulation did not succeed in creating different levels of perceived importance of change and stability between the experimental groups, our results can neither confirm nor disconfirm the main hypothesis of Study 2A. Nonetheless, analyses revealed no differences between the change group ( $M = 5.18, SD = 2.93$ ) and the consistency group ( $M = 5.67, SD = 2.97$ ) in renting vs. buying preferences ( $t(392.42) = 1.659, p = 0.098$ ),

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<sup>13</sup> The importance of change and importance of stability scales were not significantly correlated:  $r = 0.05, p = 0.290$ .

and no interaction effect of the manipulation on the identity-renting vs. buying-relationship ( $b = 0.035$ ,  $t(390) = 0.214$ ,  $p = 0.830$ ). Full regression results are presented in Table 3.

Table 3

*Regression results Study 2A*

|                                 | Model 1                  |
|---------------------------------|--------------------------|
| (Intercept)                     | 6.25 ***<br>[5.36, 7.15] |
| Identity relevance              | -0.17<br>[-0.39, 0.06]   |
| Change group                    | -0.61<br>[-1.88, 0.66]   |
| Formal wear frequency           | 0.00<br>[-0.01, 0.01]    |
| Identity relevance*Change group | 0.04<br>[-0.29, 0.36]    |
| N                               | 395                      |
| R2                              | 0.02                     |

*Note.* Brackets indicate upper and lower levels of 95% confidence intervals for regression coefficients.

\*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ .

We also checked if the manipulation had an effect on the identity relevance variable, since we assumed these would be independent of each other. Since the manipulation was presented before the measure of identity relevance, there was a possibility of dependence. A t-test showed no significant effect of the manipulation on identity relevance ( $t = 0.32$ ,  $p = 0.750$ )

## Study 2B

In Study 2B, we again sought to test the hypothesis that need for variety would moderate the relationship between identity relevance and a preference for buying vs. renting. Since our manipulation of the moderating factor (focus on consistency vs. change) in Study 2A was unsuccessful, in Study 2B we attempted to measure the proposed moderator with a measure of trait variety seeking. Whereas the manipulation in Study 2A was a relatively subtle priming-type manipulation, the measurement of trait variety seeking would allow us to test the hypothesis from a different angle.

## Method

**Sample.** We recruited an all-female, US sample via Mturk. The final sample consisted of 387 women participants (Mean age = 39.2, SD = 11.9). 54 % reported household incomes below the US median, and 48 % had completed four or more years of higher education.

**Procedure.** *Identity relevance* was measured with the same shortened, 4-item scale as in Study 2A. *Variety seeking* was measured with the 7-item change seeking index (Steenkamp & Baumgartner, 1995). Two example items are “I like to experience novelty and change in my daily routine” and “I am continually seeking new ideas and experiences”. A full overview of these and other measures is presented in the supplemental materials.

## Results

Our moderation hypothesis was not supported, as there was no moderation by trait change seeking on the identity-rent vs. buy-relationship ( $b = -0.04$ ,  $SE = 0.06$ ,  $t = -0.60$ ,  $p = 0.549$ ). See Table 4 for full regression results.

We also checked the assumption that the moderator (change seeking) and the independent variable (identity relevance) were indeed independent of one another. A simple regression showed that our assumption did not hold. There was a statistically significant

relationship between identity relevance and change seeking ( $b = 0.32$ ,  $SE = 0.04$ ,  $t = 8.72$ ,  $p < 0.001$ ).

Table 4

*Regression results Study 2B*

|                                   | Model 1                  |
|-----------------------------------|--------------------------|
| (Intercept)                       | 5.79 ***<br>[3.87, 7.72] |
| Identity relevance                | -0.00<br>[-0.61, 0.60]   |
| Change seeking                    | 0.10<br>[-0.35, 0.54]    |
| Formal wear frequency             | 0.00<br>[-0.02, 0.02]    |
| Identity relevance*Change seeking | -0.04<br>[-0.17, 0.08]   |
| N                                 | 387                      |
| R <sup>2</sup>                    | 0.02                     |

*Note.* Brackets indicate upper and lower levels of 95% confidence intervals for regression coefficients. \*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ .

### Discussion Study 2A and 2B

Study 2A and Study 2B both examined the hypothesis that variety seeking would affect the relationship between identity relevance and the preference to buy established in Study 1. We were unable to support our hypothesis that variety seeking or a focus on change would moderate the effect of identity relevance on buying vs. renting preference. However, both of these studies involved relatively subtle variety seeking variables: either an essay-



writing task or a measure of general change seeking. In Study 2B, we also found a significant relationship between our proposed independent variable (identity relevance) and moderator (change seeking), which precludes drawing conclusions from moderation analyses. In Study 3, we therefore sought to manipulate need for variety, in order to ensure independence from identity relevance, and with a more impactful manipulation than an essay-writing task.

### Study 3

In Study 3, we sought to test whether making variety seeking a more salient goal in the choice situation would affect participants' renting vs. owning preferences. We manipulated the situational need for variety through varying the number of consumption events in the renting vs. buying scenarios presented to participants. We expected that when making people think of attending three formal events, the strongly fashion-identified participants would become more interested in renting compared to when considering just one event, whereas the non-identified participants would not increase their rental interest to the same extent. The hypothesized mechanism was that attending three vs. one event would spur a higher need for variety, and since strongly fashion-interested individuals would value variety more than others, they would also become more likely to rent (vs. buy) in the three-events condition. Study 3 was preregistered at <https://osf.io/xqvaf>.

### Method

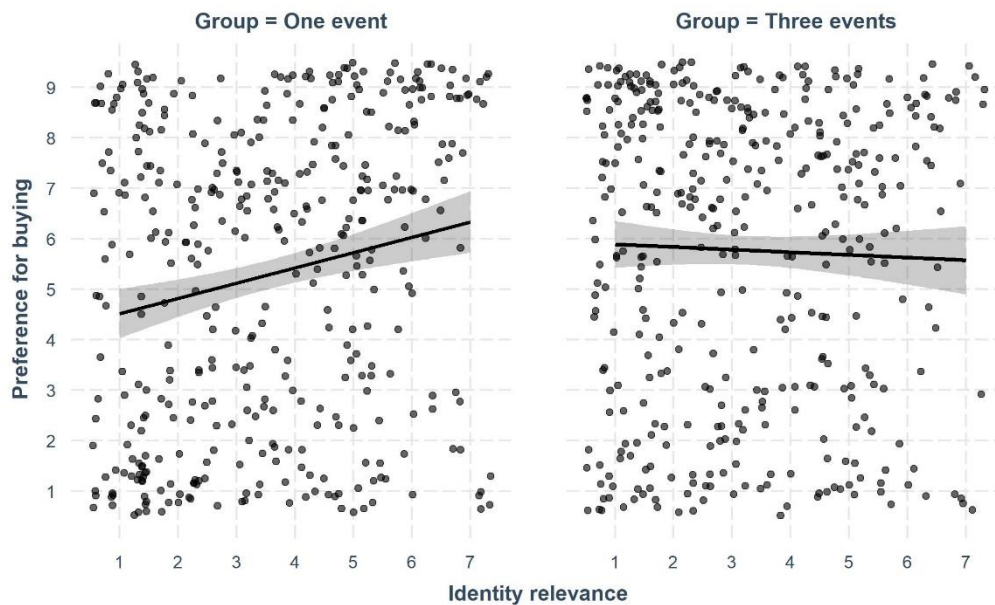
The sample consisted of 802 US Mturk workers ( $M_{age} = 36.0$ ,  $SD = 11.0$ , 39.7 % female), with 403 assigned to the one event condition, and 399 assigned to the three events condition. 52 % of participants reported below-median household incomes, and 53 % had completed four or more years of higher education.

Study 3 was designed as a between-subjects experiment, where we manipulated the number of consumption events presented in the renting vs. buying scenario. Participants were

presented with the same type of scenario as in the previous studies. Half of participants were asked to imagine going to one event over the next year, and the other half were asked to imagine going to three events over the next year. Participants were then asked about their preference for buying vs. renting outfits for the events. Identity relevance was measured with the same shortened version of the scale as in Study 2A and 2B.

## Results

Consistent with our hypothesis, we found that the number of events significantly affected the relationship between identity relevance and acquisition mode preference, as indicated by a significant interaction between experimental group (one vs. three events) and identity relevance ( $b = -0.36$ ,  $SE = 0.11$ ,  $t = -3.145$ ,  $p = 0.002$ ). Identity relevance was positively related to a buying preference when participants considered a single event ( $b = 0.30$ ,  $SE = 0.08$ ,  $t = 3.80$ ,  $p < .001$ ), but not when considering several events ( $b = -0.05$ ,  $SE = 0.08$ ,  $t = -0.63$ ,  $p = 0.528$ ). However, the regression model explains a low amount of variance ( $r^2 = 0.04$ ). See Table 5 for full regression results, and Figure 1 for an illustration of the interaction effect.



*Figure 16: Interaction effect in Study 3. Identity relevance was positively associated with a preference to buy (vs. rent) formal wear when participants considered going to one event only. For participants who considered a scenario where they were attending three events there was no relationship between identity relevance and preference to buy vs. rent formal wear. The regression line illustrates the relationship between identity relevance (7-point scale) and preference for buying (9 indicates strong buying preference, 1 indicates strong renting preference). The grey area plots the 95% confidence interval around the regression line.*

A weakness of our pre-registered interaction analysis was that it assumes independence between the manipulation and the identity relevance variables. A main effects test showed this assumption not to hold. There was a significant main effect of the manipulation on the identity relevance variable ( $b = -0.29$ ,  $SE = 0.13$ ,  $t = -2.231$ ,  $p = 0.026$ ). Therefore, findings from the interaction analyses in this study must be taken as tentative.

Table 5

*Regression results Study 3*

|                                       | Model 1                    |
|---------------------------------------|----------------------------|
| (Intercept)                           | 4.12 ***<br>[3.50, 4.73]   |
| Identity relevance                    | 0.30 ***<br>[0.15, 0.46]   |
| Three events group                    | 1.72 ***<br>[0.87, 2.58]   |
| Formal wear frequency                 | 0.01 **<br>[0.00, 0.01]    |
| Identity relevance*Three events group | -0.35 **<br>[-0.58, -0.13] |
| N                                     | 802                        |
| R2                                    | 0.04                       |

*Note.* Brackets indicate upper and lower levels of 95% confidence intervals for regression coefficients. \*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ .

For Study 3, in our preregistration we also predicted that need for variety would moderate the relationship between materialism and preference for ownership, so that when need for variety was higher, the relationship between materialism and a preference for ownership would be less positive than when need for variety was lower. To test this prediction we estimated an OLS regression model with materialism, experimental condition (one vs. three events), and the interaction between materialism and experimental condition as predictors. As a control variable, we included frequency of formal wear usage. Results (see Table 6) showed that there was no significant interaction effect between materialism and the experimental conditions ( $b = -0.20$ ,  $SE = 0.16$ ,  $p = .209$ ).

Table 6

*Regression results (materialism) Study 3*

|                                | Model 1                  |
|--------------------------------|--------------------------|
| (Intercept)                    | 3.95 ***<br>[3.02, 4.87] |
| Materialism                    | 0.31 **<br>[0.09, 0.53]  |
| Three events group             | 1.28 *<br>[0.01, 2.56]   |
| Formal wear frequency          | 0.01 **<br>[0.00, 0.01]  |
| Materialism*Three events group | -0.20<br>[-0.50, 0.11]   |
| N                              | 802                      |
| R2                             | 0.03                     |

*Note.* Brackets indicate upper and lower levels of 95% confidence intervals for regression coefficients. \*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ .

### Discussion Study 3

The main finding of Study 3 was that, in line with our predictions, the number of consumption opportunities had a significant impact on the relationship between identity relevance and buying vs. renting preference. However, since the manipulation significantly affected the identity relevance variable, we cannot draw final conclusions based on the interaction analyses from Study 3. In Study 4, we sought to replicate Study 3 with some minor changes to the design.

### Study 4

In Study 4, we sought to conduct a close replication of Study 3, in order to gain confidence in the overall interaction effect. Study 4 was preregistered at <https://osf.io/xufs9>.

## Method

In Study 4, we implemented a comprehension check in order to guard ourselves against careless reporting. The comprehension check was presented directly after the manipulation scenario, and consisted of asking participants “In the hypothetical scenario in the previous question, how many formal events were you going to over the next year?” 174 participants either failed to answer correctly or failed to answer at all, and were excluded from the analyses. There was a significant difference between experimental groups in number of participants who failed the comprehension check, with more people in the one event condition failing than in the five events condition (see the appendix for details). There is no obvious explanation for the observed imbalance, but results should be interpreted in light of there potentially being a selection issue among participants.

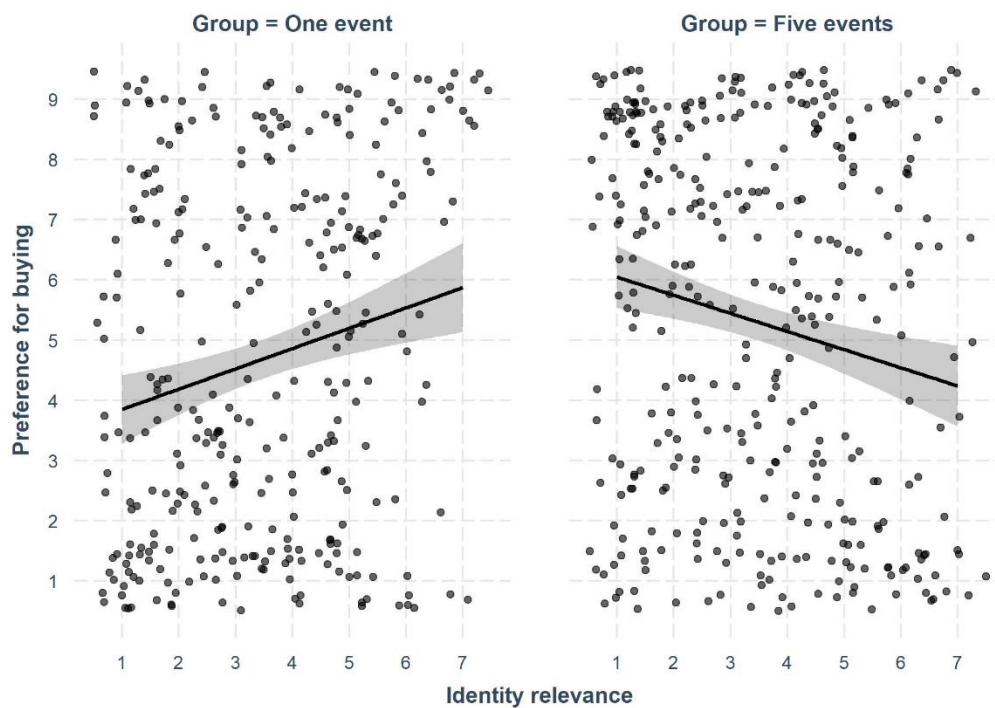
The final sample for Study 4 consisted of 677 US Mturk workers ( $M_{age} = 37.34$ ,  $SD = 10.93$ , 49.1% female). 316 were assigned to the one event condition, and 361 assigned to the three events condition. 50% of participants reported below-median household incomes, and 53% had completed four or more years of higher education.

Since we observed small effect sizes of the interaction in Study 3, we attempted to increase the strength of our manipulation in Study 4, by increasing the multiple event scenario to five instead of three events. Otherwise, the experimental design and measures were identical to Study 3.

## Results

In Study 4, we replicated the results from Study 3. There was a significant interaction between experiment condition (one vs. five events) and identity relevance in predicting

renting vs. buying preference ( $b = -0.64$ ,  $SE = 0.13$ ,  $t = -5.04$ ,  $p < .001$ ). However, as in the previous studies, the explained variance of the model was low ( $r^2 = 0.05$ ). See Table 7 for regression results, and Figure 4 for an illustration of the interaction effect.



*Figure 17: Interaction effect in Study 4. The regression line illustrates the relationship between identity relevance and preference for buying (9 indicates strong buying preference, 1 indicates strong renting preference). The grey area plots the 95% confidence interval around the regression line.*

Table 7  
*Regression results Study 4*

|                                      | Model 1                     |
|--------------------------------------|-----------------------------|
| (Intercept)                          | 3.45 ***<br>[2.72, 4.17]    |
| Identity relevance                   | 0.34 ***<br>[0.15, 0.53]    |
| Five events group                    | 2.84 ***<br>[1.87, 3.81]    |
| Formal wear frequency                | 0.01<br>[-0.00, 0.01]       |
| Identity relevance*Five events group | -0.64 ***<br>[-0.89, -0.39] |
| N                                    | 676                         |
| R2                                   | 0.05                        |

*Note.* Brackets indicate upper and lower levels of 95% confidence intervals for regression coefficients. \*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ .

In Study 4, the assumption of independence between the manipulation and the identity relevance variable held. There was not a significant effect of the manipulation on the identity relevance variable ( $b = 0.002$ ,  $SE = 0.14$ ,  $t = 0.012$ ,  $p = 0.99$ ). We can thus safely interpret the moderation results from Study 4.

Identity relevance was positively related to buying preference when people considered a single event ( $b = 0.31$ ,  $SE = 0.10$ ,  $t = 3.21$ ,  $p = 0.001$ ). However, when people considered going to five events, identity relevance was negatively related to buying preference ( $b = -0.27$ ,  $SE = 0.09$ ,  $t = -3.03$ ,  $p = 0.003$ ). In other words, in the five events condition, identity relevance was related to an increased preference to rent (vs. buy).



## **Discussion Study 4**

Study 4 replicated the findings from Study 3, thus increasing our confidence in the identified effects. We confirm that the number of events significantly affected the relationship between identity relevance and preferences for buying vs. renting. However, the explained variance of the regression model is low, and as one can see from the interaction plots in Figure 4, the data does not follow a very clear pattern. Therefore, although we found support for our hypotheses in the test of coefficients, the findings should be interpreted as covering only a small part of the picture when it comes to explaining buying vs. renting preference.

### **General discussion**

An overview of the main findings is presented in Table 8. Our five studies provide novel evidence for the relationship between identity and acquisition mode preferences. Based on theory about liquid and solid modes of consumption and theory of identity-based consumption, we predicted that identification with a consumption domain would be associated with a tendency to prefer buying vs. renting products within that domain. We confirm this hypothesis, but with some important boundary conditions and limitations.

We find that the number of consumption events significantly affects the relationship between identity relevance and acquisition mode preference. Across our studies, we observe a positive relationship when participants are faced with a situation involving low need for variety (going to a single event), and a non-significant or negative relationship when faced with a situation involving more need for variety (going to several events). The most reliable evidence comes from Study 4, which was pre-registered, and the manipulation of the moderating variable did not affect the identity relevance variable. However, we should note that both the identity relevance variable and the modeled interactions explain a very low

amount of variance in our dependent variable (renting vs. buying preference). Therefore, although theoretically interesting, the findings might be limited in their practical relevance.

Table 8

*Regression coefficients for the relationship between identity relevance and preference for buying vs. renting across all five studies.*

|                 | Study 1<br>(n=137, 60%<br>women) | Study 2A<br>(n= 395, 100%<br>women) | Study 2B<br>(n= 387, 100%<br>women) | Study 3<br>(n=802, 40%<br>women) | Study 4<br>(n=677, 49%<br>women) |
|-----------------|----------------------------------|-------------------------------------|-------------------------------------|----------------------------------|----------------------------------|
| One event       | 0.36**                           | -                                   | -                                   | 0.30***<br>(n=403)               | 0.31**<br>(n=316)                |
| Multiple events | -                                | -0.15                               | -0.22*                              | -0.05<br>(n= 399)                | -0.27**<br>(n=361)               |

*Note.* All regression coefficients are from OLS regressions including formal wear use frequency as control variable. Positive coefficient indicates positive relationship between identity relevance and buying preference.

\* $p < .05$ , \*\* $p < .01$ , \*\*\*  $p < .001$

On the theoretical note, our findings align with the traditional view that identification within a consumption domain indeed does increase the weight consumers place on the symbolic benefits of consumption. However, our findings challenge the notion that solid forms of consumption (ownership) provide more identity-related value than more liquid consumption modes (access-based consumption). To make sense of this apparent contradiction, it might be useful to distinguish between identity-related value derived from signaling an identity to others vs. to oneself. Leung et al. (2022) find that the desire for self-verification seems to explain strong identifiers' preference for material (vs. digital) products. In this context, the solid, material consumption could provide better evidence to a consumer about what kind of person they really are. In our research, we applied a context where the product would be highly visible to others (wearing it at a special event), and participants were likely thinking more about signaling their identity to others, vs. verifying their identity to themselves. Therefore, these findings together might indicate that liquid forms of

consumption can provide identity-related value in terms of signaling an identity to others, but it is much more questionable whether liquid consumption can verify an identity to oneself.

### **Limitations and suggestions for future research**

**Manipulation and mechanism.** One potential alternative explanation for our findings warrant special attention. Our manipulation of need for variety in Study 3 and 4 also manipulates the re-use value of purchased items, since going to five events means that purchasing one item would involve being able to use it at least five times, vs. just once in the one-event condition. Since we did not include a manipulation check in these studies, this could serve as an alternative explanation for the interaction effect we observed. Specifically, it might be that low-identifiers get more interested in buying (vs. renting) when faced with a scenario where purchased items have higher re-use value. This could be driving the interaction effect seen in Study 3 and 4. Future research could therefore try to test our proposed mechanism using a different manipulation of need for variety, and apply manipulation checks and confounding checks.

In all of the studies presented in this paper, the independent variable of interest was measured, and not manipulated. This precludes us from drawing causal conclusions, and implies that further experimental tests are necessary to confirm the findings. Future research could attempt to manipulate identity relevance, for instance building on the manipulations by Leung et al. (2018).

A possible avenue for future research could also be to take a closer look at potential explanatory mechanisms underlying the relationship between identity relevance and consumption mode preferences. For instance, it would be interesting to examine whether access-based consumption can signal identity to others, but not to oneself, as discussed above.

Another question could be whether access-based consumption is experienced by consumers as more apt for self-enhancement than self-verification purposes.

**Power and moderation.** The findings of this paper must be interpreted in light of the statistical power of the different studies. For studies 2-4, we recruited samples large enough to achieve 80 % statistical power to detect a small sized linear relationship ( $r = 0.20$ ), in order to estimate the relationship between identity relevance and consumption mode preference. For study 3 and 4, we increased the sample size as much as feasible within budget, in order to address the issue of an interaction effect of unknown size. However, since we do not know the true effect size of our effects of interest, it might be that our moderation analyses are underpowered, since moderation effect tend to be smaller than main effects (Leon & Heo, 2009). We therefore recommend that our moderation results are interpreted with more caution than the main effects results.

**Pre-registration.** We completed pre-registrations for two of the five studies presented in this paper. Ideally, pre-registrations should have been completed for all studies, since we conduct hypothesis testing for all studies. For the two studies where pre-registrations were in place (Study 3 and 4), we acknowledge that there are parts of the pre-registration that could have been more specific, such as what secondary and exploratory analyses we planned to conduct, and how results from these should be interpreted. For transparency, we report all measures, and have made all data publically available.

**Product domain.** The current research was conducted within a single context (fashion/clothes), and focused on one potential moderator of the identity-acquisition mode relationship (variety seeking). Future research should therefore investigate whether identity-based value can be derived from access-based consumption in other domains (e.g. furniture or cars), and under different boundary conditions.

## References

- Akbar, P., Mai, R., & Hoffmann, S. (2016). When do materialistic consumers join commercial sharing systems. *Journal of Business Research*, *69*(10), 4215–4224. <https://doi.org/10.1016/j.jbusres.2016.03.003>
- Bardhi, F., & Eckhardt, G. M. (2012). Access-based consumption: The case of car sharing. *Journal of Consumer Research*, *39*(4), 881–898. <https://doi.org/10.1086/666376>
- Bardhi, F., & Eckhardt, G. M. (2017). Liquid consumption. *Journal of Consumer Research*, *44*(3), 582–597. <https://doi.org/10.1093/jcr/ucx050>
- Bardhi, F., Eckhardt, G. M., & Arnould, E. J. (2012). Liquid relationship to possessions. *Journal of Consumer Research*, *39*(3), 510–529. <https://doi.org/10.1086/664037>
- Belk, R. (1988). Possessions and the extended self. *Journal of Consumer Research*, *15*(2), 139–168.
- Durgee, J. F., & Connor, G. C. O. (1995). An exploration into renting as consumption behavior. *Psychology & Marketing*, *12*(2), 89–104.
- Eckhardt, G. M., Houston, M. B., Jiang, B., Lambertson, C., Rindfleisch, A., & Zervas, G. (2019). Marketing in the sharing economy. *Journal of Marketing*, *83*(5), 5–27. <https://doi.org/10.1177/0022242919861929>
- Escalas, J. E., & Bettman, J. R. (2005). Self-construal, reference groups, and brand meaning. *Journal of Consumer Research*, *32*, 378–389.
- Fournier, S. (1998). Consumers and their brands: Developing relationship theory in consumer research. *Journal of Consumer Research*, *24*(4), 343–373. <https://doi.org/10.1086/209515>

- Gullstrand Edbring, E., Lehner, M., & Mont, O. (2016). Exploring consumer attitudes to alternative models of consumption: Motivations and barriers. *Journal of Cleaner Production*, 123, 5–15. <https://doi.org/10.1016/j.jclepro.2015.10.107>
- Lamberton, C., & Goldsmith, K. (2020). Ownership: A perennial prize or a fading goal? A curation, framework, and agenda for future research. *Journal of Consumer Research*, 47, 301–309. <https://doi.org/10.1093/jcr/ucaa027>
- Lawson, S. J., Gleim, M. R., Perren, R., & Hwang, J. (2016). Freedom from ownership: An exploration of access-based consumption. *Journal of Business Research*, 69(8), 2615–2623. <https://doi.org/10.1016/j.jbusres.2016.04.021>
- Leon, A. C., & Heo, M. (2009). Sample sizes required to detect interactions between two binary fixed-effects in a mixed-effects linear regression model. *Computational Statistics & Data Analysis*, 53(3), 603–608.
- Leung, E., Cito, M. C., Paolacci, G., & Puntoni, S. (2022). Preference for material products in identity-based consumption. *Journal of Consumer Psychology*, 32(4), 672–679. <https://doi.org/10.1002/jcpy.1272>
- Leung, E., Paolacci, G., & Puntoni, S. (2018). Man versus machine: Resisting automation in identity-based consumer behavior. *Journal of Marketing Research*, 55(6), 818–831. <https://doi.org/10.1177/0022243718818423>
- McAlister, L., & Pessemier, E. (1982). Variety seeking behavior: An interdisciplinary review. *Journal of Consumer Research*, 9(3), 311–322. <https://doi.org/10.1086/208926>
- Muniz, A. M., & O’Guinn, T. C. (2001). Brand community. *Journal of Consumer Research*, 27, 412–432.
- Naderi, I. (2013). Beyond the fad: A critical review of consumer fashion involvement.

*International Journal of Consumer Studies*, 37(1), 84–104.

<https://doi.org/10.1111/j.1470-6431.2011.01041.x>

Pantano, E., & Stylos, N. (2020). The Cinderella moment: Exploring consumers' motivations to engage with renting as collaborative luxury consumption mode. *Psychology and Marketing*, 37(5), 740–753. <https://doi.org/10.1002/mar.21345>

Sirgy, M. J. (1985). Using self-congruity and ideal congruity to predict purchase motivation. *Journal of Business Research*, 13, 195–206.

## Appendix Article 2

### Measures

#### Measures Study 1

| Measure                      | Items   | Response scale  |
|------------------------------|---|---|
| Rent vs. buy preference      | How would you prefer to access formal wear in this scenario?  | Strongly prefer renting formal wear (1)<br>-<br>Strongly prefer buying formal wear (9)        |
| Reason                       | Could you briefly describe the background for your answer? What factors do you think matter for your preference for buying or renting clothes?                                  | Open ended  |
| Subscribe vs. buy preference | What would be your preference in this case?   | Strongly prefer signing up for a monthly subscription (1) -Strongly prefer buying clothes (9) |
| Reason                       | Could you briefly describe the background for your answer? What factors do you think matter for your preference for buying clothes or using a subscription service for clothes? | Open ended  |
| Company vs. individual       | If you were going to rent formal wear some time, would you most prefer renting from a company, or from fashion-interested individuals through an online platform?               | Strongly prefer renting from individuals (1) -Strongly prefer renting from company (9)        |
| Reason                       | Could you please describe the background for your answer? What factors do you think matter for your preference of renting from private individuals or from a company?           | Open ended  |
| Identity relevance fashion   | Being interested in fashion is important to who I am<br>How I see myself is connected to fashion<br>I feel like fashion is a part of who I really am                            | -3: Completely disagree – 3: Completely agree   |



|  |   |   |
|--|---|---|
|  | <p>I want my identity to become associated with fashion</p> <p>I would like to be a kind of person who is into fashion</p> <p>Having an interest in fashion is a part of how I want to see myself</p> <p>People who know me think of me as a fashion -person</p> <p>Others would describe me as someone who is interested in fashion</p> <p>I think others people perceive me as a fashion -person</p> <p>I want to be seen as someone who is interested in fashion</p> <p>I would like others to think of me of someone who is into fashion</p> <p>I would be embarrassed if other people thought that fashion was important to me (R)</p> |   |
| Clothing purchases                         | On average, how many times per year do you purchase new clothes? (Any type of clothing.)  | Open ended  |
| Formal wear purchases                      | On average, how many times per year do you purchase new formal clothes? (Clothes you would wear for special events like weddings etc.)  | Open ended  |
| Formal wear frequency                      | On average, how many days per year do you wear formal clothes?  | Open ended  |
| Fashion knowledge                          | Compared to the average person, how much would you say you know about fashion?  | -3: Much less than average - 3: Much more than average                                      |
| Skiing: rent vs. buy preference            | Imagine you are going on a skiing vacation, and that you currently do not own any pair of skis. How would you prefer to access skis for your vacation?  | Strongly prefer renting skis (1) - Strongly prefer buying skis (9)                          |
| Reason                                     | Could you briefly describe the background for your answer? What factors do you think matter for your preference for buying or renting clothes?  | Open ended  |
| Skiing: sharing service vs. buy preference | What would be your preference in this case?   | Strongly prefer signing up for the ski-sharing service (1) -Strongly prefer buying skis (9) |
| Reason                                     | Could you briefly describe the background for your answer? What factors do you think matter for your preference for buying or renting clothes?  | Open ended  |
| Skiing: Company vs. individual             | If you were going to rent skis some time, would you most prefer renting from a company, or from other skiers through an online platform?  | Strongly prefer renting from individuals (1) -Strongly prefer renting from company (9)      |

|                           |  |  |
|---------------------------|--|--|
| Reason                    | Could you briefly describe the background for your answer? What factors do you think matter for your preference for buying or renting clothes?   | Open ended   |
| Identity relevance skiing | Being interested in skiing is important to who I am<br>How I see myself is connected to skiing<br>I feel like skiing is a part of who I really am<br>I want my identity to become associated with skiing<br>I would like to be a kind of person who is into skiing<br>Having an interest in skiing is a part of how I want to see myself<br>People who know me think of me as a skiing -person<br>Others would describe me as someone who is interested in skiing<br>I think others people perceive me as a skiing -person<br>I want to be seen as someone who is interested in skiing<br>I would like others to think of me of someone who is into skiing<br>I would be embarrassed if other people thought that skiing was important to me (R) | -3: Completely disagree – 3: Completely agree          |
| Skiing frequency          | On average, how many days per year do you go skiing  | Open ended   |
| Skiing ownership          | Do you currently own skis? If yes, please enter the number of pairs of skis you own.   | Open ended   |
| Skiing knowledge          | Compared to the average person, how much would you say you know about skiing?  | -3: Much less than average - 3: Much more than average |
| Materialism               | I admire people who own expensive homes, cars, and clothes.<br>The things I own say a lot about how well I'm doing in life.<br>I like to own things that impress people.<br>I try to keep my life simple, as far as possessions are concerned.<br>Buying things gives me a lot of pleasure.<br>I like a lot of luxury in my life.<br>My life would be better if I owned certain things I don't have.<br>I'd be happier if I could afford to buy more things.<br>It sometimes bothers me quite a bit that I can't afford to buy all the things I'd like.  | Strongly disagree (1) – Strongly agree (7)             |

|                                    |  |  |
|------------------------------------|--|--|
| Experiences in close relationships | <p>When answering these questions, please think about a current or previous relationship with a close friend or romantic partner.</p> <p><b>I try to avoid getting too close to my partner.</b></p> <p><b>I usually discuss my problems and concerns with my partner.</b></p> <p><b>I am nervous when partners get too close to me.</b></p> <p><i>I do not often worry about being abandoned.</i></p> <p><i>I get frustrated if romantic partners are not available when I need them.</i></p> <p><i>I worry that romantic partners won't care about me as much as I care about them.</i></p> | Disagree strongly (1) – Agree strongly (7)   |
| Age                                | What is your age in years?   | Number entry   |
| Gender                             | What gender you most identify with?  | Male (1), female (2), other (3)  |
| Education                          | What is the highest level of education you received?   | some high school (1), high school degree/GED (2), some college degree (3), undergraduate degree (4), some graduate degree (5), graduate degree (6) |
| Income                             | What is your household income per year?  | \$0-9,999 (1), \$10,000-29,999 (2), \$30,000-49,999 (3), \$50,000-69,999 (4), \$70,000-89,999 (5), \$90,000-119,999 (6), \$120+ (7)                |

## Measures Study 2A

| Measure                 | Items  | Response scale   |
|-------------------------|--|--|
| Rent vs. buy preference | Imagine that you for the next year know that you are going to three formal events (e.g. weddings, formal work events etc.), and that you do not have anything in your current wardrobe that fits for these occasions. Further, assume that within your budget you have the option to either <b>buy one dress</b> , or to <b>rent three different dresses</b> , one for each event. | Strongly prefer renting three dresses (1) - Strongly prefer buying one dress (9)   |
| Reason                  | Can you give a brief description of your answer? What guided your preference for either buying or renting in the scenario?   |  |
| Formal wear frequency   | On average, how many days per year do you wear formal clothes?   | Open ended   |
| Identity relevance      | Being interested in fashion is important to who I am<br>Having an interest in fashion is a part of how I want to see myself<br>I think others people perceive me as a fashion-person<br>I would like others to think of me of someone who is into fashion  | -3: Completely disagree – 3: Completely agree  |
| Familiarity             | Are you familiar with any services that allow people to rent clothes, handbags or other fashion accessories for a fee?   | Yes, can think of several services (1)<br>Yes, can think of at least one service (2)<br>Might have heard of such services (3)<br>Have not heard of such services (4)                     |
| Familiarity_services    | Below is a list of fashion rental services. Please indicate if you have heard of any of these. Mark as many as you have heard of.  | Rent the Runway (1) Le Tote (2) Armoire (3) Gwynnie Bee (4) Glam Corner (5) Style Lend (6) BagBorroworSteal (7) ArmGem (8) BagRomance (9) Other (10) Have not heard of any of these (11) |
| RTR_use                 | Rent the Runway is a company that provides rental of designer clothes, handbags and other accessories. Have you ever used Rent the Runway?   | Yes, several times (1)<br>Yes, once (2)<br>No (3)  |
| RTR_attitude            | How positive or negative is your impression of Rent the Runway? (Either based on your experience or just your general impression.)   | 1: Very negative – 7: Very positive  |

|                                       |   |  |
|---------------------------------------|---|--|
| RTR_likely                            | How likely is it that you will use Rent the Runway for renting fashion items in the future?   | 1: Very unlikely– 7: Very likely                                       |
| RTR_subscription                      | Rent the Runway has recently started to offer monthly subscription memberships, through which members can rent new sets of clothing every week. How positive or negative is your impression of this service?  | 1: Very negative – 7: Very positive                                    |
| Subscription_likely                   | How likely is it that you would ever try this subscription service?   | 1: Very unlikely– 7: Very likely                                       |
| Renting_items                         | How interested would you be in renting the following items, assuming the items are high-quality designer products?  | 1: Not at all interested – 7: Very interested                          |
| Manipulation check                    | In the area of clothing and fashion, how important do you think the following aspects are?<br><ul style="list-style-type: none"> <li>- Being consistent</li> <li>- Being stable</li> <li>- Changing</li> <li>- Evolving</li> </ul>  |  |
| Materialism (Richins, 2004)           | I admire people who own expensive homes, cars, and clothes.<br>The things I own say a lot about how well I'm doing in life.<br>I like to own things that impress people.<br>I try to keep my life simple, as far as possessions are concerned.<br>Buying things gives me a lot of pleasure.<br>I like a lot of luxury in my life.<br>My life would be better if I owned certain things I don't have.<br>I'd be happier if I could afford to buy more things.<br>It sometimes bothers me quite a bit that I can't afford to buy all the things I'd like. | Strongly disagree (1) – Strongly agree (7)                             |
| Age                                   | What is your age? (Please only input a number)  |  |
| Gender (to confirm all-female sample) | What is your gender?  | Man (1) Woman (2) Prefer to self-identify (3) Prefer not to answer (4) |

|           |   |  |
|-----------|---|--|
| Income    | <p>The median yearly income for US households was approximately \$61,400 in 2017, which means that half of US households had yearly incomes lower than this number, and half of US households had yearly incomes higher than this number.</p> <p>How would you describe the income of your household?</p> | <p>Lower than \$61,400 (1)</p> <p>Approximately \$61,400 (2)</p> <p>Higher than \$61,400 (3)</p>   |
| Education | <p>What is your level of completed education?</p>   | <p>Less than high school (1) High school graduate (2) Some college (3) 2 year degree (4) 4 year degree (5) Professional degree (6) Doctorate (7)</p> |

**Measures Study 2B**

| Measure                 | Items  | Response scale  |
|-------------------------|--|---|
| Rent vs. buy preference | Imagine that you for the next year know that you are going to three formal events (e.g. weddings, formal work events etc.), and that you do not have anything in your current wardrobe that fits for these occasions. Further, assume that within your budget you have the option to either buy one dress, or to rent three different dresses, one for each event. | Strongly prefer renting three dresses (1) -<br>Strongly prefer buying one dress (9) |
| Rent vs. buy choice     | If you had to make a choice, what would you most likely choose?  | Renting three dresses (1)<br>Buying one dress (2)                                   |
| Reason                  | Can you give a brief description of your answer? What guided your preference for either buying or renting in the scenario?   |   |
| Formal wear frequency   | On average, how many days per year do you wear formal clothes?   | Open ended  |
| Identity relevance      | Being interested in fashion is important to who I am<br>Having an interest in fashion is a part of how I want to see myself<br>I think others people perceive me as a fashion-person<br>I would like others to think of me of someone who is into fashion  | -3: Completely disagree – 3: Completely agree                                       |
| RTR_use                 | Rent the Runway is a company that provides rental of designer clothes, handbags and other accessories. Have you ever used Rent the Runway?   | Yes, several times (1)<br>Yes, once (2)<br>No (3)                                   |
| RTR_attitude            | How positive or negative is your impression of Rent the Runway? (Either based on your experience or just your general impression.)   | 1: Very negative – 7: Very positive   |
| RTR_likely              | How likely is it that you will use Rent the Runway for renting fashion items in the future?  | 1: Very unlikely– 7: Very likely  |
| RTR_subscription        | Rent the Runway has recently started to offer monthly subscription memberships, through which members can rent new sets of clothing every week. How positive or negative is your impression of this service?   | 1: Very negative – 7: Very positive   |

|  |  |  |
|--|--|--|
| Subscription_likely  | How likely is it that you would ever try this subscription service?  | 1: Very unlikely– 7: Very likely                             |
| Change seeker index<br>(Steenkamp & Baumgartner, 1995)           | <p>I like to continue to do the same old things rather than trying new and different things (1)</p> <p>I like to experience novelty and change in my daily routine (2)</p> <p>I like a job that offers change, variety and travel, even if it involves some danger (3)</p> <p>I am continually seeking new ideas and experiences (4)</p> <p>I like continually changing activities (5)</p> <p>When things get boring, I like to find some new and unfamiliar experience (6)</p> <p>I prefer a routine way of life to an unpredictable one full of change (7)</p>                               | -3: Completely false - 3: Completely true                    |
| Public self-consciousness<br>(Fenigstein, Scheier, & Buss, 1975) | <p>I'm concerned about my style of doing things (1)</p> <p>I'm concerned about the way I present myself (2)</p> <p>I'm self-conscious about the way I look (3)</p> <p>I usually worry about making a good impression (4)</p> <p>One of the last things I do before I leave my house is look in the mirror (5)</p> <p>I'm concerned about what other people think of me (6)</p> <p>I'm usually aware of my appearance (7)</p>   | 0: Extremely uncharacteristic – 4: Extremely characteristics |
| Materialism (Richins, 2004)                                      | <p>I admire people who own expensive homes, cars, and clothes.</p> <p>The things I own say a lot about how well I'm doing in life.</p> <p>I like to own things that impress people.</p> <p>I try to keep my life simple, as far as possessions are concerned.</p> <p>Buying things gives me a lot of pleasure.</p> <p>I like a lot of luxury in my life.</p> <p>My life would be better if I owned certain things I don't have.</p> <p>I'd be happier if I could afford to buy more things.</p> <p>It sometimes bothers me quite a bit that I can't afford to buy all the things I'd like.</p> | Strongly disagree (1) – Strongly agree (7)                   |



|                                       |  |   |
|---------------------------------------|--|---|
| Social media use                      | About how often do you visit or use Instagram?   | Several times a day (1) About once a day (2)<br>A few times a week (3) Every few weeks (4)<br>Less often (5)                                  |
| Age                                   | What is your age? (Please only input a number)   |   |
| Gender (to confirm all-female sample) | What is your gender?   | Man (1) Woman (2) Prefer to self-identify (3)<br>Prefer not to answer (4)   |
| Income                                | The median yearly income for US households was approximately \$61,400 in 2017, which means that half of US households had yearly incomes lower than this number, and half of US households had yearly incomes higher than this number.<br>How would you describe the income of your household? | Lower than \$61,400 (1)<br>Approximately \$61,400 (2)<br>Higher than \$61,400 (3)   |
| Education                             | What is your level of completed education?   | Less than high school (1) High school graduate (2) Some college (3) 2 year degree (4) 4 year degree (5) Professional degree (6) Doctorate (7) |

### Measures Study 3

| Measure  | Items   | Response scale   |
|--|---|--|
| Rent vs. buy preference  | Imagine that you for the next year know that you are going to <b>[one formal event/three formal events]</b> (e.g. wedding, formal work event etc.), and that you do not have anything in your current wardrobe that fits for this occasion. Further, assume that within your budget you have the option either to <b>buy [an/one] outfit</b> , or to <b>rent [an/three different] outfit</b> . The rental fee corresponds to a third of the retail price for one outfit.  | Strongly prefer renting (1) - Strongly prefer buying (9) |
| Identity relevance   | Being interested in fashion is important to who I am<br>Having an interest in fashion is a part of how I want to see myself<br>I think others people perceive me as a fashion-person<br>I would like others to think of me of someone who is into fashion   | -3: Completely disagree – 3: Completely agree            |
| Formal wear frequency  | On average, how many days per year do you wear formal clothes?  | Open ended   |
| Materialism  | I admire people who own expensive homes, cars, and clothes.<br>The things I own say a lot about how well I'm doing in life.<br>I like to own things that impress people.<br>I try to keep my life simple, as far as possessions are concerned.<br>Buying things gives me a lot of pleasure.<br>I like a lot of luxury in my life.<br>My life would be better if I owned certain things I don't have.<br>I'd be happier if I could afford to buy more things.<br>It sometimes bothers me quite a bit that I can't afford to buy all the things I'd like. | Strongly disagree (1) – Strongly agree (7)               |
| Variety seeking scale (adapted from Van Trijp & Steenkamp, 1992) | When I shop for clothes, I like to try on the most unusual items, even if I am not sure I would like them.<br>While deciding what to wear, I like to try out new combinations of clothes.<br>I think it is fun to try out clothes and accessories one is not familiar with.<br>I am eager to know what kind of clothing styles are popular in other countries.<br>I like to wear unique clothes.<br>Fashion brands that I am unfamiliar with make me curious.<br>I prefer to wear fashion brands I am used to (R)                                       | Completely disagree (1) - Completely agree (5)           |

|  |  |  |
|--|--|--|
|  | I am curious about fashion trends that I am not familiar with.   |  |
| Public self-consciousness<br>(Fenigstein, Scheier, & Buss, 1975) | I'm concerned about my style of doing things (1)<br>I'm concerned about the way I present myself (2)<br>I'm self-conscious about the way I look (3)<br>I usually worry about making a good impression (4)<br>One of the last things I do before I leave my house is look in the mirror (5)<br>I'm concerned about what other people think of me (6)<br>I'm usually aware of my appearance (7)  | 0: Extremely uncharacteristic – 4: Extremely characteristics   |
| Experiential buying tendency                                     | In this section of the survey we would like to know more about the purchasing choices you are typically more likely to make. A material item is something tangible, such as jewelry or clothes. An experiential item is something that is intangible, like going out to dinner or going on vacation. Using the scale below as a guide, please indicate your preferences.<br>1. In general, when I have extra money I am likely to buy...<br>2. When I want to be happy, I am more likely to spend my money on... | Item 1: A material item (1) - A life experience (7)<br>Item 2: Material goods (1) – Activities and events (7)                                    |
| Age  | What is your age? (Please only input a number)   |  |
| Gender (to confirm all-female sample)                            | What is your gender?   | Man (1) Woman (2) Prefer to self-identify (3) Prefer not to answer (4)   |
| Income   | The median yearly income for US households was approximately \$61,400 in 2017, which means that half of US households had yearly incomes lower than this number, and half of US households had yearly incomes higher than this number.<br>How would you describe the income of your household?   | Lower than \$61,400 (1)<br>Approximately \$61,400 (2)<br>Higher than \$61,400 (3)  |
| Education  | What is your level of completed education?   | Less than high school (1) High school graduate (2) Some college (3) 2 year degree (4) 4 year degree (5)<br>Professional degree (6) Doctorate (7) |

### Measures Study 4

| Measure  | Items   | Response scale   |
|--|---|--|
| Rent vs. buy preference  | Imagine that you for the next year know that you are going to <b>[one formal event/five formal events]</b> (e.g. wedding, formal work event etc.), and that you do not have anything in your current wardrobe that fits for this occasion. Further, assume that within your budget you have the option either to <b>buy [an/one] outfit</b> , or to <b>rent [an/five different] outfit</b> . The rental fee corresponds to a fifth of the retail price for one outfit.  | Strongly prefer renting (1) - Strongly prefer buying (9) |
| Comprehension check  | In the hypothetical scenario in the previous question, how many formal events were you going to over the next year?   | Open ended   |
| Formal wear frequency  | On average, how many days per year do you wear formal clothes?  | Open ended   |
| Identity relevance   | Being interested in fashion is important to who I am<br>Having an interest in fashion is a part of how I want to see myself<br>I think others people perceive me as a fashion-person<br>I would like others to think of me of someone who is into fashion   | -3: Completely disagree – 3: Completely agree            |
| Materialism  | I admire people who own expensive homes, cars, and clothes.<br>The things I own say a lot about how well I'm doing in life.<br>I like to own things that impress people.<br>I try to keep my life simple, as far as possessions are concerned.<br>Buying things gives me a lot of pleasure.<br>I like a lot of luxury in my life.<br>My life would be better if I owned certain things I don't have.<br>I'd be happier if I could afford to buy more things.<br>It sometimes bothers me quite a bit that I can't afford to buy all the things I'd like. | Strongly disagree (1) – Strongly agree (7)               |
| Variety seeking scale (adapted from Van Trijp & Steenkamp, 1992) | When I shop for clothes, I like to try on the most unusual items, even if I am not sure I would like them.<br>While deciding what to wear, I like to try out new combinations of clothes.<br>I think it is fun to try out clothes and accessories one is not familiar with.<br>I am eager to know what kind of clothing styles are popular in other countries.<br>I like to wear unique clothes.  | Completely disagree (1) - Completely agree (5)           |

|  |  |   |
|--|--|---|
|  | <p>Fashion brands that I am unfamiliar with make me curious.</p> <p>I prefer to wear fashion brands I am used to (R)</p> <p>I am curious about fashion trends that I am not familiar with.</p>   |   |
| Public self-consciousness<br>(Fenigstein, Scheier, & Buss, 1975) | <p>I'm concerned about my style of doing things (1)</p> <p>I'm concerned about the way I present myself (2)</p> <p>I'm self-conscious about the way I look (3)</p> <p>I usually worry about making a good impression (4)</p> <p>One of the last things I do before I leave my house is look in the mirror (5)</p> <p>I'm concerned about what other people think of me (6)</p> <p>I'm usually aware of my appearance (7)</p> | 0: Extremely uncharacteristic – 4: Extremely characteristics  |
| Age  | What is your age? (Please only input a number)   |   |
| Gender (to confirm all-female sample)                            | What is your gender?   | Man (1) Woman (2) Prefer to self-identify (3) Prefer not to answer (4)  |
| Income   | <p>The median yearly income for US households was approximately \$61,400 in 2017, which means that half of US households had yearly incomes lower than this number, and half of US households had yearly incomes higher than this number.</p> <p>How would you describe the income of your household?</p>  | <p>Lower than \$61,400 (1)</p> <p>Approximately \$61,400 (2)</p> <p>Higher than \$61,400 (3)</p>  |
| Education  | What is your level of completed education?   | <p>Less than high school (1) High school graduate (2) Some college (3) 2 year degree (4) 4 year degree (5)</p> <p>Professional degree (6) Doctorate (7)</p> |

## Supplementary Analyses

### Supplemental analyses Study 1

In the skiing domain, there was no significant relationship between identity relevance and buying (vs. renting) preference in the regression controlling for skiing frequency ( $b = 0.11$ ,  $SE = 0.15$ ,  $t(132) = 0.76$ ,  $p = .451$ ).

Factor analysis identity relevance measure

#### Factor Matrix<sup>a</sup>

|   | Factor<br>1 |
|---|-------------|
| Being interested in [Field-Domain] is important to who I am                                       | ,889        |
| How I see myself is connected to [Field-Domain]   | ,852        |
| I feel like the area of [Field-Domain] is a part of who I really am                               | ,895        |
| I want my identity to become associated with [Field-Domain]                                       | ,874        |
| I would like to be a kind of person who is into [Field-Domain]                                    | ,901        |
| Having an interest in [Field-Domain] is a part of how I want to see myself                        | ,917        |
| People who know me think of me as a [Field-Domain]-person   | ,912        |
| Others would describe me as someone who is interested in [Field-Domain]                           | ,933        |
| I think others people perceive me as a [Field-Domain]-person                                      | ,922        |
| I want to be seen as someone who is interested in [Field-Domain]                                  | ,884        |
| I would like others to think of me of someone who is into [Field-Domain]                          | ,897        |
| I would be embarrassed if other people thought that [Field-Domain] was important to me (reversed) | ,188        |

Extraction Method: Maximum Likelihood.

a. 1 factors extracted. 7 iterations required.

#### Goodness-of-fit Test

| Chi-Square | df | Sig. |
|------------|----|------|
| 489,672    | 54 | ,000 |

### Correlation tables

Below are correlation tables for pairwise correlations between the independent variable (identity relevance), moderator variables (change seeking and variety seeking) and the covariate variable (formal wear usage frequency), as well as materialism (also an independent variable in the pre-registrations of some studies), and the dependent variable (rent vs. buy).

All correlations are Pearson correlations.  $p < .0001$ , \*\*\*\*,  $p < .001$  \*\*\*,  $p < .01$  \*\*,  $p < .05$  \*

Study 1:

|                    | rentvbuy | Identity_relevance | Materialism |
|--------------------|----------|--------------------|-------------|
| Identity_relevance | 0.22*    |                    |             |
| Materialism        | 0.31***  | 0.50****           |             |
| frq_wearformal     | 0.17*    | -0.06              | 0.02        |

Study 2A:

|                    | rentvbuy | Identity_relevance | Materialism |
|--------------------|----------|--------------------|-------------|
| Identity_relevance | -0.09    |                    |             |
| Materialism        | -0.14**  | 0.42****           |             |
| frq_clothes        | -0.01    | 0.12*              | 0.01        |

Study 2B:

|                    | rentvbuy | Identity_relevance | Materialism | frq_clothes |
|--------------------|----------|--------------------|-------------|-------------|
| Identity_relevance | -0.13*   |                    |             |             |
| Materialism        | -0.17*** | 0.47****           |             |             |
| frq_clothes        | -0.03    | 0.19***            | 0.17***     |             |
| Change_seeking     | -0.07    | 0.41****           | 0.25****    | 0.15**      |

Study 3:

|                    | rentvbuy | Identity_relevance | Materialism | Variety  |
|--------------------|----------|--------------------|-------------|----------|
| Identity_relevance | 0.10**   |                    |             |          |
| Materialism        | 0.10**   | 0.44****           |             |          |
| Variety            | 0.06     | 0.69****           | 0.33****    |          |
| frq_clothes        | 0.12***  | 0.27****           | 0.15****    | 0.18**** |

Study 4:

|                    | rentvbuy | Identity_relevance | Materialism | Variety  |
|--------------------|----------|--------------------|-------------|----------|
| Identity_relevance | 0.01     |                    |             |          |
| Materialism        | 0.06     | 0.41****           |             |          |
| Variety            | -0.01    | 0.66****           | 0.32****    |          |
| frq_clothes        | 0.07     | 0.26****           | 0.15***     | 0.19**** |

## Gender effects

### Gender effects in Study 3

Results from an explorative analysis showed that the three-way interaction between identity relevance, experimental group and gender was not significant (see Table A1). However, when inspecting the Johnson-Neyman plots for men and women separately, an interesting pattern became apparent. For women, the relationship between identity relevance and preference to buy (vs. rent) is opposite in the one event condition compared to the three event condition, see figure A1. For men, it seems that the relationship between identity relevance and preference for buying (vs. renting) remains positive independent of the number of events considered, see figure A2. These results are in line with our predictions that desire for variety might stronger for women than men in the three-event condition, but should be interpreted as speculative, as the three-way interaction was not significant.

Table A1

*Regression for interaction between identity relevance, experimental group and gender in Study 3*

|                    | Model 1                  |
|--------------------|--------------------------|
| (Intercept)        | 3.96 ***<br>[3.20, 4.71] |
| Identity_relevance | 0.31 **<br>[0.12, 0.51]  |
| GroupThree events  | 1.69 **<br>[0.65, 2.73]  |
| menvwomWoman       | 0.45<br>[-0.84, 1.73]    |
| frq_clothes        | 0.01 **<br>[0.00, 0.01]  |



|   |               |
|---|---------------|
| Identity_relevance:GroupThree events              | -0.18         |
|   | [-0.46, 0.10] |
| Identity_relevance:menvwomWoman                   | -0.04         |
|   | [-0.36, 0.28] |
| GroupThree events:menvwomWoman                    | -0.04         |
|   | [-1.84, 1.76] |
| Identity_relevance:GroupThree events:menvwomWoman | -0.36         |
|   | [-0.81, 0.10] |
| N   | 799           |
| R2  | 0.06          |

\*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ .

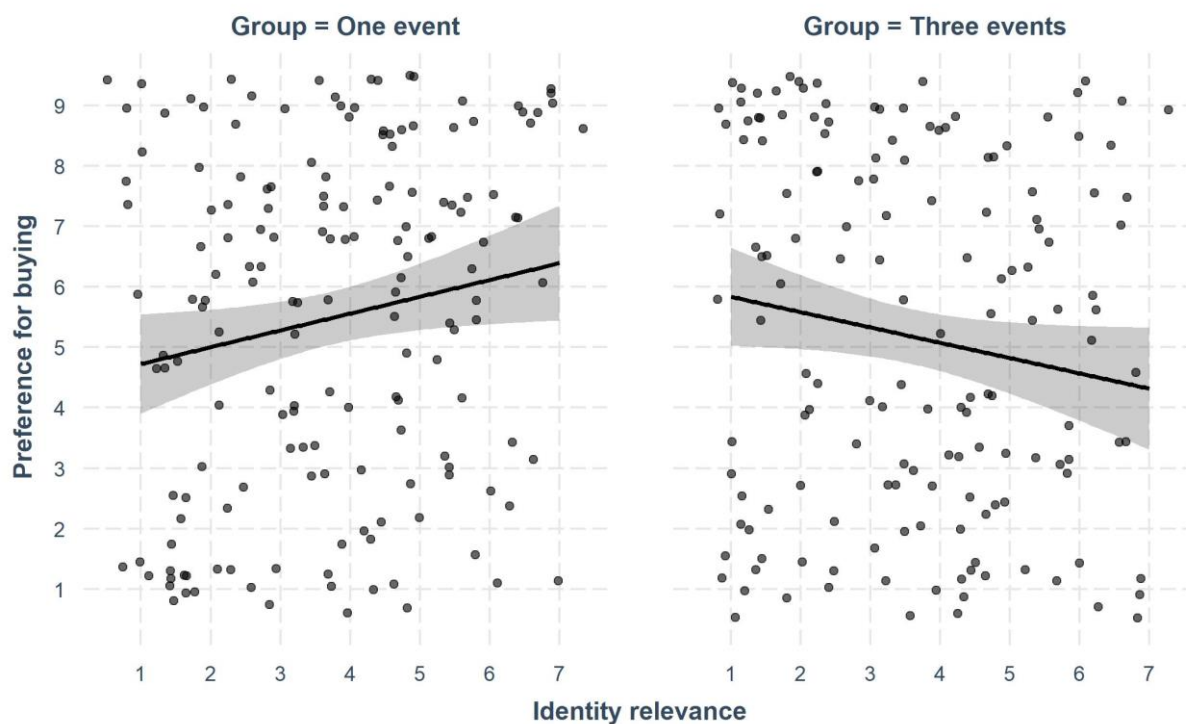


Figure A1: Interaction effect for women in Study 3. The regression line illustrates the relationship between identity relevance and preference for buying (9 indicates strong buying preference, 1 indicates strong renting preference). The grey area plots the 95% confidence interval around the regression line.

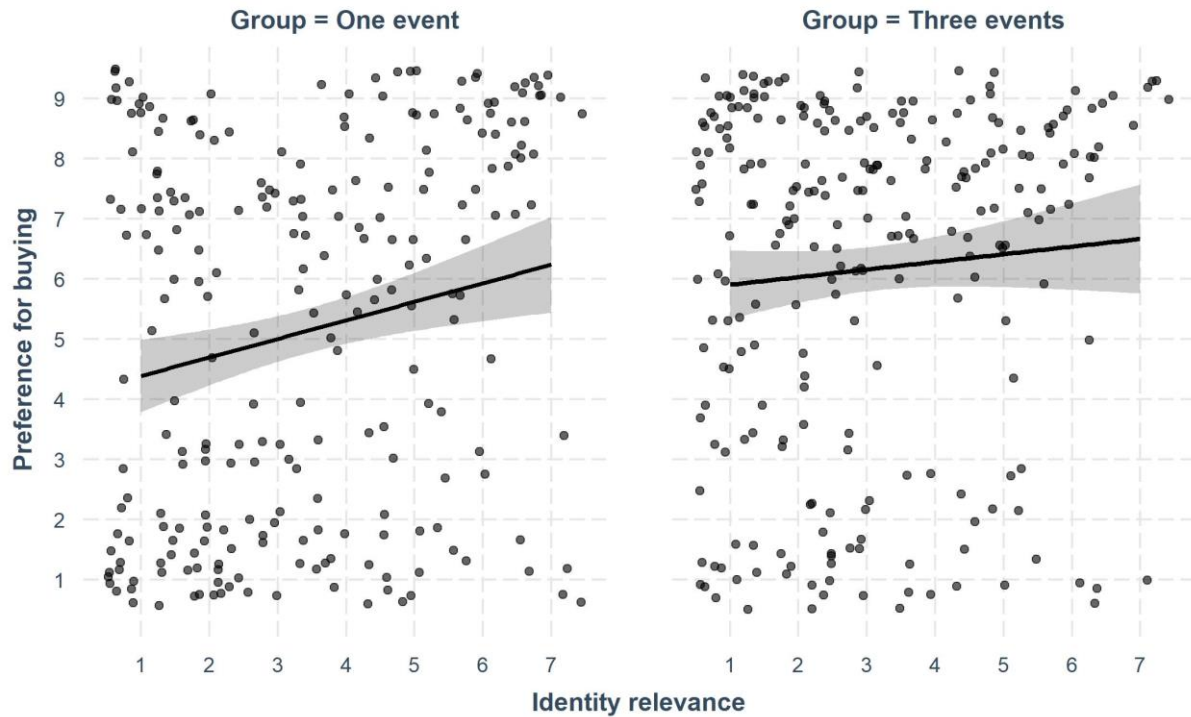


Figure A2: Interaction effect for men in Study 3. The regression line illustrates the relationship between identity relevance and preference for buying (9 indicates strong buying preference, 1 indicates strong renting preference). The grey area plots the 95% confidence interval around the regression line.

#### Gender effects in Study 4

The results for gender in Study 4 mirror those from Study 3. Although the interaction effect was not significantly different for men and women, as indicated by a non-significant three-way interaction ( $b = -0.03$ ,  $SE = 0.26$ ,  $t = -0.11$ ,  $p = 0.914$ , see Table A2), the specific nature of the interaction displayed the same gender differences as in Study 3 (see Figure A3 and A4). As expected, it was among women in the five event condition we observed the strongest relationship between identity relevance and preference to rent (vs. buy).

Table A2

*Regression for interaction between identity relevance, experimental group, and gender in Study 4*

|  | Model 1                    |
|--|----------------------------|
| (Intercept)                                      | 3.27 ***<br>[2.31, 4.22]   |
| Identity_relevance                               | 0.45 **<br>[0.18, 0.73]    |
| GroupFive events                                 | 3.17 ***<br>[1.91, 4.44]   |
| menvwomWoman                                     | 0.26<br>[-1.20, 1.72]      |
| frq_clothes                                      | 0.00<br>[-0.00, 0.01]      |
| Identity_relevance:GroupFive events              | -0.59 **<br>[-0.94, -0.23] |
| Identity_relevance:menvwomWoman                  | -0.18<br>[-0.55, 0.20]     |
| GroupFive events:menvwomWoman                    | -1.03<br>[-3.00, 0.94]     |
| Identity_relevance:GroupFive events:menvwomWoman | -0.03<br>[-0.53, 0.48]     |
| N  | 672                        |
| R2   | 0.09                       |

\*\*\* p < 0.001; \*\* p < 0.01; \* p < 0.05.

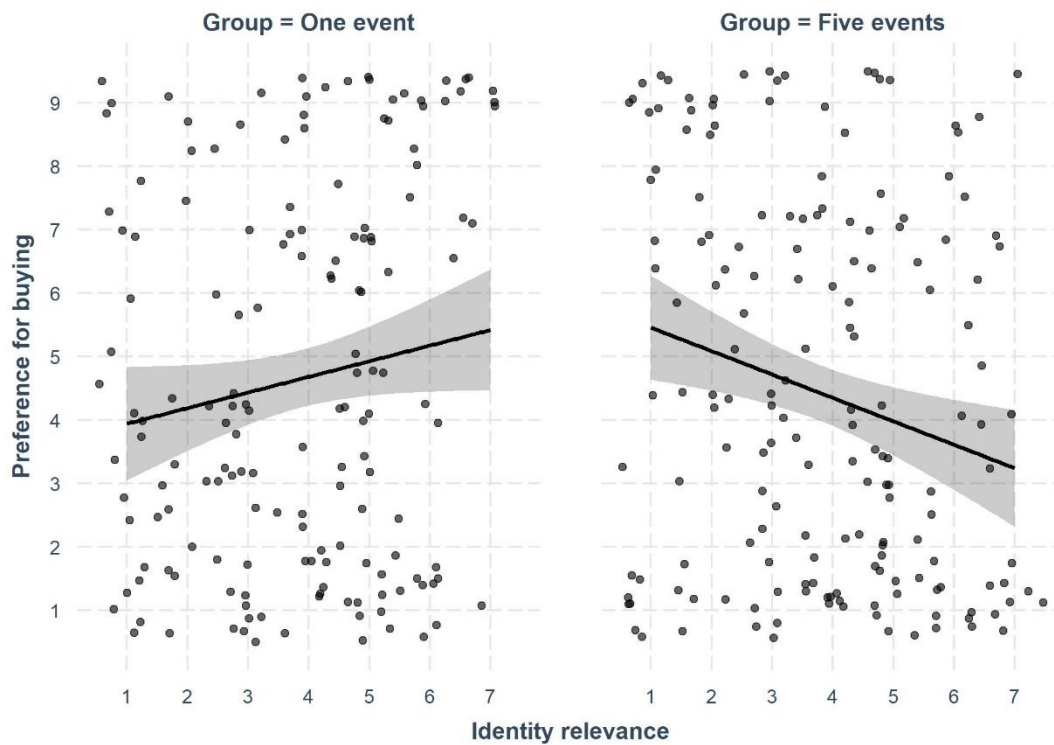


Figure A3: Interaction effect for women in Study 4. The regression line illustrates the relationship between identity relevance and preference for buying (9 indicates strong buying preference, 1 indicates strong renting preference). The grey area plots the 95% confidence interval around the regression line.

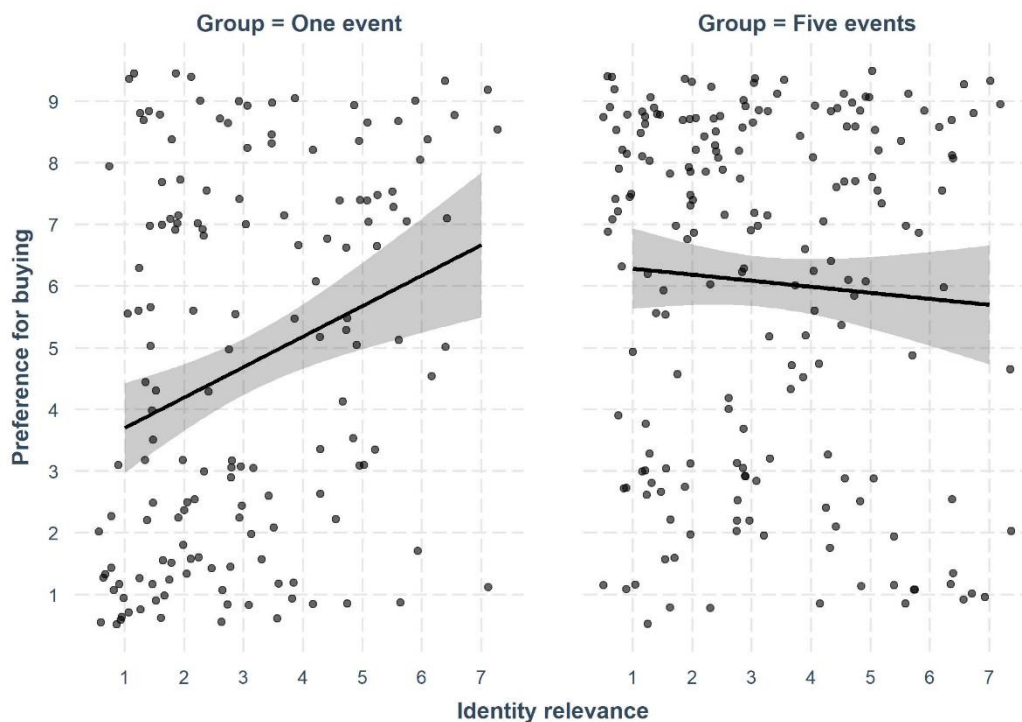


Figure A4: Interaction effect for men in Study 4. The regression line illustrates the relationship between identity relevance and preference for buying (9 indicates strong buying preference, 1 indicates strong renting preference). The grey area plots the 95% confidence interval around the regression line.

## Discussion gender results study 3 and 4

The main finding of Study 3 and 4 was that, in line with our predictions, the number of consumption opportunities had a significant impact on the relationship between identity relevance and buying vs. renting preference. However, the specific pattern of the interaction effect differed somewhat from what we expected. Instead of there being a general tendency for all strong identifiers to get more tempted by renting when they were going to multiple vs. a single event, we found that this was only the case among women. Among men, the data indicated that the number of events was instead something that mainly affected the preferences of low identifiers, increasing their preference for buying. A possible explanation for this finding is that by manipulating the number of events, we might have not just manipulated the situational need for variety, but also the re-use value of the product. For men with low identity relevance, having more opportunities to wear something might lead them to increasingly favor buying over renting, simply because they would get more value for their purchase. However, since the three-way interaction of identity relevance, number of events and gender was not significant, the gender-based explanations are speculative.

### Comprehension check

In study 5, there was a significant imbalance between conditions on the comprehension check. This led to imbalanced exclusions. Below is a table showing the number and percentage of exclusions for each condition.

Summary descriptives table by groups of 'Group'

|         | One event   | Five events | p.overall |
|---------|-------------|-------------|-----------|
|         | N=426       | N=425       |           |
| Failed: |             |             | <0.001    |
| Failed  | 110 (25.8%) | 64 (15.1%)  |           |
| Passed  | 316 (74.2%) | 361 (84.9%) |           |

### **Checking for collider bias**

In all studies, we included participants' frequency of using formal wear as a covariate in the regression models. Our reason for including this variable was that we suspected it could be correlated with our outcome (buying vs. renting preference), since wearing formal wear more often would presumably increase the use value of buying formal wear. In order to check for collider bias, we here report the regression results without this covariate. If frequency of formal wear use were a collider variable, the relationship between identity relevance and buying vs. renting preference should disappear when no longer controlling for usage frequency. As the regression tables below show, there is no indication of collider bias from the frequency of use covariate.

## Study 1:

**Rent vs buy by Identity**

| <i>Dependent variable:</i> |  |
|----------------------------|--|
| rentvbuy                   |  |
| Identity_relevance         | 0.340**<br>(0.130)                                       |
| Constant                   | 3.751***<br>(0.502)                                      |
| Observations               | 137  |
| R <sup>2</sup>             | 0.048  |
| Adjusted R <sup>2</sup>    | 0.041  |
| Residual Std. Error        | 2.367 (df = 135)   |
| F Statistic                | 6.814** (df = 1; 135)                                    |
| Note:                      | $p < 0.1$ ; <b><math>p &lt; 0.05</math></b> ; $p < 0.01$ |

**Rent vs buy by Identity and Usage**

| <i>Dependent variable:</i> |  |
|----------------------------|--|
| rentvbuy                   |  |
| Identity_relevance         | 0.357***<br>(0.129)                                      |
| frq_wearformal             | 0.014**<br>(0.006)                                       |
| Constant                   | 3.510***<br>(0.506)                                      |
| Observations               | 137  |
| R <sup>2</sup>             | 0.082  |
| Adjusted R <sup>2</sup>    | 0.068  |
| Residual Std. Error        | 2.333 (df = 134)   |
| F Statistic                | 5.981*** (df = 2; 134)                                   |
| Note:                      | $p < 0.1$ ; <b><math>p &lt; 0.05</math></b> ; $p < 0.01$ |

## Study 2a:

**Rent vs buy by Identity**

| <i>Dependent variable:</i> |                                     |
|----------------------------|-------------------------------------|
| rentvbuy                   |                                     |
| Identity_relevance         | -0.152 <sup>*</sup><br>(0.082)      |
| Constant                   | 5.956 <sup>***</sup><br>(0.323)     |
| Observations               | 395                                 |
| R <sup>2</sup>             | 0.009                               |
| Adjusted R <sup>2</sup>    | 0.006                               |
| Residual Std. Error        | 2.942 (df = 393)                    |
| F Statistic                | 3.455 <sup>*</sup> (df = 1; 393)    |
| Note:                      | $p < 0.1$ ; $p < 0.05$ ; $p < 0.01$ |

**Rent vs buy by Identity and Usage**

| <i>Dependent variable:</i> |                                     |
|----------------------------|-------------------------------------|
| rentvbuy                   |                                     |
| Identity_relevance         | -0.152 <sup>*</sup><br>(0.083)      |
| frq_clothes                | -0.0002<br>(0.004)                  |
| Constant                   | 5.956 <sup>***</sup><br>(0.323)     |
| Observations               | 395                                 |
| R <sup>2</sup>             | 0.009                               |
| Adjusted R <sup>2</sup>    | 0.004                               |
| Residual Std. Error        | 2.946 (df = 392)                    |
| F Statistic                | 1.724 (df = 2; 392)                 |
| Note:                      | $p < 0.1$ ; $p < 0.05$ ; $p < 0.01$ |



## Study 2b:

**Rent vs buy by Identity**

| <i>Dependent variable:</i> |                                     |
|----------------------------|-------------------------------------|
|                            | rentvbuy                            |
| Identity_relevance         | -0.223**<br>(0.087)                 |
| Constant                   | 6.254***<br>(0.347)                 |
| Observations               | 387                                 |
| R <sup>2</sup>             | 0.017                               |
| Adjusted R <sup>2</sup>    | 0.014                               |
| Residual Std. Error        | 3.013 (df = 385)                    |
| F Statistic                | 6.542** (df = 1; 385)               |
| Note:                      | $p < 0.1$ ; $p < 0.05$ ; $p < 0.01$ |

**Rent vs buy by Identity and Usage**

| <i>Dependent variable:</i> |                                     |
|----------------------------|-------------------------------------|
|                            | rentvbuy                            |
| Identity_relevance         | -0.221**<br>(0.089)                 |
| frq_clothes                | -0.001<br>(0.008)                   |
| Constant                   | 6.253***<br>(0.348)                 |
| Observations               | 387                                 |
| R <sup>2</sup>             | 0.017                               |
| Adjusted R <sup>2</sup>    | 0.012                               |
| Residual Std. Error        | 3.017 (df = 384)                    |
| F Statistic                | 3.270** (df = 2; 384)               |
| Note:                      | $p < 0.1$ ; $p < 0.05$ ; $p < 0.01$ |

## Study 3:

**Rent vs buy by Identity**

| <i>Dependent variable:</i> |  |
|----------------------------|--|
| rentvbuy                   |  |
| Identity_relevance         | 0.164 <sup>***</sup><br>(0.057)                          |
| Constant                   | 4.970 <sup>***</sup><br>(0.220)                          |
| Observations               | 802  |
| R <sup>2</sup>             | 0.010  |
| Adjusted R <sup>2</sup>    | 0.009  |
| Residual Std. Error        | 2.943 (df = 800)   |
| F Statistic                | 8.287 <sup>***</sup> (df = 1; 800)                       |
| Note:                      | $p < 0.1$ ; <b><math>p &lt; 0.05</math></b> ; $p < 0.01$ |

**Rent vs buy by Identity and Usage**

| <i>Dependent variable:</i> |  |
|----------------------------|--|
| rentvbuy                   |  |
| Identity_relevance         | 0.121 <sup>**</sup><br>(0.059)                           |
| frq_clothes                | 0.006 <sup>***</sup><br>(0.002)                          |
| Constant                   | 5.019 <sup>***</sup><br>(0.219)                          |
| Observations               | 802  |
| R <sup>2</sup>             | 0.019  |
| Adjusted R <sup>2</sup>    | 0.017  |
| Residual Std. Error        | 2.931 (df = 799)   |
| F Statistic                | 7.863 <sup>***</sup> (df = 2; 799)                       |
| Note:                      | $p < 0.1$ ; <b><math>p &lt; 0.05</math></b> ; $p < 0.01$ |

## Study 4:

**Rent vs buy by Identity**

| <i>Dependent variable:</i> |  |
|----------------------------|--|
| rentvbuy                   |  |
| Identity_relevance         | 0.014<br>(0.065)   |
| Constant                   | 4.966 <sup>***</sup><br>(0.252)                          |
| Observations               | 676  |
| R <sup>2</sup>             | 0.0001   |
| Adjusted R <sup>2</sup>    | -0.001   |
| Residual Std. Error        | 2.999 (df = 674)   |
| F Statistic                | 0.045 (df = 1; 674)                                      |
| Note:                      | $p < 0.1$ ; <b><math>p &lt; 0.05</math></b> ; $p < 0.01$ |

**Rent vs buy by Identity and Usage**

| <i>Dependent variable:</i> |  |
|----------------------------|--|
| rentvbuy                   |  |
| Identity_relevance         | -0.017<br>(0.067)  |
| frq_clothes                | 0.006 <sup>*</sup><br>(0.003)                            |
| Constant                   | 5.008 <sup>***</sup><br>(0.253)                          |
| Observations               | 676  |
| R <sup>2</sup>             | 0.005  |
| Adjusted R <sup>2</sup>    | 0.002  |
| Residual Std. Error        | 2.994 (df = 673)   |
| F Statistic                | 1.638 (df = 2; 673)                                      |
| Note:                      | $p < 0.1$ ; <b><math>p &lt; 0.05</math></b> ; $p < 0.01$ |

**PRE-PRINT**

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**Article 3: Does sharing make you seem caring? Social perception of sharing vs. owning.**

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### Abstract

Consumer research within the sharing economy context has so far mainly investigated drivers and barriers for adoption. This paper investigates another important factor for understanding consumer behavior in pro-environmental sharing contexts, namely how consumers using car-sharing services instead of traditional car ownership are perceived by others. Using a between-subjects design to study *person perception* effects, we conducted a high-powered experiment in a general population sample in Norway ( $N = 1,194$ ), examining whether users of car-sharing services are perceived as more trustworthy than similar individuals who own their own car. The results supported this hypothesis, but only when the car-sharing motive was environmental. That is, participants seem to rely on car-sharing behavior as a cue for generalized trustworthiness, *if* the car-sharing behavior is assumed to reflect an underlying pro-environmental motive (as opposed to a less appealing financial motive). We found no main effect of consumer category (car-sharing vs. car-owning) on participants' socialization intentions. However, a follow-up analysis found suggestive evidence of social homophily: Participants who drove less themselves and/or were highly environmentally engaged, displayed a relative preference for socializing with car-sharing users, whereas participants who drove frequently and/or were less environmentally engaged displayed a relative preference for socializing with car-owners. We found no moderation of treatment effects by left-right political orientation. Seen as a whole, the results suggest that environmentally-motivated car-sharing can operate as a generalized trust cue in person perception, but that preferences for who to spend social time with relies more on similarity with oneself than their environmental profile.

Keywords: sharing economy, car-sharing, social perception, moral motives

### **Does sharing make you seem caring? Social perception of sharing vs. owning.**

The sharing economy has grown to become a significant part of the economy, with sharing services entering and gaining traction in various markets. Consumer research within the sharing economy has so far focused on exploring motives and barriers for participating in different sharing services (Klarin & Suseno, 2021). Something we still know close to nothing about is how people evaluate others when they use these kinds of services. This is interesting to study for several reasons. We know that consumers can be motivated to use or not use a brand, product or service based on what the consumption communicates about them (Escalas & Bettman, 2005). Therefore, what sharing communicates about a person can be an important part of the service's attractiveness. We also know that trust is an important factor underlying sharing service use (Sundararajan, 2019). This means that the perceived trustworthiness of existing users is likely to affect non-users' adoption intentions.

In the current research, we apply theory about social perception and social cognition to the context of sharing vs. owning a car, and test our predictions using a high-powered experimental design in a general population sample. Specifically, we investigate whether sharing vs. owning a car spurs more positive trustworthiness judgements and socialization intentions towards a target individual. We also test whether trustworthiness judgements and socialization intentions vary according to the motive underlying use of the sharing service (economic vs. pro-environmental), and whether individual differences among participants affect their response to the target person. Our main finding is that trustworthiness judgements are more positive for the car-sharing target person when the motive for sharing is pro-environmental, but not when the motive is unstated or economic. Further, we find suggestive evidence that socialization intentions seem to depend on individual differences among participants in terms of driving frequency and environmentalism. With this study, we aim to

contribute with a new facet to the understanding of consumer behavior in the sharing economy, and to the social perception of pro-environmental behavior.

### **Social perception of sharing vs. ownership**

Humans are social creatures, and we tend to care about how our actions are perceived and interpreted by those around us. Our consumption behavior is no exception, and it is well documented that consumers place weight on the ability of products, brands and services to signal characteristics about themselves (Belk, 1988; Reed, Forehand, Puntoni, & Warlop, 2012; Solomon, 1983). However, as more consumption is taking place in the access-based services of the sharing economy, there is a need for research on the social signals emitted by this form of consumption. Research on the drivers motivating people to use sharing services and platforms has already established that social norms and image concerns matter (Hazeel, Delcourt, & Van Vaerenbergh, 2017; Peterson & Simkins, 2019). But what image do people have of others who use a sharing service to access instead of own a product?

Traditionally, ownership has been the ideal mode of consumption, and non-ownership in the form of rental, borrowing or sharing has received less attention and less status (Belk, 2010; Rudmin, 2016). This might lead us to believe that users of access-based/sharing services will be awarded less positive traits when judged by others compared to product owners. However, other mechanisms are likely to pull in the opposite direction. Sharing services can be categorized on a spectrum ranging from commercial to communal (Habibi, Kim & Laroche, 2016). Generally, use of the more commercial types of services is driven by more self-centered consumer motives such as economic gains, convenience or enjoyment, and use of the more communal services is more likely to be driven by self-transcendent motives, such as altruism, generosity or environmentalism (Bucher, Fieseler, & Lutz, 2016; Hamari, Sjöklint, & Ukkonen, 2016). For instance, a study of two different forms of car-sharing in Norway found that members of a non-profit car-sharing cooperative were more motivated by

environmental reasons than users of a for-profit car-sharing platform (Uteng, Julsrud, & George, 2019). Akbar, Mai & Hoffmann (2016) found that consumers who are more positive towards sharing services for clothes on average score lower on materialism, in particular the materialism dimension labeled possessiveness. This indicates that participants in sharing services on the more communal side of the spectrum might also be perceived as less self-centered and more concerned with the wellbeing of others.

Some sharing services can also be categorized as environmentally friendly, or at least perceived this way by consumers (Gullstrand Edbring, Lehner, & Mont, 2016; Hartl, Sabitzer, Hofmann, & Penz, 2018). We can therefore conceptualize use of these services as examples of pro-environmental behavior, and previous research has investigated how consumers engaging in pro-environmental consumption are perceived. This research has found that people who engage in pro-environmental behaviors are perceived as more ethical and moral (Mazar & Zhong, 2010; Kennedy & Horne, 2020), as harboring several positive personality traits (Skippon, Kinnear, Lloyd, & Stannard, 2016), and as more cooperative and trustworthy (Vesely, Klöckner, & Brick, 2020). However, research also shows that “typical” environmentalists are associated with negative traits such as being militant, unhygienic and eccentric (Bashir, Lockwood, Chasteen, Nadolny, & Noyes, 2013), and that pro-environmental behaviors have varying impacts on perceptions of social status (Berger, 2017; Puska, Kurki, Lähdesmäki, Siltaoja, & Luomala, 2016; Welte & Anastasio, 2009). The fact that pro-environmental behaviors can signal different traits adds to the importance of testing how sharing service use as a concrete example of a pro-environmental behavior is perceived.

Previous research also indicates that it is not only the action of engaging in a pro-social action that matters; it also plays a role whether the action is consciously motivated or not. People might judge the same behavior as more or less moral depending on what they infer to be motivating the behavior (Carlson, Bigman, Gray, Ferguson, & Crockett, 2022).



People who are perceived to engage in environmentally friendly consumption “by accident” are not judged as positively as those who are perceived to do so by choice (Kennedy & Horne, 2020). A similar effect has been found in the area of moral psychology. People seem to have a tendency to prefer others who follow a more deontological moral reasoning, in the sense that they follow a set of pre-defined moral principles where some actions, for instance harming a child or killing a person, are wrong no matter the consequences (Everett, Pizarro, & Crockett, 2016). In contrast, people who are perceived to employ a more calculative consequentialist approach to their moral reasoning are judged less positively. This finding holds when the action they choose in a moral dilemma is the same, illustrating that inferred motives matter for how we judge and evaluate other people.

In the current research, we apply the context of car-sharing to investigate people’s perceptions of sharing service users. Car-sharing services have showed significant growth potential, but adoption is still quite limited. It is therefore especially interesting to investigate the social perceptions of users, in order to assess the attractiveness of use among non-users. It is also a service used by different demographic groups, with different motives (environment, economy, efficiency), which means there is potential for these motives shaping outsiders’ perceptions. For instance, people might use car-sharing services for environmental reasons, wanting to reduce the carbon footprint of their car use and perhaps reduce the total number of cars required, or for economic reasons, avoiding car-ownership because they want to save money. In the current research, we vary information about the underlying motive behind experimental conditions, to examine the potential effect on perceived trustworthiness and socialization intentions.

We expect that perceptions of carsharing users in part will be affected by the characteristics of car-sharing services, and the motivations present among existing users. One such characteristic of particular importance is environmental friendliness, and since people

making environmentally friendly choices are generally judged as more moral/ethical (Kennedy & Horne, 2020; Mazar & Zhong, 2010) we hypothesize that a similar effect will arise for carsharing users. Specifically, we propose that car-sharing users will be rated as more *trustworthy* than car owners. Trustworthiness is related to general perceptions of integrity, and therefore thought to display similar results as for measures of morality/ethicality. Research has also found that people expect more cooperative behavior from others when they are known to act pro-environmentally (Vesely et al., 2020). We choose trustworthiness as one of our main outcome measures because trust is a central component of sharing service adoption, and trustworthiness is a primary trait in human social perception, meaning it is one of the aspects of others we first notice and judge (Todorov, Pakrashi, & Oosterhof, 2009). By measuring trustworthiness perceptions, we also contribute to the literature on social perceptions of pro-environmental behaviors.

We also assume that people will display a greater tendency to want to socialize with car-sharing users than car-owners. Given that we expect car-sharing users to be evaluated as more trustworthy, we also expect car-sharing users to be evaluated as more attractive social interaction partners, mirroring previous findings of pro-environmental behavior (Vesely et al., 2020). By measuring intentions to engage in social interaction, we also aim to tap into more affect-based judgements than trustworthiness judgements, similarly to how emotional prejudice is measured in research on intergroup perception (e.g. Strabac & Listhaug, 2008). In short, our first hypothesis is therefore:

H1: People will report a) higher trustworthiness judgements and b) a higher desire to socialize with a car-sharing user than a car owner.

In the context of sharing vs. owning, we expect sharing users to be perceived as somewhat more pro-environmentally motivated than car-owners, even when their motive for sharing is not explicit. This reasoning lies behind Hypothesis 1. However, we do not expect

use of a sharing service to lead to more positive judgements than owning if perceivers believe the target person is motivated by self-oriented goals, such as economic gains. It is only if consumption is perceived to be driven by other-oriented values that sharing service consumption will be judged as similar to pro-environmental consumption. This leads us to the prediction that sharing service users, compared to product owners, will be perceived as more trustworthy, and that people will be more inclined to socialize with them, but that the presence of this effect will depend on what the perceived motive of consumption is.

Since we expect that positive trustworthiness judgements and socialization intentions arise because car-sharers are deemed more environmentally friendly, we predict that making the motive of the car-sharer explicit will affect judgements. Specifically, we predict that when the car-sharer is presented with an explicit pro-environmental motive, they will be perceived as more trustworthy and socialization intentions will be higher for them than for a car-owner (we also expect this effect when car-sharing is presented with no motive, because we expect the inferred motive to be pro-environmental). But if the car-sharer is presented with an explicit self-serving motive such as economic gains, we expect the positive “car-sharing halo” to disappear. Specifically, we expect trustworthiness judgements and socialization intentions to be similar for an economically motivated car-sharer and a car-owner. The above reasoning leads us to hypothesis 2 and 3:

H2: When a car-sharing user is presented as having a pro-environmental motive, participants will report a) higher trustworthiness judgments and b) higher socialization intentions for the car-sharing user than for the car-owner.

H3: When a car-sharing user is presented as having an economic motive, participants’ judgements of a) trustworthiness judgments and b) socialization intentions will not differ for the car-sharing user and for the car-owner.

### **The moderating role of individual differences**

From the extensive literatures on in-group bias and social homophily we know that people tend to favor others who are more similar to themselves (Dunham, 2018; McPherson, Smith-Lovin, & Cook, 2001). We therefore expect that people who themselves are non-owners and less frequent users of a product, will show increased positive leanings towards the sharing users, independent of what the sharing user's motive is. Specifically, we expect people who are less dependent on a car themselves (infrequent drivers) to be more positive towards the car-sharing user than people who themselves are more car-dependent (frequent drivers). In other words, we propose that the effect proposed in Hypothesis 1 will be stronger for participants who do not use a car very frequently.

H4: Participants who use a car less frequently will display a stronger tendency to judge the carsharing user more positively in terms of a) trustworthiness and b) socialization intentions compared to participants who use a car more frequently.

From research on pro-environmental consumption, we also know that evaluations of environmentally friendly consumers partly depend on the person who is judging. People with more right-leaning political preferences do not evaluate pro-environmental consumers more positively, for instance (Kennedy & Horne, 2020). This could also be true for sharing service consumption. Although the environmental issue is not a clear left-right issue in Norwegian politics, we still expect there to be more environmentally engaged voters leaning towards the left end of the political scale. We therefore hypothesize that left-oriented participants to a larger extent than right-oriented participants will rate the car-sharing user more positively than the car-owner.

H5: More politically left-leaning participants will judge carsharing users (vs. car owners) more positively in terms of a) trustworthiness and b) socialization intentions than more right-leaning participants.

### **The current study**

In order to investigate whether sharing service users are perceived differently from product owners in the car-sharing context, we designed a vignette-based between-subjects experiment. In the experiment, we manipulated both whether an individual was describes as owning a car vs. using a car-sharing service, and whether the motive for using car-sharing was economic, environmental, or not made explicit at all. This design allowed us to examine differences in judgements based on the mode of consumption (ownership vs. sharing) as well as the motive behind sharing. Specifically, we compared one example of a self-oriented motive: an economic motive, with an instance of an other-oriented/non-self-oriented motive: a pro-environmental motive. We also examined possible moderation effects resulting from individual differences among participants.

Methodologically, the current research was conducted with an “Open Science” approach. Over the last decade, replication studies and other methodological investigations have revealed systematic weaknesses with existing empirical research in many fields, including social psychology and behavioral research more generally (Simmons, Nelson, & Simonsohn, 2011). Some of the specific challenges have been low sample sizes, post hoc hypothesizing and unrepresentative samples (Munafò et al., 2017). We therefore conducted our current study using a large general population sample based on a statistical power analysis, and we pre-registered our hypotheses, manipulations and measures prior to the data collection. The experiment was pre-registered at the following site: <https://osf.io/9wjv5>. All data, code and materials from the experiment is publically available on the project’s OSF website: <https://osf.io/nkjp4/>.

## Methods

### Sample

Since we did not know the true size of neither main effects nor interaction effects, we aimed for a sample size that would yield statistical power of 95% for identifying a small effect size ( $d = 0.3$ ) on a 0.05 p-level. To achieve this power level, we needed at least 290 participants per condition, and therefore sought to recruit a total sample of 1200 participants (300 per experimental condition). We recruited participants through a Norwegian market research panel. As preregistered, only participants completing the full post-experimental survey were included, and people failing an initial attention check were not allowed to participate.

After data collection had been completed, we identified six cases of duplicate responses among the 1200 complete responses collected. As the sample size is large, we did not expect these cases to have any impact on the results, but we decided to exclude them from analyses, as each participant was only intended to reply to the experiment once. The open dataset accompanying the article nonetheless includes the duplicates for full transparency.

We aimed for a sample where participants would be familiar with car-sharing as a concept, and participants were therefore recruited from the largest cities and urban areas in Norway. Participation was open to all ages above 18 years, and we did not require the participant to possess a driver's license or own a car.

The final analyzable sample consisted of 1194 participants (52.1% female,  $M_{age} = 44.8$ ,  $SD_{age} = 17.3$ ).

### Procedure and manipulation

Upon entering the experiment and giving their informed consent, participants were first asked to complete a simple attention check (see appendix for details). Those who passed were randomly assigned to one of the four experimental conditions, and were presented with one of four different versions of a vignette (see Table 1). The vignettes described a 32 year old male individual living a bit outside the center of a Norwegian city, and working close to where he lives. The target individual was described as either 1) owning a car (car-owner condition), 2) using a car-sharing service (basic car-sharing condition), 3) using a car-sharing service for environmental reasons (environmental car-sharing condition), or 4) using a car-sharing service for economic gains (economic car-sharing condition). In all vignettes, the target individual was described as using a car mostly for heavy shopping and out-of-town weekend trips. Participants were required to spend at least 10 seconds on the page displaying the vignette, to ensure sufficient time to read the text.

Table 1

*Vignettes presented to participants in experiment*

| Experimental condition              | Vignette   |
|-------------------------------------|--|
| Car-owner condition                 | Thomas is 32 years old, lives a bit outside the city center of a Norwegian city, and works close to where he lives. Thomas owns his own car, which he mainly uses when he needs to do heavy grocery shopping or buy heavy things, and for weekend trips outside the city.                            |
| Car-sharing basic condition         | Thomas is 32 years old, lives a bit outside the city center of a Norwegian city, and works close to where he lives. Thomas is a member of a car-sharing service, and mainly uses car-sharing when he needs to do heavy grocery shopping or buy heavy things, and for weekend trips outside the city. |
| Environmental car-sharing condition | Thomas is 32 years old, lives a bit outside the city center of a Norwegian city, and works close to where he lives. Thomas is a member of a car-sharing service, and mainly uses car-sharing when he needs to do heavy grocery shopping or buy heavy things, and for weekend trips outside the city. |

|                                |   |
|--------------------------------|---|
| Economic car-sharing condition | <p>The most important reason why Thomas has chosen to use a car-sharing service is that he has found it to be more climate- and environmentally friendly compared to owning his own car.</p> <p>Thomas is 32 years old, lives a bit outside the city center of a Norwegian city, and works close to where he lives. Thomas is a member of a car-sharing service, and mainly uses car-sharing when he needs to do heavy grocery shopping or buy heavy things, and for weekend trips outside the city.</p> <p>The most important reason why Thomas has chosen to use a car-sharing service is that he has found it to be more economically beneficial compared to owning his own car.</p> |
|--------------------------------|---|

After reading the vignette, participants were asked to respond to a post-experimental survey with dependent and other measures. In between measures pertaining to the vignette (the dependent measures) we introduced two filler items asking participants about their happiness and satisfaction in life, before questions measuring moderating variables were presented. The filler items were introduced in order to create decrease the chance that responses to dependent measures would bias responses to moderating measures.

## Measures

The main dependent measures in the study were *perceived trustworthiness* and *socialization intentions*, measured with respect to the target individual presented in the vignettes.

*Trustworthiness* was measured by asking participants how well, on a scale from 1-7, they thought three statements fitted with their first impression of the person in the vignette: “Can be relied on”, “Wants what is good for others” and “Keeps his promises”. These three items were designed to cover the three dimensions of trustworthiness as proposed by Mayer, Davis, & Schoorman, (1995): ability, benevolence and integrity respectively.

*Socialization intentions* were measured with three items asking whether participants would have liked to 1) get to know the target person better in a social setting, 2) have the



target person as a neighbor, and 3) collaborate with the target person on a joint project, on a scale from 1-7. These items were partly inspired by previous studies of social perception of strangers (Luttrell, Sacchi, & Brambilla, 2022), and partly by group-based prejudice research, where willingness to have a member of a certain group as a neighbor is asked to measure group-based prejudice (Strabac & Listhaug, 2008).

We measured the proposed moderator *driving frequency* by asking participants how often they themselves drove a car: daily, weekly, monthly, more seldom, or never. As background information we also asked whether they possessed a driver's license, and whether they had access to a car in their everyday life.

*Political orientation* was measured by asking participants to rate themselves on an 11-point scale ranging from "All the way to the left politically" to "All the way to the right politically", with the center point labelled "Center".

In addition to the above-mentioned main measures, we measured additional variables for conducting secondary and exploratory analyses. Among these were the perceived environmental impact of the target person's travel behavior, and participants' own environmental engagement. See the appendix for a full overview of measures, items and response scales, as well as supplemental analyses, tables and figures. None of the measures were pre-tested before application in this study.

## **Results**

In our preregistration we specified which analyses were to be conducted to test our main hypotheses, and also mentioned a secondary set of analyses which we will also present in this results section. In addition to the results presented below, the appendix contains additional exploratory analyses and an overview of correlations between measured variables.

All significance tests were two-tailed, and applied a 0.05 alpha level. For comparing group means we used Welch's t-tests, as this is a method more robust to unequal group variances, and gives similar results to Student's t-test when variances are equal (Delacre, Lakens, & Leys, 2017). Since our moderating variables were measured after participants were exposed to the manipulation, we checked whether there were group effects on the moderators, and as expected there were no effects of the manipulation on the moderating variables (see appendix for details).

### **Effects of car-sharing on trustworthiness judgements**

**Main effect:** To test whether using a car-sharing service vs. owning a car affected trustworthiness judgements towards the target person, we conducted Welch two-sample t-tests comparing mean scores for the car-sharing conditions and the car-owner condition. See Figure 1 for mean trustworthiness values for the four experimental conditions. Results showed that the car-sharing user was not rated as significantly more trustworthy ( $M = 4.77$ ,  $SD = 1.02$ ) than the car-owner ( $M = 4.61$ ,  $SD = 1.01$ ,  $d = 0.16$ , 95% CI [-0.32, 0.004],  $t(589.54) = -1.92$ ,  $p = .055$ ). We thus did not find support for hypothesis 1a.

To examine the effect of a pro-environmental motive for car-sharing, we conducted t-tests comparing the mean scores on trustworthiness judgments for the group presented with the environmentally motivated car-sharing user and the group presented with the car-owner. In line with hypothesis 2a, the car-sharing user with a pro-environmental motive was rated as significantly more trustworthy ( $M = 4.91$ ,  $SD = 1.08$ ) than the car-owner ( $M = 4.61$ ,  $SD = 1.01$ ,  $d = -0.28$ , 95% CI [-0.44, -0.12],  $t(604.15) = -3.49$ ,  $p = .001$ ).

In line with hypothesis 3a, we found no significant difference in trustworthiness ratings between the economically motivated car-sharing user ( $M = 4.73$ ,  $SD = 1.00$ ) and the car-owner ( $M = 4.61$ ,  $SD = 1.01$ ,  $d = -0.12$ , 95% CI [-0.28, 0.04],  $t(588.92) = -1.46$ ,  $p = .144$ ).

In addition to the pre-registered test, we conducted an equivalence test (Lakens, Scheel, & Isager, 2018) to check if we could reject the possibility of a small effect (Cohen's  $d = 0.3$ ) being present. An equivalence test with  $\alpha = 0.05$ , assuming equal variances, and equivalence bounds of  $d = -0.3$  and  $d = 0.3$  was significant ( $t(588.97) = 2.17, p < .001, 90\%$  CI  $[-0.26, 0.02]$ ). We can thus reject effects larger than  $d = 0.3$ . In sum, the results showed that trustworthiness judgement were not significantly affected by the car-sharing behavior in itself, but that car-sharing with a pro-environmental motive spurred higher trust.

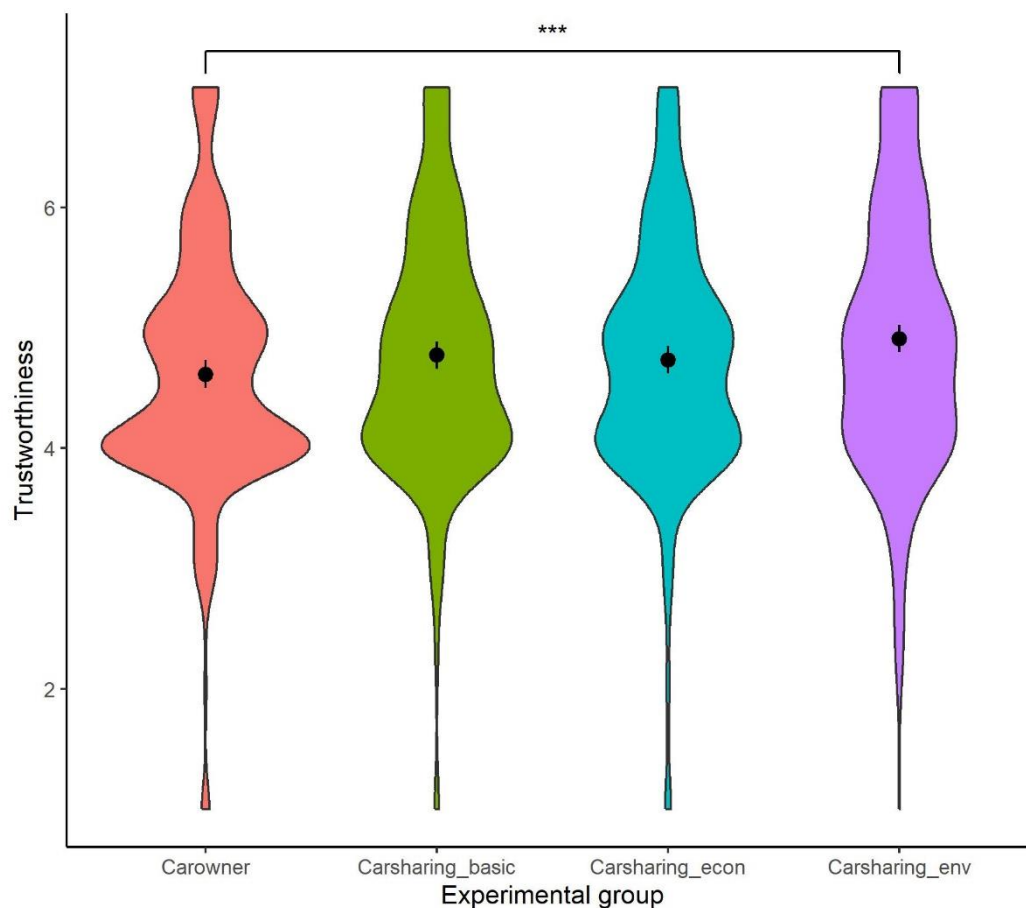


Figure 18: Violin plot of trustworthiness ratings for the target person across the four experimental groups. The colored areas indicate the density of scores. The black dots indicate the mean ratings in each experimental group. Black lines indicate 95% confidence intervals of the means. The statistically significant comparison between the car-owner and the environmental car-sharing condition is indicated with \*\*\* ( $p \leq .001$ ).

**Moderation analyses:** We had predicted that participants' judgements of car-sharers and car-owners would depend on participants' own level of car use (hypothesis 4). Since we measured car use frequency on an ordinal, not a continuous scale, we could not treat it as a continuous variable in our analyses. Instead of including all five levels, we decided to dichotomize the variable, because we thought two levels would be sufficient to represent participants' responses. However, the variable with all levels is available in the open data for reanalysis. We classified car use as *frequent* if participants reported to drive weekly or more often, and *infrequent* if participants reported to drive more seldom than this, including never. To test for moderation by car use, we estimated OLS regressions where we included a dummy variable representing experimental condition (1 = car-owner condition, 2 = car-sharing basic condition), a dummy variable representing driving frequency (1 = infrequent, 2 = frequent), and the interaction between these two variables as predictors of the dependent variables (trustworthiness and socialization intentions). The results showed that driving frequency did not significantly moderate the effect of presenting participants with a car-sharing user vs. a car-owner on trustworthiness ( $b = -0.30, SE = 0.17, p = .076$ ).

We had also predicted that participants' political orientation would shape the way they responded to the car-sharing user vs. the car-owner (hypothesis 5). In order to test for the moderating effect of political orientation, we estimated OLS regressions where we again included a dummy variable representing experimental condition (1 = car-owner condition, 2 = car-sharing basic condition), political orientation (a continuous variable on an 11-point scale), and the interaction between these two variables as predictors of the dependent variables (trustworthiness and socialization intentions). The results failed to support our hypothesis, as political orientation did not significantly moderate the effect of presenting participants with a car-sharing user vs. a car-owner on trustworthiness judgements ( $b = -0.04, SE = 0.03, p = .222$ ).

**Secondary analyses:** In addition to the analyses examining our main hypotheses, we also conducted a secondary set of analyses, investigating whether participants' environmental engagement moderated the effect of presenting participants with a car-sharing user vs. car-owner on trustworthiness judgements and socialization intentions. Using the same regression approach as above, results showed that environmental engagement did not significantly interact with the car-sharing vs. car-owner variable in predicting trustworthiness judgements ( $b = 0.04, SE = 0.07, p = .523$ ).

**Exploratory analyses:** As described above, we found that only the environmentally motivated car-sharing user was rated as more trustworthy. We wondered if this could be explained by participants believing that this person's actions had more positive consequences for the environment, or whether the person's intentions were all that mattered for the trustworthiness judgements. To answer this question, we examined participants' responses to two exploratory questions about their perception of the target person's travel behavior: One question asked how environmentally friendly they thought the target person's travel behavior was, and the other question asked what impact they thought the target person's travel behavior had on the environment. The two items were highly correlated ( $r = 0.62, p < .001$ ), and were combined to form a scale. We first ran a one-way analysis of variance in order to see whether there were significant differences across all four experimental groups in perceived environmental impact. The overall ANOVA was significant ( $F(3, 1190) = 66.6, p < .001$ ), indicating that there were differences between the groups. We then used Welch t-test to contrast the experimental groups, and found that the target person's travel behavior was perceived as significantly worse for the environment in the car-owner condition ( $M = 4.41, SD = 1.17$ ) compared to the car-sharing basic condition ( $M = 5.35, SD = 1.02, d = -0.86, 95\% CI [-1.19, -0.86], t(581.22) = -10.49, p < .001$ ), the environmental car-sharing condition ( $M = 5.35, SD = 1.01, d = -0.87, 95\% CI [-1.03, -0.70], t(586.55) = -10.63, p < .001$ ) and the

economic car-sharing condition ( $M = 5.44$ ,  $SD = 0.91$ ,  $d = -0.98$ , 95% CI [-1.15, -0.81],  $t(558.69) = -11.95$ ,  $p < .001$ ). However, there were no significant differences in the perceived environmental friendliness between the different car-sharing conditions ( $F(2,893) = 0.67$ ,  $p = .510$ ). This indicates that the perceived environmental consequences of the target person's behavior did not seem to explain the difference in trustworthiness judgements.

### **Effects of car-sharing on socialization intentions**

**Main effect:** To test whether using a car-sharing service vs. owning a car affected intentions to socialize with the target person, we conducted Welch two-sample t-tests comparing mean scores for the car-sharing conditions and the car-owner condition. See Figure 2 for mean socialization intention values for the four experimental conditions. Results showed that there were no statistically significant differences in socialization intentions for the car-sharing user without an explicit motive ( $M = 4.50$ ,  $SD = 1.09$ ) compared to the car-owner ( $M = 4.52$ ,  $SD = 0.99$ ,  $d = 0.02$ , 95% CI [-0.14, 0.18],  $t(583.34) = 0.24$ ,  $p = .808$ ). We thus did not find support for hypothesis 1b.

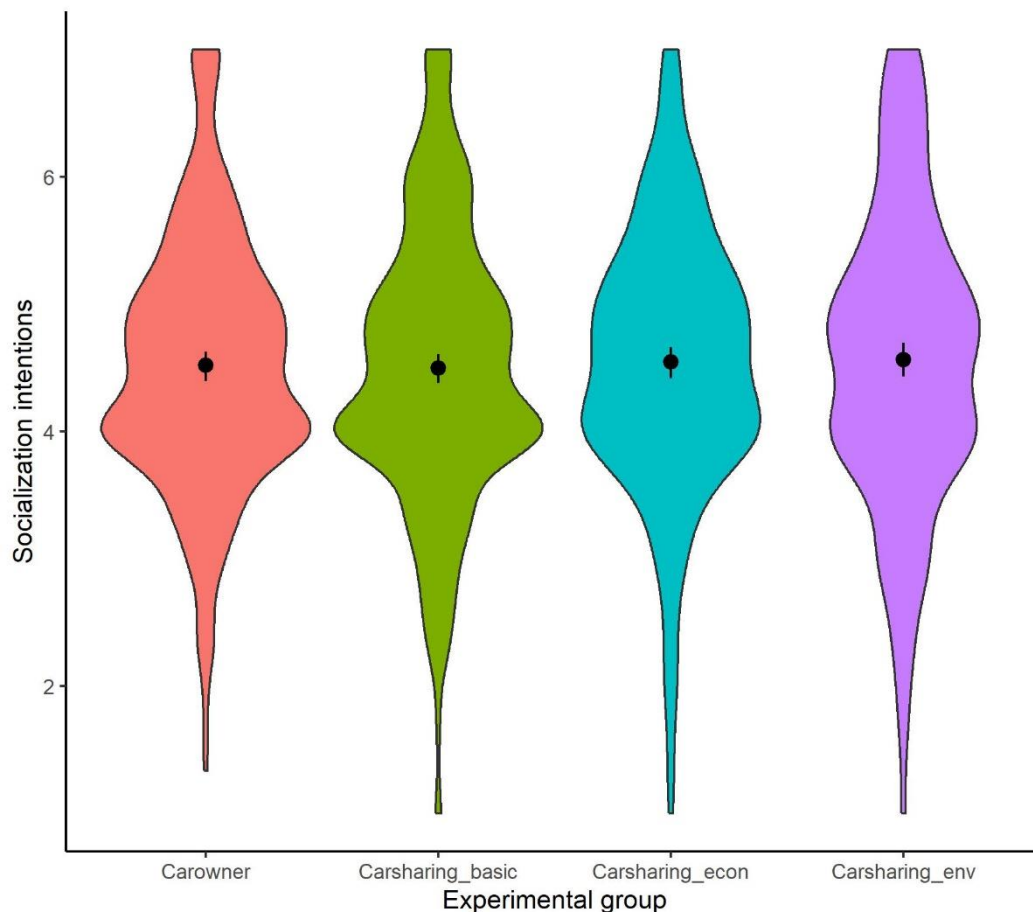


Figure 19: Violin plot of socialization intentions for the target person across the four experimental groups. The colored areas indicate the density of scores. The black dots indicate the mean ratings in each experimental group. Black lines indicate 95% confidence intervals of the means. None of the mean comparisons were statistically significant.

To examine whether socialization intentions would differ between the pro-environmentally motivated car-sharer and the car-owner, we conducted t-tests comparing the mean scores on socialization intentions. Contrary to hypothesis 2b, and to the finding for trustworthiness judgements, socialization intentions were not significantly different for the environmentally motivated car-sharing user ( $M = 4.57$ ,  $SD = 1.18$ ) compared to the car-owner ( $M = 4.52$ ,  $SD = 0.99$ ,  $d = -0.04$ , 95% CI [-0.20, 0.12],  $t(593.61) = -0.54$ ,  $p = .589$ ).

When comparing socialization intentions between the economically motivated car-sharing user and the car-owner, we predicted that there would not be significant differences

(hypothesis 3b). The results supported this prediction. We found no significant differences between socialization intentions for the economically motivated car-sharing user ( $M = 4.54$ ,  $SD = 1.03$ ) and the car-owner ( $M = 4.52$ ,  $SD = 0.99$ ,  $d = -0.03$ , 95% CI [-0.19, 0.14],  $t(586.70) = -0.32$ ,  $p = .751$ ). An equivalence test with  $\alpha = 0.05$ , assuming equal variances, and equivalence bounds of  $d = -0.3$  and  $d = 0.3$  was significant ( $t(587.12) = 3.29$ ,  $p < .001$ , 90% CI [-0.16, 0.11]). We can thus reject effects larger than  $d = 0.3$ .

**Moderation analyses:** Although we did not find any of the predicted mean differences in socialization intentions for the sample as a whole, our moderation hypotheses (hypothesis 4 and hypothesis 5) predicted that socialization intentions might vary according to individual differences among participants. We first investigated whether participants' own driving frequency affected their responses to the car-sharing vs. car-owning target person. We applied the same regression approach as described above, and results showed that driving frequency had a statistically significant interaction effect with the car-sharing vs. car-owner group variable on socialization intentions ( $b = -0.46$ ,  $SE = 0.18$ ,  $p = .009$ ). As Figure 3 shows, the interaction seems to follow the hypothesized pattern: People who drive less frequently are more positive towards socializing with a car-sharing user than a car-owner, whereas people who drive more frequently are more positive towards socializing with the car-owner than the car-sharing user. We tested whether the car-owner vs. car-sharer differences in socialization intentions were significant among both the frequent and the infrequent drivers using Welch's t-test. The results showed that among the frequent drivers, socialization intentions were not significantly higher for the car-owner ( $M = 4.59$ ,  $SD = 0.90$ ) than the car-sharer ( $M = 4.39$ ,  $SD = 1.05$ ,  $d = 0.20$ , 95% CI [-0.005, 0.41],  $t(352.61) = -1.93$ ,  $p = .055$ ). Among the infrequent drivers socialization intentions were also not significantly different for the car-sharer ( $M = 4.68$ ,  $SD = 1.12$ ) versus for the car-owner ( $M = 4.42$ ,  $SD = 1.12$ ,  $d = -0.24$ , 95% CI [-0.50, 0.03]  $t(226.59) = -1.78$ ,  $p = .077$ ). We must therefore be cautious in interpreting the



interaction as conclusive evidence of opposite effects in the groups of frequent and infrequent drivers, since the effect in each group was not statistically significant in itself, and confidence intervals for the effect are relatively wide (ranging from zero to large effects). The effect size of the interaction is also small, and achieved power is only 68% for the interaction.

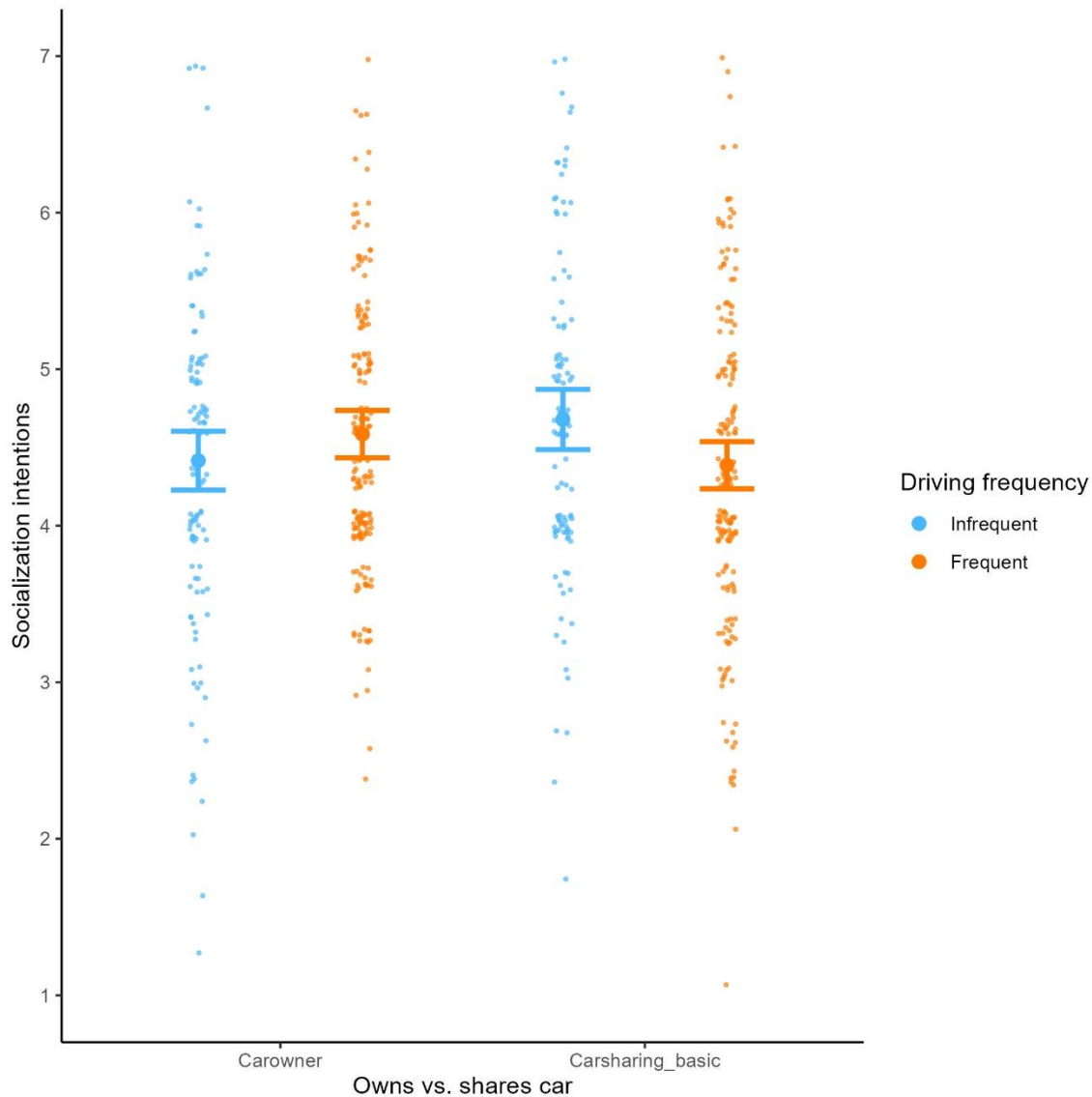


Figure 20: The plot shows the interaction effect between participants' own driving frequency and whether the target person were presented as owning vs. sharing a car on socialization intentions. Errorbars indicate 95% confidence intervals. Small dots represent data points.

We had also predicted that participants' political orientation would shape the way they responded to the car-sharing user vs. the car-owner (hypothesis 5). The results failed to support our hypothesis, as political orientation did not significantly moderate the effect of

presenting participants with a car-sharing user vs. a car-owner on socialization intentions ( $b = -0.05$ ,  $SE = 0.03$ ,  $p = .118$ ).

**Secondary analyses:** In addition to the analyses examining our main hypotheses, we also conducted a secondary set of analyses, investigating whether participants' environmental engagement moderated the effect of presenting participants with a car-sharing user vs. car-owner on socialization intentions. Results showed that environmental engagement significantly interacted with the car-sharing vs. car-owner variable in prediction socialization intentions ( $b = 0.20$ ,  $SE = 0.07$ ,  $p = .003$ ).

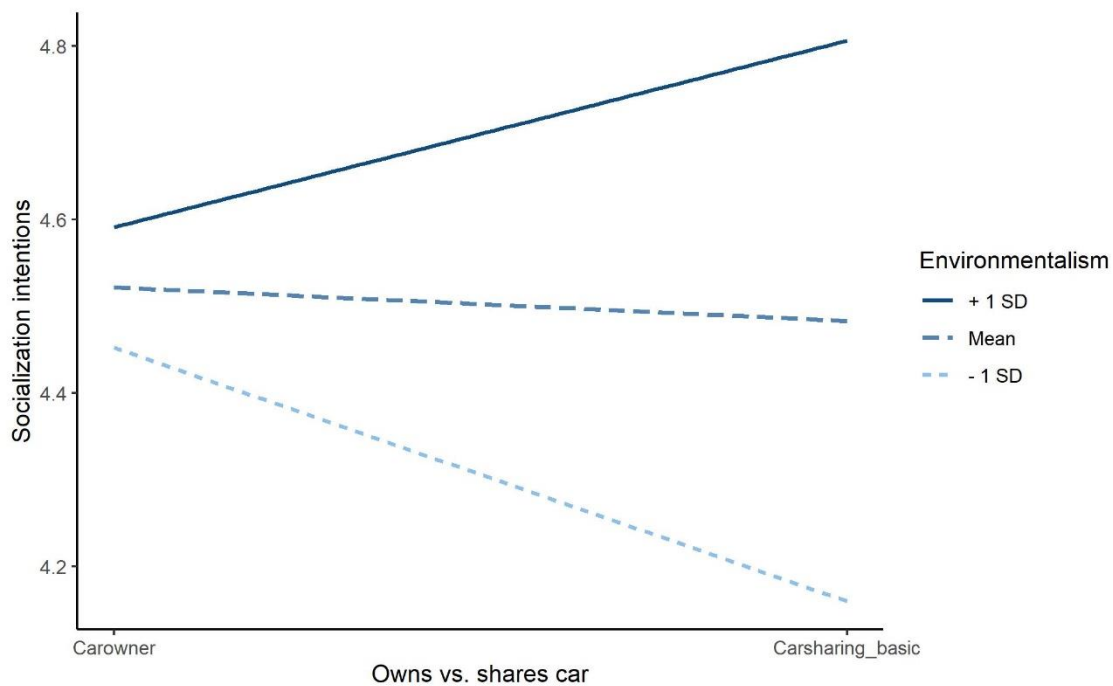


Figure 21: The plot shows the interaction effect between participants' own self-reported environmentalism and whether the target person were presented as owning vs. sharing a car on socialization intentions. Participants with lower levels of environmentalism report more positive socialization intentions towards the car-owning target person compared to the car-sharing target person. Participants with higher levels of environmentalism report more positive socialization intentions for the car-sharing target person than the car-owning target person.

As seen in Figure 4, the interaction follows the hypothesized pattern. Participants scoring high on environmentalism (1 *SD* above the mean) report more positive socialization intentions towards the car-sharing than the car-owning target person. Conversely, participants

scoring low on environmentalism (1 *SD* below the mean) report more positive socialization intentions towards the car-owning than the car-sharing target person.

### **Discussion**

This study is as far as we know the first to present experimental evidence of the social perception of users of sharing services. We find that when expressing a pro-environmental motive, a car-sharing user is perceived as more trustworthy than a car-owner. However, if the car-sharing user's motive is either unstated or focused on economic gain, they are perceived similarly to car-owners. The effect is of relatively modest size (Cohen's  $d = 0.28$ ), indicating that signaling a pro-environmental motive in itself would have a small practical impact. The finding is still interesting, as it speaks to the potential of car-sharing to signal trustworthiness for service users, and can be built on to construct more forceful manipulations in future research, if one were to seek a practically applicable effect. The potential of car-sharing to signal trustworthiness can of course be positive for the individual user, but also make the service more attractive to current non-users. Trust is a central currency of the sharing economy, as use often involves interdependencies among users. Based on our results, it seems people will be more trusting towards existing car-sharing service users if they believe their motivation for using the service is environmental, rather than for instance economic. This poses marketers for car-sharing services with an interesting dilemma; economic gain is namely an important driver for adoption of car-sharing services as opposed to car-ownership (Lamberton & Rose, 2012; Paundra, Rook, van Dalen, & Ketter, 2017), and therefore something service marketers would like to emphasize in marketing communication. But by focusing exclusively on economic or other self-serving benefits, marketing messages might serve to construct an image of the typical user as someone motivated by these benefits, which according to our findings might reduce their perceived trustworthiness compared to if the typical user had been presented as pro-environmentally motivated. This in turn could make

potential adopters worried that other users will not comply to rules and norms, such as returning cars mess-free and in time, thus reducing service attractiveness. Instead, perceiving other users as environmentally motivated seems to spur greater trust.

Another interesting insight our data provides is that it does not seem like the environmental consequences of a person's behavior matter for judging them as more or less trustworthy. Instead, the intention behind the behavior is what affects trustworthiness judgements. People see all car-sharing use as equally positive for the environment, irrespective of the user's motive, but only the person with a pro-environmental motive is judged as more trustworthy. In judging a stranger's trustworthiness, therefore, it seems more important to talk the talk, than to walk the walk. This can be linked to findings from moral psychology that people trust others more when they perceive them to behave in line with deontological principles compared to consequentialist calculations (Everett et al., 2016). How much we can trust someone is to some degree a judgement of predictability, and people likely find it easier to predict the behavior of someone following a simple, fixed rule compared to someone whose rule is to make a case-by-case calculation of pros and cons. Similarly, people find it more trustworthy when someone behaves in line with their (pro-environmental) ethical principles compared to if they engage in the exact same behavior for either an unspecified or a self-centered reason.

The finding that people perceive an environmentally motivated car-sharer to be more trustworthy may, however, have more to do with participants having positive attitudes towards pro-environmental individuals, than their attitudes towards car-sharing. Since we did not include a control condition with environmentally motivated car ownership, we cannot exclude the possibility that trustworthiness judgements would be positively affected regardless of owning vs. sharing a car, as long as the motive is pro-environmental. It also

might be that other pro-social or other-oriented motives would exert the same effect. These are interesting topics for future research.

Our study also reveals an interesting contrast between our two dependent variables: judgements of trustworthiness and socialization intentions. Whereas trustworthiness judgements seem to be uniform across participants, socialization intentions were in several cases affected by moderating variables. People's driving frequency and environmental engagement affected how positively inclined they were to socialize with the fictitious target person from the vignettes, with infrequent drivers and pro-environmental participants being more positive towards a car-sharing user than a car-owner, and frequent drivers and less environmentally engaged participants displaying the opposite pattern (although note, the simple effects were not statistically significant for the infrequent vs. frequent drivers). However, none of these individual differences significantly changed people's trustworthiness judgements towards car-owners and car-sharers. The positive trustworthiness effect of pro-environmental motivation for car-sharing held independent of participants' driving frequency, political orientation and environmental engagement. Thus, one tentative conclusion that might be drawn is that pro-environmental motivation served as a global trust cue, robust to individual differences.

In contrast to trustworthiness judgements, socialization intentions seemed to be shaped to a significant extent by individual differences among participants. A preference for socializing with others more similar to oneself seems to be the most likely explanation for these findings. An interesting aspect of this finding is that it demonstrates that in some cases, to some groups, non-ownership of a product might serve as a bonding element. By sharing instead of owning a car, car-sharing users can signal belonging to a community of others who also do not own cars, or at least do not use a car very often. This stands somewhat in contrast to the liquid vs. solid consumption framework (Bardhi & Eckhardt, 2017), where it is mainly

solid, ownership-based consumption that is seen as creating social linkages and signal important aspects of identity. Our findings suggest a more nuanced view, where consumers can use sharing services to access products while still distancing themselves from the potential negative signal effects of owning them (in this case, the negative environmental connotations of cars).

### **Limitations**

Some caveats to the findings of the present study must be noted. Firstly, we only consider one type of sharing service: car-sharing. In other domains, such as tools, clothes or sporting equipment, where ordinary ownership-based consumption perhaps does not carry the same negative environmental connotations as for cars, the effect of signaling a pro-environmental motive for sharing might have less of a positive effect. In these contexts, other kinds of non-selfish motives might be more relevant for trustworthiness judgements. Another factor that affects generalizability is that the data for this study was collected from a sample of Norwegian consumers. Findings might therefore be shaped by the history of car-sharing in Norway, where the most established services are non-commercial co-operatively run organizations. Commercial services have only become more common in recent years, and it might be that in countries with more commercial car-sharing, perceptions of users will be different. However, we believe the finding that motives matter will hold up across various contexts, as this converges with other research on environmentally friendly consumer behavior, as well as more general insights from moral psychology. In future research there is ample possibilities in examining other consumption domains, other geographic contexts, as well as other judgmental outcome variables than trustworthiness and socialization intentions.

It should also be noted that although this study was pre-registered, the pre-registration did not specify all details of all composite measures and all analyses. The confirmatory

quality of the findings should therefore be evaluated in light of the level of detail in the pre-registration. For transparency, all data, code and measures are available for re-analysis.

Another limitation of the current study was that interaction analyses were somewhat underpowered, and that the moderating variables were measured, not manipulated. The results from the interaction analyses should therefore be interpreted with care.

## **Conclusion**

This study contributes to the stream of consumer research in the sharing economy by being the first experimental investigation of social perception of sharing service users. Our results from a large, high-powered experiment with a general-population sample demonstrate that using a sharing service as an alternative to ownership can signal trustworthiness to others, but only if the motivation underlying use is of a selfless kind (pro-environmental). We also show that the positive effect of a pro-environmental car-sharing motive on trustworthiness is robust to individual difference among participants, but that people seem to be more polarized in their socialization intentions. When asked who to get to know, have as a neighbor or collaborate with, our findings offer suggestive evidence that people prefer the one that seems more similar to themselves, even though they might trust the dissimilar other more. This is theoretically interesting, and future research should continue to examine the differential social responses to people expressing different types of values and motives. Our findings also have practical implications, as they can inform managers and marketers working to promote sharing services, car-sharing in particular. Although the effect identified in our controlled experiment was small in size, we believe our results can serve as a building block for future experiments seeking higher practical applicability. We already know that people use car-sharing for different reasons. If trying to bolster trust in the image people have of a typical user, our results suggest that the pro-environmental motives of users should be emphasized in marketing communications. This study thus contributes with several interesting first insights

concerning the social perception of sharing service users, and opens up new avenues for future research.



## References

- Akbar, P., Mai, R., & Hoffmann, S. (2016). When do materialistic consumers join commercial sharing systems. *Journal of Business Research*, *69*(10), 4215–4224. <https://doi.org/10.1016/j.jbusres.2016.03.003>
- Bardhi, F., & Eckhardt, G. M. (2017). Liquid consumption. *Journal of Consumer Research*, *44*(3), 582–597. <https://doi.org/10.1093/jcr/ucx050>
- Bashir, N. Y., Lockwood, P., Chasteen, A. L., Nadolny, D., & Noyes, I. (2013). The ironic impact of activists: Negative stereotypes reduce social change influence. *European Journal of Social Psychology*, *43*(7), 614–626.
- Belk, R. (1988). Possessions and the extended self. *Journal of Consumer Research*, *15*(2), 139–168.
- Belk, R. (2010). Sharing. *Journal of Consumer Research*, *36*(5), 715–734.
- Berger, J. (2017). Are luxury brand labels and “green” labels costly signals of social status? An extended replication. *PloS one*, *12*(2), e0170216.
- Bucher, E., Fieseler, C., & Lutz, C. (2016). What’s mine is yours (for a nominal fee)—Exploring the spectrum of utilitarian to altruistic motives for Internet-mediated sharing. *Computers in Human Behavior*, *62*, 316–326. <https://doi.org/10.1016/j.chb.2016.04.002>
- Carlson, R. W., Bigman, Y. E., Gray, K., Ferguson, M. J., & Crockett, M. J. (2022). How inferred motives shape moral judgements. *Nature Reviews Psychology*, *1*(8), 468–478.
- Delacre, M., Lakens, D., & Leys, C. (2017). Why psychologists should by default use welch’s t-Test instead of student’s t-Test. *International Review of Social Psychology*, *30*(1), 92–101. <https://doi.org/10.5334/irsp.82>

- Dunham, Y. (2018). Mere Membership. *Trends in Cognitive Sciences*, 22(9), 780–793.  
<https://doi.org/10.1016/j.tics.2018.06.004>
- Escalas, J. E., & Bettman, J. R. (2005). Self-construal, reference groups, and brand meaning. *Journal of Consumer Research*, 32, 378–389.
- Everett, J. A. C., Pizarro, D. A., & Crockett, M. J. (2016). Inference of trustworthiness from intuitive moral judgments. *Journal of Experimental Psychology: General*, 145(6), 772–787. <https://doi.org/10.1037/xge0000165>
- Gullstrand Edbring, E., Lehner, M., & Mont, O. (2016). Exploring consumer attitudes to alternative models of consumption: Motivations and barriers. *Journal of Cleaner Production*, 123, 5–15. <https://doi.org/10.1016/j.jclepro.2015.10.107>
- Habibi, M. R., Kim, A., & Laroche, M. (2016). From sharing to exchange: An extended framework of dual modes of collaborative nonownership consumption. *Journal of the Association for Consumer Research*, 1(2), 277-294.
- Hamari, J., Sjöklint, M., & Ukkonen, A. (2016). The sharing economy: Why people participate in collaborative consumption. *Journal of the Association for Information Science & Technology*, 67(9), 2047–2059. <https://doi.org/10.1002/asi.23552>
- Hartl, B., Sabitzer, T., Hofmann, E., & Penz, E. (2018). “Sustainability is a nice bonus” the role of sustainability in carsharing from a consumer perspective. *Journal of Cleaner Production*, 202, 88-100.
- Hazée, S., Delcourt, C., & Van Vaerenbergh, Y. (2017). Burdens of access: understanding customer barriers and barrier-attenuating practices in access-based services. *Journal of Service Research*, 20(4), 441-456. <https://doi.org/10.1177/1094670517712877>
- Kennedy, E. H., & Horne, C. (2020). Accidental environmentalist or ethical elite? The moral

dimensions of environmental impact. *Poetics*, 82, 101448.

<https://doi.org/10.1016/j.poetic.2020.101448>

Klarin, A., & Suseno, Y. (2021). A state-of-the-art review of the sharing economy:

Scientometric mapping of the scholarship. *Journal of Business Research*, 126, 250–262.

<https://doi.org/10.1016/j.jbusres.2020.12.063>

Lakens, D., Scheel, A. M., & Isager, P. M. (2018). Equivalence testing for psychological

research: A tutorial. *Advances in Methods and Practices in Psychological Science*, 1(2),

259-269.

Lamberton, C. P., & Rose, R. L. (2012). When ours is better than mine? A framework for

understanding and altering participation in commercial sharing systems. *Journal of*

*Marketing*, 76(4), 109–125. <https://doi.org/10.1509/jm.10.0368>

Luttrell, A., Sacchi, S., & Brambilla, M. (2022). Changing impressions in competence-

oriented domains: The primacy of morality endures. *Journal of Experimental Social*

*Psychology*, 98, 104246. <https://doi.org/10.1016/j.jesp.2021.104246>

Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). An integrative model of

organizational trust. *Academy of Management Review*, 20(3), 709–734.

Mazar, N., & Zhong, C. B. (2010). Do green products make us better people? *Psychological*

*Science*, 21(4), 494–498. <https://doi.org/10.1177/0956797610363538>

McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a feather: Homophily in

social networks. *Annual Review of Sociology*, 27, 415–444.

Munafò, M. R., Nosek, B. A., Bishop, D. V., Button, K. S., Chambers, C. D., Percie du Sert,

N., ... & Ioannidis, J. (2017). A manifesto for reproducible science. *Nature Human*

*Behaviour*, 1(1), 1-9.

- Paundra, J., Rook, L., van Dalen, J., & Ketter, W. (2017). Preferences for car sharing services: Effects of instrumental attributes and psychological ownership. *Journal of Environmental Psychology, 53*, 121–130. <https://doi.org/10.1016/j.jenvp.2017.07.003>
- Puska, P., Kurki, S., Lähdesmäki, M., Siltaoja, M., & Luomala, H. (2016). Male–male status signaling through favoring organic foods: Is the signaler perceived and treated as a friend or a foe? *Psychology & Marketing, 33*(10), 843-855.
- Reed, A., Forehand, M. R., Puntoni, S., & Warlop, L. (2012). Identity-based consumer behavior. *International Journal of Research in Marketing, 29*(4), 310–321. <https://doi.org/10.1016/j.ijresmar.2012.08.002>
- Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2011). False-positive psychology: undisclosed flexibility in data collection and analysis allows presenting anything as significant. *Psychological Science, 22*(11), 1359-1366.
- Skippon, S. M., Kinnear, N., Lloyd, L., & Stannard, J. (2016). How experience of use influences mass-market drivers' willingness to consider a battery electric vehicle: A randomised controlled trial. *Transportation Research Part A: Policy and Practice, 92*, 26-42.
- Solomon, M. R. (1983). The role of products as social stimuli: A symbolic interactionism perspective. *Journal of Consumer Research, 10*(3), 319–329.
- Strabac, Z., & Listhaug, O. (2008). Anti-Muslim prejudice in Europe: A multilevel analysis of survey data from 30 countries. *Social Science Research, 37*(1), 268–286. <https://doi.org/10.1016/j.ssresearch.2007.02.004>
- Sundararajan, A. (2019). Commentary: The twilight of brand and consumerism? Digital trust, cultural meaning, and the quest for connection in the sharing economy. *Journal of*

*Marketing*, 83(5), 32–35. <https://doi.org/10.1177/0022242919868965>

Todorov, A., Pakrashi, M., & Oosterhof, N. N. (2009). Evaluating faces on trustworthiness after minimal time exposure. *Social Cognition*, 27(6), 813–833.

Uteng, T. P., Julsrud, T. E., & George, C. (2019). The role of life events and context in type of car share uptake: Comparing users of peer-to-peer and cooperative programs in Oslo, Norway. *Transportation Research Part D: Transport and Environment*, 71, 186-206.

Vesely, S., Klöckner, C. A., & Brick, C. (2020). Pro-environmental behavior as a signal of cooperativeness: Evidence from a social dilemma experiment. *Journal of Environmental Psychology*, 67, 101362.

Welte, T. H., & Anastasio, P. A. (2010). To conserve or not to conserve: is status the question? *Environment and Behavior*, 42(6), 845-863.

### Appendix Article 3

#### Attention Check

When entering the link to the experiment, participants were first ask to complete an attention check to avoid careless responses. Participants were presented with the following text:

*It is very important that participants in this survey read all questions properly. To show that you have read these instructions, we ask you to respond “Tennis” to the question below to continue to the survey.*

*Which of the following sports are you most interested in?*

Participants were then presented with nine options, including “Tennis”. Those who did not choose “Tennis” were screened out

### Overview of measures

| Table A1<br>Overview of all measures in study   |  |   |
|---|--|---|
| Measure   | Items  | Response scale  |
| Trustworthiness<br>( $\alpha = 0.90$ )          | How well do the following descriptions fit with your first impression of Thomas?<br><ul style="list-style-type: none"> <li>- Can be relied on</li> <li>- Wants what is good for others</li> <li>- Keeps his promises</li> </ul>  | 1: Does not fit at all – 7: Fits very well  |
| Socialization intentions<br>( $\alpha = 0.84$ ) | <ul style="list-style-type: none"> <li>- Would you be interested to get to know Thomas better in a social setting?</li> <li>- Would you have liked having Thomas as a neighbor?</li> <li>- Would you have wanted to collaborate with Thomas on a joint project?</li> </ul> | <ul style="list-style-type: none"> <li>- 1: Very uninterested – 7: Very interested</li> <li>- 1: Would strongly dislike – 7: Would like very much</li> <li>- 1: Would not want to collaborate – 7: Would very much have liked to collaborate</li> </ul> |
| Competence<br>( $\alpha = 0.90$ )               | How well do the following descriptions fit with your first impression of Thomas?<br><ul style="list-style-type: none"> <li>- Intelligent</li> <li>- Competent</li> </ul>   | 1: Does not fit at all – 7: Fits very well  |
| Environmental impact<br>( $\alpha = 0.77$ )     | <ul style="list-style-type: none"> <li>- How environmentally friendly do you think Thomas' transportation habits are?</li> </ul>   | <ul style="list-style-type: none"> <li>- 1: Very unfriendly to the environment – 7: Very environmentally friendly</li> </ul>  |

|                       |  |  |
|-----------------------|--|--|
|                       | <ul style="list-style-type: none"> <li>- What effect do you think Thomas' transportation habits have on the environment?</li> </ul>  | <ul style="list-style-type: none"> <li>- -3: Strong negative effect – +3: Strong positive effect (recoded to values 1-7 for analysis)</li> </ul>   |
| Filler items          | <ul style="list-style-type: none"> <li>- All in all, how happy are you with your life nowadays?</li> <li>- All in all, to what extent do you experience what you are doing in life to be meaningful?</li> </ul>  | <ul style="list-style-type: none"> <li>- 0: Not happy at all – 10: Very happy</li> <li>- 0: Not at all meaningful – 10: Very meaningful</li> </ul> |
| Political orientation | In politics one often speaks of the “left side” and the “right side”. Below is a scale where 0 represents those who stand all the way to the left politically, and 10 represents those who stand all the way to the right politically. How would you place yourself on this scale? | 0: All the way to the left – 10: All the way to the right (recoded to values 1-11 for analysis)  |
| Drivers license       | Do you have a driver's license for cars?   | 1: Yes, 2:No   |
| Car access            | Do you have access to a car in your daily life?  | 1: Yes, I own a car<br>2: Yes, I have access to a car someone else owns<br>3: Yes, I use a car-sharing service<br>4: No                            |
| Car use               | How often do you drive a car yourself?   | 1: Daily<br>2: Weekly<br>3: Monthly<br>4: More seldom  |



|                       |   |   |
|-----------------------|---|---|
|                       |   | 5: Never  |
| Distance              | Approximately how many kilometers do you live from the nearest city center?   | Number entry  |
| Car-sharing knowledge | How much knowledge would you say you have about the concept of car-sharing?   | 1: Very little knowledge<br>2: Somewhat little knowledge<br>3: Some knowledge<br>4: Somewhat good knowledge<br>5: Very good knowledge |
| Car-sharing attitude  | How positive are you to use car-sharing in the future yourself?   | 1: Very negative – 7: Very positive   |
| Environmentalism      | To what extent do you view yourself as an environmentally engaged person?   | 1: Not at all – 7: To a very large extent   |
| Economical            | To what extent do you view yourself as a person who is concerned with using money sensibly?                                 | 1: Not at all – 7: To a very large extent   |
| Manipulation check    | At the beginning of this study you read about Thomas. Which of the statements below fit with what you learned about Thomas? | 1: Thomas owns his own car<br>2: Thomas uses a car-sharing service<br>3: Don't know   |
| Age                   | What is your age?   | Age   |
| Gender                | What is your gender?  | 1: Man<br>2: Woman  |

## Data overview and pre-registered analyses

### Measures

Cronbach's alphas for the scales used.

#### ## Calculating alphas

```
psych::alpha(trust_items)$total$std.alpha
## [1] 0.8964758

psych::alpha(soc_items)$total$std.alpha
## [1] 0.8445179

psych::alpha(comp_items)$total$std.alpha
## [1] 0.9014274

psych::alpha(env_items)$total$std.alpha
## [1] 0.7670578
```

### Descriptives

Summary descriptives table by groups of 'Group'

|                    | Carowner<br>N=298 | Carsharing_basic<br>N=294 | Carsharing_econ<br>N=293 | Carsharing_env<br>N=309 | p.overall |
|--------------------|-------------------|---------------------------|--------------------------|-------------------------|-----------|
| Trust              | 4.61 (1.01)       | 4.77 (1.02)               | 4.73 (1.00)              | 4.91 (1.08)             | 0.005     |
| Socialization      | 4.52 (0.99)       | 4.50 (1.09)               | 4.54 (1.03)              | 4.57 (1.18)             | 0.873     |
| Driving_frequency: |                   |                           |                          |                         | 0.803     |
| Infrequent         | 118 (39.6%)       | 112 (38.1%)               | 123 (42.0%)              | 121 (39.2%)             |           |
| Frequent           | 180 (60.4%)       | 182 (61.9%)               | 170 (58.0%)              | 188 (60.8%)             |           |
| Political          | 5.68 (2.62)       | 5.52 (2.55)               | 5.54 (2.45)              | 5.78 (2.45)             | 0.543     |
| Env_person         | 4.56 (1.24)       | 4.68 (1.28)               | 4.65 (1.24)              | 4.61 (1.28)             | 0.718     |
| gender:            |                   |                           |                          |                         | 0.353     |
| FEMALE             | 164 (55.0%)       | 141 (48.0%)               | 152 (51.9%)              | 165 (53.4%)             |           |
| MALE               | 134 (45.0%)       | 153 (52.0%)               | 141 (48.1%)              | 144 (46.6%)             |           |
| age                | 44.8 (16.8)       | 44.1 (17.5)               | 44.9 (17.5)              | 45.1 (17.3)             | 0.911     |

*Summary descriptives table*

|                    | <b>[ALL]</b>  | <b>N</b> |
|--------------------|---------------|----------|
|                    | <b>N=1194</b> |          |
| Trust              | 4.76 (1.03)   | 1194     |
| Socialization      | 4.53 (1.07)   | 1193     |
| Driving_frequency: |               | 1194     |
| Infrequent         | 474 (39.7%)   |          |
| Frequent           | 720 (60.3%)   |          |
| Political          | 5.63 (2.52)   | 1194     |
| Env_person         | 4.62 (1.26)   | 1194     |
| gender:            |               | 1194     |
| FEMALE             | 622 (52.1%)   |          |
| MALE               | 572 (47.9%)   |          |
| age                | 44.8 (17.3)   | 1194     |

## Effect of manipulation on moderators

In order to conduct interaction analyses as specified in hypothesis 4 and 5, we needed to check whether the moderators were affected by the manipulation. We conducted a Fisher's exact test for the categorical Driving frequency moderator, and ANOVAs for the continuous moderators (Political orientation and Environmentalism). The results show that the moderators do not appear to be affected by the manipulation.

```
##
## Fisher's Exact Test for Count Data
##
## data: mydata$Group and mydata$Driving_frequency
## p-value = 0.8047
## alternative hypothesis: two.sided

##           Df Sum Sq Mean Sq F value Pr(>F)
## Group      3      14   4.538   0.715  0.543
## Residuals 1190   7548   6.343

##           Df Sum Sq Mean Sq F value Pr(>F)
## Group      3      2.1   0.713   0.449  0.718
## Residuals 1190 1890.5   1.589
```

## Hypothesis tests

### H1: Carsharer vs. carowner

H1: People will report a) higher trustworthiness judgements and b) a higher desire to socialize with a carsharing user than a car owner.

```
##
## Welch Two Sample t-test
##
## data: Trust by Own_vs_Share
## t = -1.9236, df = 589.54, p-value = 0.05489
## alternative hypothesis: true difference in means between group Carowner and group Carsharing_basic is not equal to 0
## 95 percent confidence interval:
## -0.323904003  0.003369525
## sample estimates:
##           mean in group Carowner mean in group Carsharing_basic
##                   4.612975                   4.773243

##
## Cohen's d
##
## d estimate: -0.1581342 (negligible)
## 95 percent confidence interval:
##           lower           upper
## -0.319829263  0.003560774
```

Trustworthiness judgements are higher for the carsharing user than the carowner, but the difference is just not statistically significant.

```
##
## Welch Two Sample t-test
```

```

##
## data: Socialization by Own_vs_Share
## t = 0.24268, df = 583.34, p-value = 0.8083
## alternative hypothesis: true difference in means between group Carowner and group Carsharing_basic is not equal to 0
## 95 percent confidence interval:
## -0.1474407 0.1890129
## sample estimates:
##      mean in group Carowner mean in group Carsharing_basic
##                4.518519                4.497732

##
## Cohen's d
##
## d estimate: 0.01997399 (negligible)
## 95 percent confidence interval:
##      lower      upper
## -0.1416084 0.1815564

```

There is not a statistically significant difference in socialization intentions for the carowner and the carsharing user without an explicit motive. Socialization intentions are almost identical, but here the mean value is higher for the carowner.

## H2: Environmental carsharer vs. carowner

H2: When a carsharing user is presented as having a pro-environmental motive, participants will report a) higher trustworthiness judgments and b) higher socialization intentions for the carsharing user than for the car owner.

```

##
## Welch Two Sample t-test
##
## data: Trust by Own_vs_Environment
## t = -3.4943, df = 604.15, p-value = 0.0005101
## alternative hypothesis: true difference in means between group Carowner and group Carsharing_env is not equal to 0
## 95 percent confidence interval:
## -0.4629995 -0.1298199
## sample estimates:
##      mean in group Carowner mean in group Carsharing_env
##                4.612975                4.909385

##
## Cohen's d
##
## d estimate: -0.2833276 (small)
## 95 percent confidence interval:
##      lower      upper
## -0.4435754 -0.1230798

```

Trustworthiness judgements are significantly higher for the environmentally motivated carsharing user compared to the carowner.

```

##
## Welch Two Sample t-test
##
## data: Socialization by Own_vs_Environment
## t = -0.53995, df = 593.61, p-value = 0.5894
## alternative hypothesis: true difference in means between group Carowner and group Carsharing_env is not equal to 0
## 95 percent confidence interval:
## -0.2217775 0.1261284
## sample estimates:

```

```
##      mean in group Carowner mean in group Carsharing_env
##      4.518519                4.566343
##
## Cohen's d
##
## d estimate: -0.04372758 (negligible)
## 95 percent confidence interval:
##      lower      upper
## -0.2033338  0.1158787
```

There is not a statistically significant difference between socialization intentions for the environmentally motivated carsharing user compared to the carowner, although the mean is slightly higher for the carsharing user.

### H3: Economical carsharer vs. carowner

H3: When a carsharing user is presented as having an economic motive, participants judgements of a) trustworthiness judgments and b) socialization intentions will not differ for the carsharing user and for the car owner.

```
##
## Welch Two Sample t-test
##
## data: Trust by Own_vs_Economy
## t = -1.4635, df = 588.92, p-value = 0.1439
## alternative hypothesis: true difference in means between group Carowner and group Carsharing_econ is not equal to 0
## 95 percent confidence interval:
## -0.28294109  0.04131508
## sample estimates:
##      mean in group Carowner mean in group Carsharing_econ
##      4.612975                4.733788
##
## Cohen's d
##
## d estimate: -0.1204005 (negligible)
## 95 percent confidence interval:
##      lower      upper
## -0.28212889  0.04132794
```

### Equivalence test:

```
##
## Welch Modified Two-Sample t-Test
##
## The equivalence test was significant, t(588.97) = 2.167, p = 1.53e-02
## The null hypothesis test was non-significant, t(588.97) = -1.461, p = 1.44e-01
## NHST: don't reject null significance hypothesis that the effect is equal to zero
## TOST: reject null equivalence hypothesis
##
## TOST Results
##      t  df p.value
## t-test -1.461 589  0.144
## TOST Lower  2.167 589  0.015
## TOST Upper -5.090 589 < 0.001
##
## Effect Sizes
##      Estimate      SE      C.I. Conf. Level
## Raw -0.1208 0.08268 [-0.257, 0.0154] 0.9
## Cohen's d(av) -0.1202 0.08271 [-0.2556, 0.0153] 0.9
## Note: SMD confidence intervals are an approximation. See vignette("SMD_calcs").
```

There is not a statistically significant difference in trustworthiness judgements of the carowner and the economically motivated carsharing user, although the mean for the carsharer is slightly higher.

```
##
## Welch Two Sample t-test
##
## data: Socialization by Own_vs_Economy
## t = -0.31734, df = 586.7, p-value = 0.7511
## alternative hypothesis: true difference in means between group Carowner and group Carsharing_econ is not equal to 0
## 95 percent confidence interval:
## -0.1899260 0.1370881
## sample estimates:
##      mean in group Carowner mean in group Carsharing_econ
##                4.518519                4.544937
##
## Cohen's d
##
## d estimate: -0.02613583 (negligible)
## 95 percent confidence interval:
##      lower      upper
## -0.1878602 0.1355885
```

#### Equivalence test:

```
##
## Welch Modified Two-Sample t-Test
##
## The equivalence test was significant, t(587.12) = 3.291, p = 5.29e-04
## The null hypothesis test was non-significant, t(587.12) = -0.318, p = 7.51e-01
## NHST: don't reject null significance hypothesis that the effect is equal to zero
## TOST: reject null equivalence hypothesis
##
## TOST Results
##      t      df p.value
## t-test -0.3178 587.1 0.751
## TOST Lower 3.2912 587.1 < 0.001
## TOST Upper -3.9268 587.1 < 0.001
##
## Effect Sizes
##      Estimate      SE      C.I. Conf. Level
## Raw -0.02642 0.08312 [-0.1634, 0.1105] 0.9
## Cohen's d(av) -0.02615 0.08244 [-0.1615, 0.1092] 0.9
## Note: SMD confidence intervals are an approximation. See vignette("SMD_calcs").
```

There is not a statistically significant difference in socialization intentions for the carowner and the economically motivated carsharing user, although the mean for the carsharer is slightly higher.

#### H4: Moderation by driving frequency

H4: Participants who use a car less frequently will display a stronger tendency to judge the carsharing user more positively in terms of a) trustworthiness and b) socialization intentions compared to participants who use a car more frequently.

#### Trustworthiness as DV

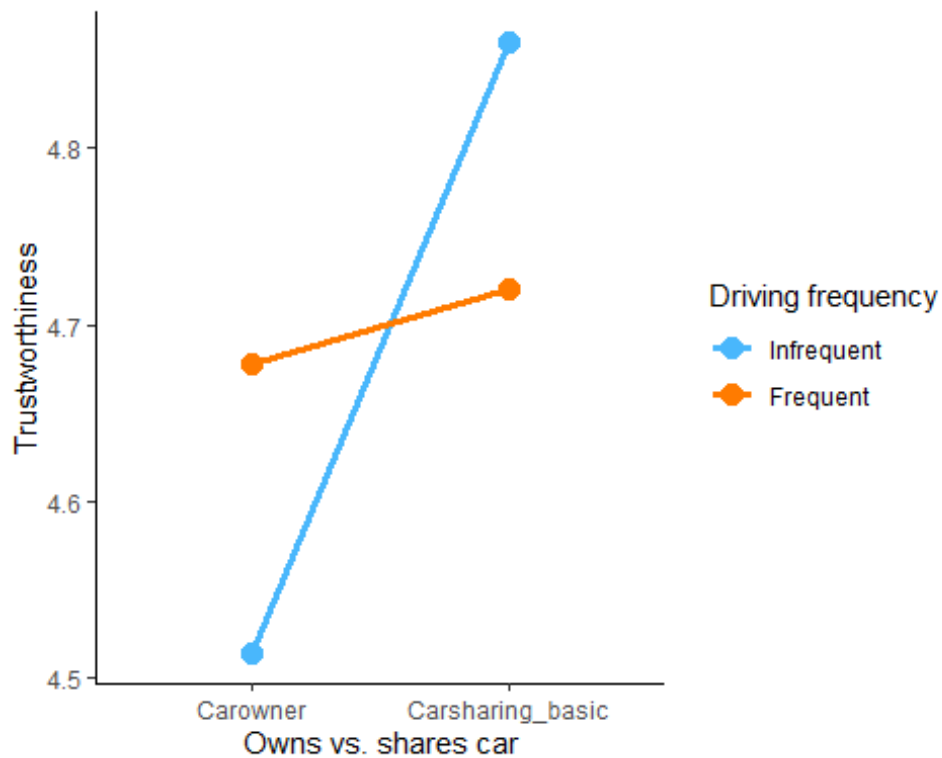
From the regression results we see that there is not a statistically significant interaction between driving frequency and the carowner vs. carsharer conditions.

```
##
## Call:
## lm(formula = Trust ~ Driving_frequency + Own_vs_Share + Driving_frequency *
##     Own_vs_Share, data = mydata)
##
## Residuals:
##     Min       1Q   Median       3Q      Max
## -3.8601 -0.6778 -0.0531  0.4859  2.4859
##
## Coefficients:
##
##               Estimate Std. Error
## (Intercept)      4.5141      0.0932
## Driving_frequencyFrequent      0.1636      0.1199
## Own_vs_ShareCarsharing_basic      0.3460      0.1336
## Driving_frequencyFrequent:Own_vs_ShareCarsharing_basic -0.3040      0.1708
##
##               t value Pr(>|t|)
## (Intercept)      48.432 < 2e-16 ***
## Driving_frequencyFrequent      1.365  0.17289
## Own_vs_ShareCarsharing_basic      2.590  0.00982 **
## Driving_frequencyFrequent:Own_vs_ShareCarsharing_basic -1.780  0.07559 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.012 on 588 degrees of freedom
## (602 observations deleted due to missingness)
## Multiple R-squared:  0.0116, Adjusted R-squared:  0.00656
## F-statistic: 2.301 on 3 and 588 DF,  p-value: 0.07622
##
##               Df Sum Sq Mean Sq F value Pr(>F)
## Driving_frequency      1    0.0   0.037   0.036 0.8488
## Own_vs_Share            1    3.8   3.791   3.698 0.0550 .
## Driving_frequency:Own_vs_Share      1    3.2   3.248   3.168 0.0756 .
## Residuals            588 602.7   1.025
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 602 observations deleted due to missingness
```

### Probing the interaction

In the preregistration we planned to use floodlight analysis to probe the interaction, however, this does not make as much sense when the moderator is a categorical, not a continuous, variable. Therefore, we will instead look at the pattern just split by the groups of drivers (frequent vs. infrequent) and the experimental conditions (carowner vs. carsharer basic).





```
## Saving 5 x 4 in image
```

To check if there are significant differences between the car-owner and car-sharer condition in one of the driving frequency groups (even though the interaction is not significant), we compare mean trustworthiness scores with t-tests:

```
##
## Welch Two Sample t-test
##
## data: Trust by Own_vs_Share
## t = -0.40097, df = 359.31, p-value = 0.6887
## alternative hypothesis: true difference in means between group Carowner and group Carsharing_basic is not equal to 0
## 95 percent confidence interval:
## -0.2480048 0.1639999
## sample estimates:
##      mean in group Carowner mean in group Carsharing_basic
##                4.677778                4.719780
##
## Cohen's d
##
## d estimate: -0.0421577 (negligible)
## 95 percent confidence interval:
##      lower      upper
## -0.2489056 0.1645902
##
## Welch Two Sample t-test
##
## data: Trust by Own_vs_Share
## t = -2.5223, df = 223.68, p-value = 0.01235
## alternative hypothesis: true difference in means between group Carowner and group Carsharing_basic is not equal to 0
## 95 percent confidence interval:
## -0.61631144 -0.07567807
## sample estimates:
```

```
##          mean in group Carowner mean in group Carsharing_basic
##                4.514124                4.860119

##
## Cohen's d
##
## d estimate: -0.3335056 (small)
## 95 percent confidence interval:
##      lower      upper
## -0.59524531 -0.07176586
```

Means among frequent drivers

*Summary descriptives table by groups of `Group`*

|               | <b>Carowner</b> | <b>Carsharing_basic</b> | <b>Carsharing_econ</b> | <b>Carsharing_env</b> | <b>p.overall</b> |
|---------------|-----------------|-------------------------|------------------------|-----------------------|------------------|
|               | <b>N=180</b>    | <b>N=182</b>            | <b>N=170</b>           | <b>N=188</b>          |                  |
| Trust         | 4.68 (1.01)     | 4.72 (0.98)             | 4.73 (1.11)            | 4.86 (1.19)           | 0.420            |
| Socialization | 4.59 (0.90)     | 4.39 (1.05)             | 4.49 (1.04)            | 4.42 (1.21)           | 0.294            |

Means among infrequent drivers

*Summary descriptives table by groups of `Group`*

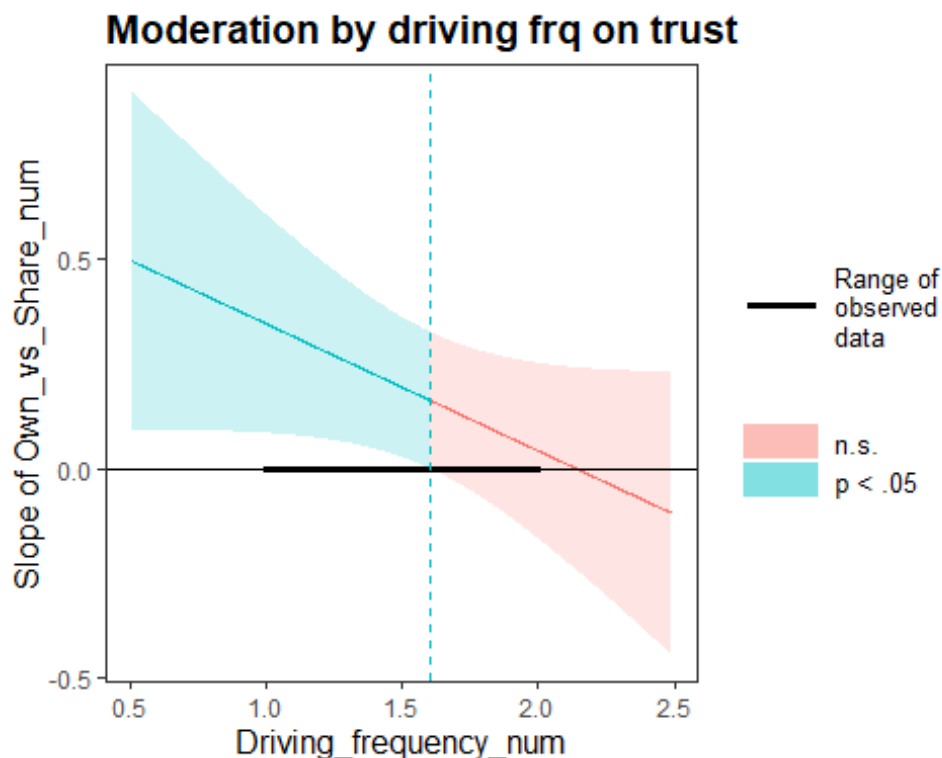
|               | <b>Carowner</b> | <b>Carsharing_basic</b> | <b>Carsharing_econ</b> | <b>Carsharing_env</b> | <b>p.overall</b> |
|---------------|-----------------|-------------------------|------------------------|-----------------------|------------------|
|               | <b>N=118</b>    | <b>N=112</b>            | <b>N=123</b>           | <b>N=121</b>          |                  |
| Trust         | 4.51 (0.99)     | 4.86 (1.08)             | 4.73 (0.82)            | 4.99 (0.90)           | 0.001            |
| Socialization | 4.42 (1.12)     | 4.68 (1.12)             | 4.62 (1.00)            | 4.79 (1.10)           | 0.058            |

We can of course pretend that the driving frequency variable is continuous, and create a floodlight analysis based on that. That would look this way. But I'm not sure whether it's really possible to interpret.

JOHNSON-NEYMAN INTERVAL

When Driving\_frequency\_num is INSIDE the interval [-3.22, 1.60], the slope of Own\_vs\_Share\_num is  $p < .05$ .

Note: The range of observed values of Driving\_frequency\_num is [1.00, 2.00]



Socialization intentions as DV

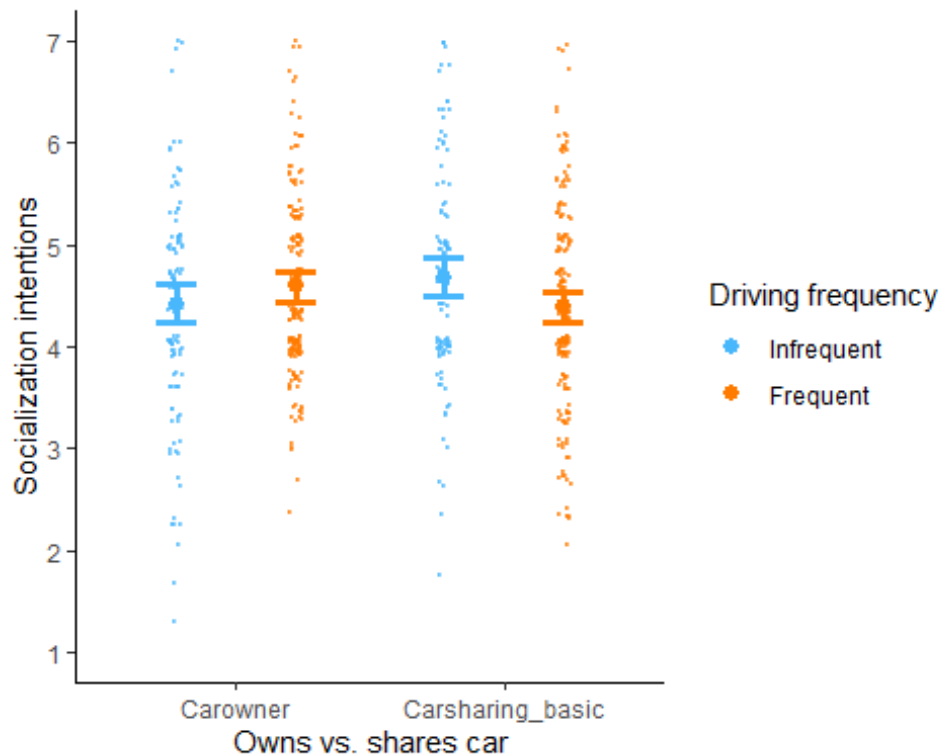
The regression results show that there is a statistically significant moderation effect of driving frequency on the carowner vs. carsharer difference in socialization intentions.

```
##
## Call:
## lm(formula = Socialization ~ Driving_frequency + Own_vs_Share +
##   Driving_frequency * Own_vs_Share, data = mydata)
##
## Residuals:
##   Min     1Q   Median     3Q      Max
## -3.6786 -0.5852 -0.0531  0.6136  2.6136
##
## Coefficients:
##                                     Estimate Std. Error
## (Intercept)                        4.41595    0.09577
## Driving_frequencyFrequent           0.16923    0.12302
## Own_vs_ShareCarsharing_basic        0.26262    0.13694
## Driving_frequencyFrequent:Own_vs_ShareCarsharing_basic -0.46136    0.17496
##
##                                     t value Pr(>|t|)
## (Intercept)                        46.110 < 2e-16 ***
## Driving_frequencyFrequent           1.376  0.16946
## Own_vs_ShareCarsharing_basic        1.918  0.05563 .
## Driving_frequencyFrequent:Own_vs_ShareCarsharing_basic -2.637  0.00859 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.036 on 587 degrees of freedom
## (603 observations deleted due to missingness)
## Multiple R-squared:  0.01256, Adjusted R-squared:  0.007512
## F-statistic: 2.488 on 3 and 587 DF, p-value: 0.05953
##
##               Df Sum Sq Mean Sq F value Pr(>F)
## Driving_frequency  1    0.5   0.490   0.457 0.49930
## Own_vs_Share      1    0.1   0.059   0.055 0.81436
## Driving_frequency:Own_vs_Share  1    7.5   7.462   6.953 0.00859 **
```

```
## Residuals          587  629.9  1.073
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 603 observations deleted due to missingness
```

### Probing the interaction

The interaction plot shows that the effect is in line with our hypothesis: The frequent drivers report higher socialization intentions for the carowner than the carsharer, whereas the infrequent drivers report wanting to socialize more with the carsharer than the carowner.



```
## Saving 5 x 4 in image
##
## Welch Two Sample t-test
##
## data: Socialization by Own_vs_Share
## t = 1.9278, df = 352.61, p-value = 0.05469
## alternative hypothesis: true difference in means between group Carowner and group Carsharing_basic is not equal to 0
## 95 percent confidence interval:
## -0.004014409  0.401491006
## sample estimates:
##      mean in group Carowner mean in group Carsharing_basic
##                4.585185                4.386447
##
## Cohen's d
##
## d estimate: 0.2024715 (small)
## 95 percent confidence interval:
##      lower      upper
## -0.004782492  0.409725406
##
## Welch Two Sample t-test
```

```
##
## data: Socialization by Own_vs_Share
## t = -1.779, df = 226.59, p-value = 0.07657
## alternative hypothesis: true difference in means between group Carowner and group Carsharing_basic is not equal to 0
## 95 percent confidence interval:
## -0.55349621 0.02826219
## sample estimates:
##      mean in group Carowner mean in group Carsharing_basic
##                4.415954                4.678571

##
## Cohen's d
##
## d estimate: -0.235172 (small)
## 95 percent confidence interval:
##      lower      upper
## -0.49655706 0.02621315
```

### H5: Moderation by political orientation

H5: More politically left-leaning participants will judge carsharing users (vs. car owners) more positively in terms of a) trustworthiness and b) socialization intentions than more right-leaning participants.

Trustworthiness as DV

Regression results show that political orientations does not significantly moderate the carowner vs. carsharer effect on trustworthiness.

```
##
## Call:
## lm(formula = Trust ~ Political + Own_vs_Share + Political * Own_vs_Share,
##     data = mydata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -3.7955 -0.6224 -0.1718  0.5057  2.4623
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    4.632897   0.140135  33.060  <2e-16
## Political      -0.003509   0.022416  -0.157   0.876
## Own_vs_ShareCarsharing_basic  0.377384   0.198722   1.899   0.058
## Political:Own_vs_ShareCarsharing_basic -0.039456   0.032253  -1.223   0.222
##
## (Intercept)          ***
## Political
## Own_vs_ShareCarsharing_basic      .
## Political:Own_vs_ShareCarsharing_basic
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.012 on 588 degrees of freedom
## (602 observations deleted due to missingness)
## Multiple R-squared:  0.01204, Adjusted R-squared:  0.007002
## F-statistic: 2.389 on 3 and 588 DF, p-value: 0.06787
```

Probing the interaction

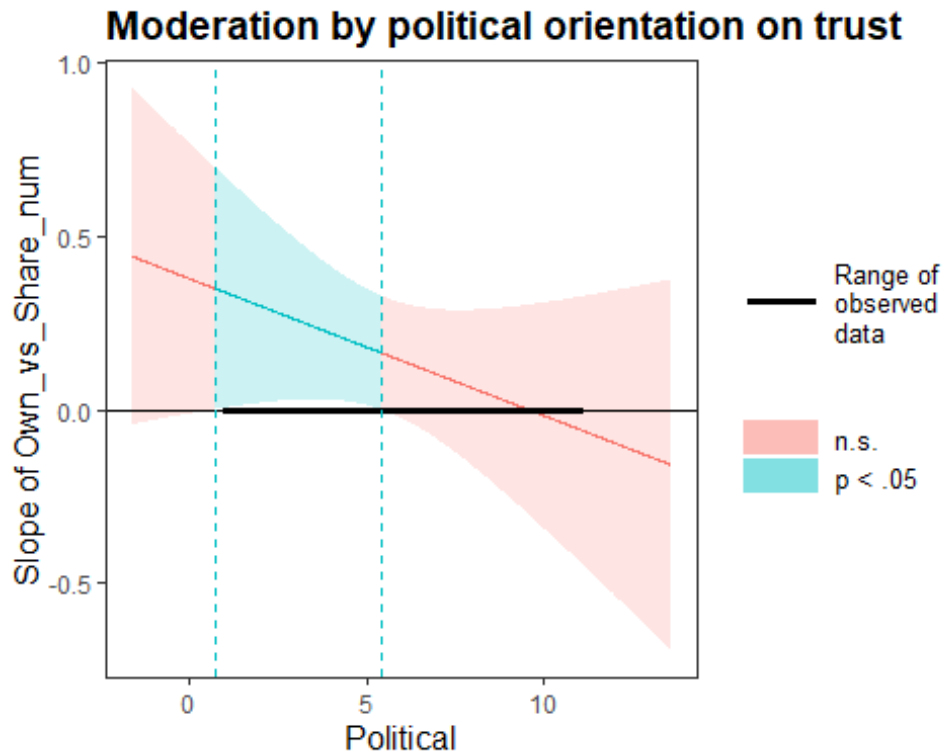
Probing the interaction, we do find a tendency in line with our hypothesis: for people who are politically left-oriented (to the left of the midpoint of the scale, which is 6), trust judgements are significantly more positive for the carsharing user than the carowner.

However, as the regression showed, the tendency is not strong enough to be reflected in a significant interaction effect.

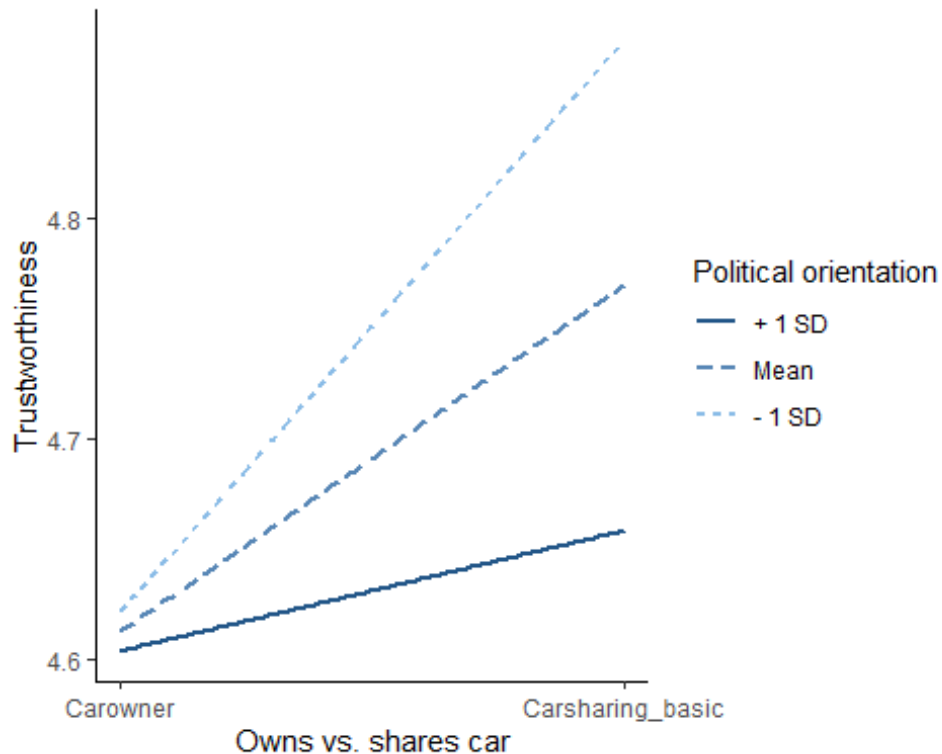
#### JOHNSON-NEYMAN INTERVAL

When Political is INSIDE the interval [0.75, 5.41], the slope of Own\_vs\_Share\_num is  $p < .05$ .

Note: The range of observed values of Political is [1.00, 11.00]



## Saving 5 x 4 in image



Socialization intentions as DV

As for trustworthiness, there is no significant interaction effect by political orientation on socialization intentions.

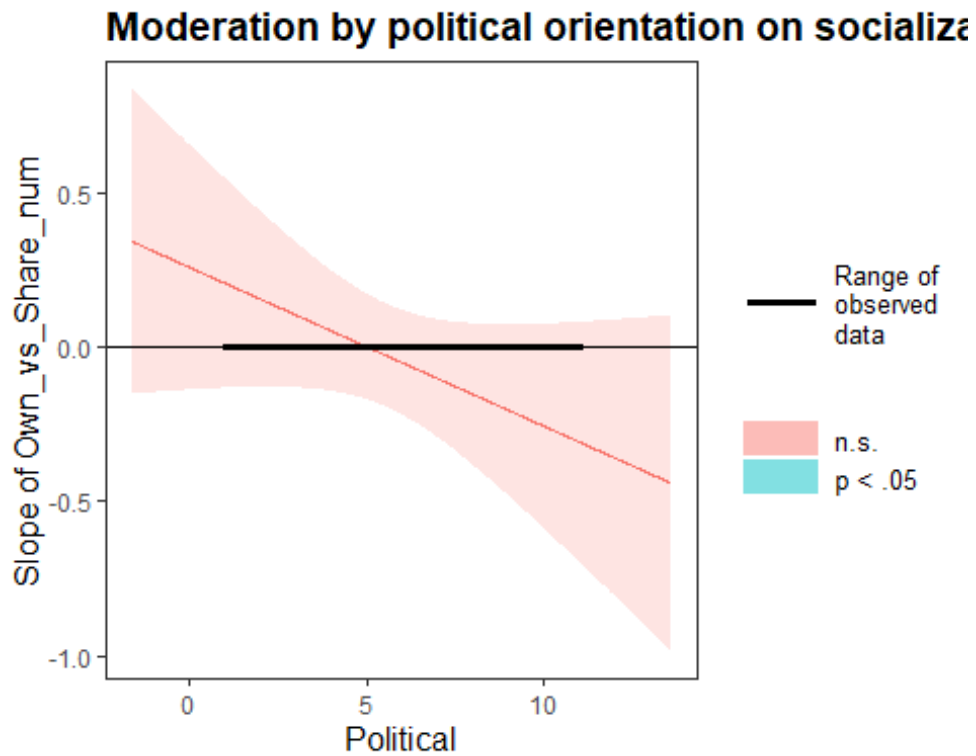
```
##
## Call:
## lm(formula = Socialization ~ Political + Own_vs_Share + Political *
##     Own_vs_Share, data = mydata)
##
## Residuals:
##     Min       1Q   Median       3Q      Max
## -3.5329 -0.5955 -0.1246  0.5362  2.8754
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    4.61194    0.14327   32.190 <2e-16 ***
## Political      -0.01646    0.02292   -0.718  0.473
## Own_vs_ShareCarsharing_basic  0.26120    0.20316  1.286  0.199
## Political:Own_vs_ShareCarsharing_basic -0.05159    0.03297  -1.565  0.118
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.035 on 587 degrees of freedom
## (603 observations deleted due to missingness)
## Multiple R-squared:  0.0148, Adjusted R-squared:  0.00976
## F-statistic: 2.938 on 3 and 587 DF, p-value: 0.0327
```

Probing the interaction

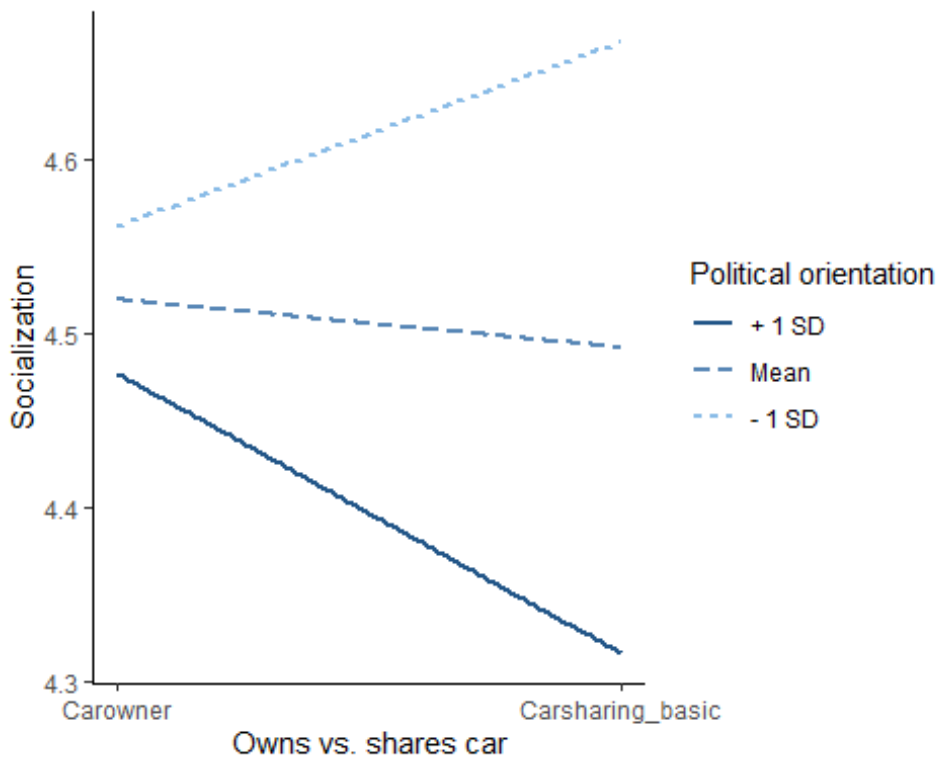
As for trustworthiness, we see a moderation pattern in line with our hypothesis for socialization intentions when using floodlight analysis, but a somewhat weaker pattern. There is no Johnson-Neyman interval.

JOHNSON-NEYMAN INTERVAL

The Johnson-Neyman interval could not be found. Is the p value for your interaction term below the specified alpha?



## Saving 5 x 4 in image





## Secondary analyses

In our preregistration we wrote that we would conduct moderation analyses using environmental engagement as a moderator as secondary analyses.

Trustworthiness as DV

No significant moderation by environmental engagement on trust.

```
##
## Call:
## lm(formula = Trust ~ Env_person + Own_vs_Share + Env_person *
##     Own_vs_Share, data = mydata)
##
## Residuals:
##     Min       1Q   Median       3Q      Max
## -4.0580 -0.6481 -0.1462  0.5205  2.5130
##
## Coefficients:
##
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)    4.24523    0.22306   19.032 <2e-16
## Env_person      0.08058    0.04718    1.708  0.0882
## Own_vs_ShareCarsharing_basic -0.04532    0.31489   -0.144  0.8856
## Env_person:Own_vs_ShareCarsharing_basic  0.04201    0.06578    0.639  0.5233
##
## (Intercept)          ***
## Env_person            .
## Own_vs_ShareCarsharing_basic
## Env_person:Own_vs_ShareCarsharing_basic
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.007 on 588 degrees of freedom
## (602 observations deleted due to missingness)
## Multiple R-squared:  0.02297, Adjusted R-squared:  0.01798
## F-statistic: 4.607 on 3 and 588 DF, p-value: 0.003385
```

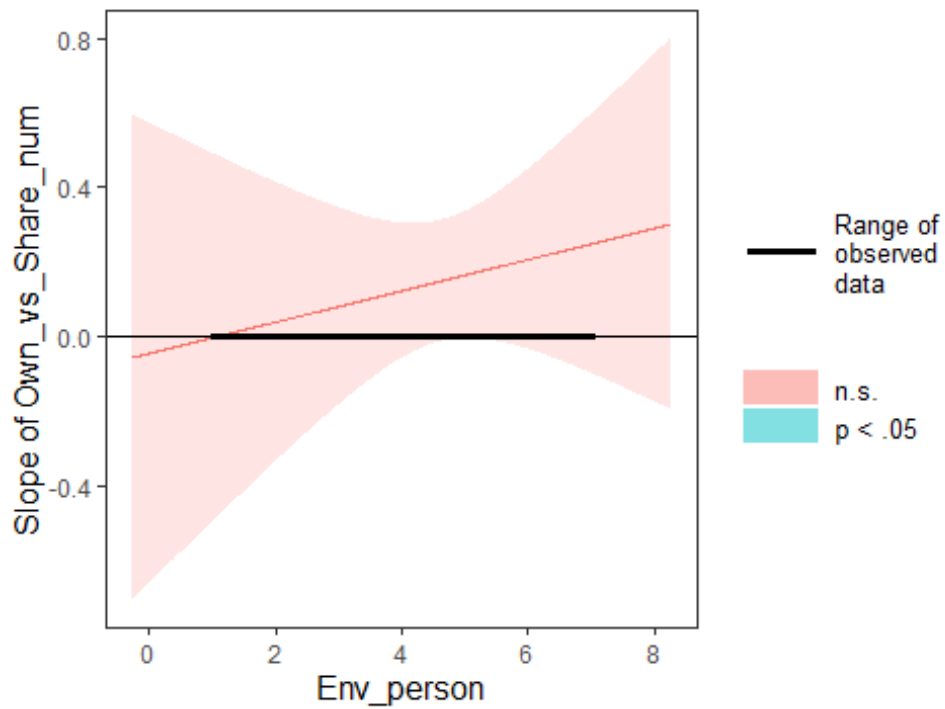
Probing the interaction

In contrast to political orientation, there is not a Johnson-Neyman interval for environmental engagement. That is: no matter at which value of environmental engagement we condition on, the effect of carowner vs. carsharer is not significant.

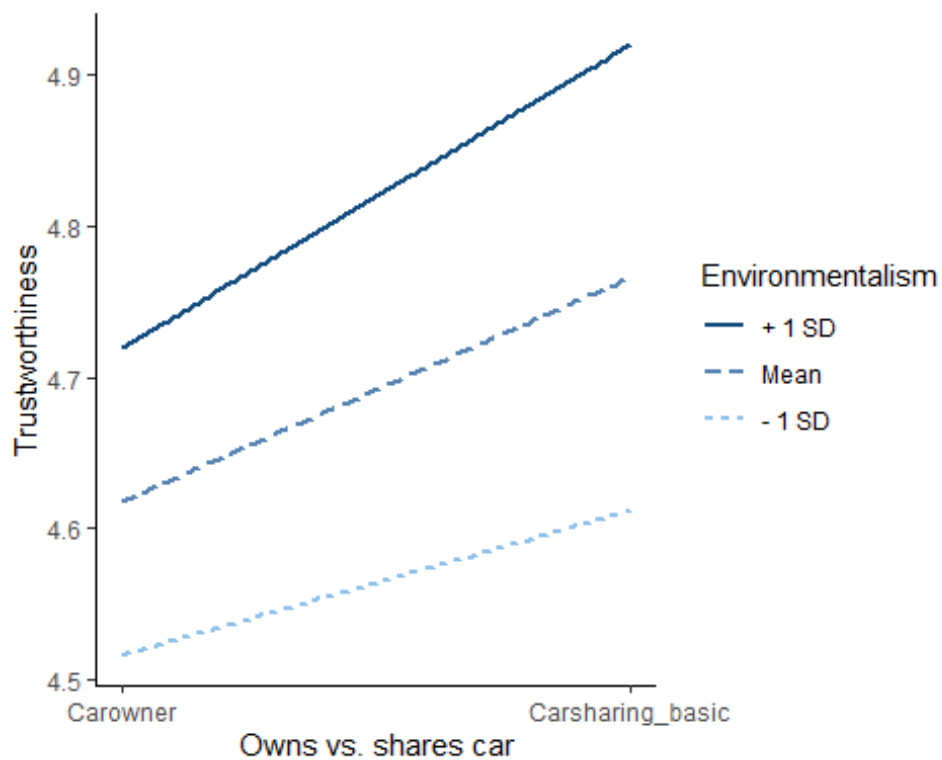
JOHNSON-NEYMAN INTERVAL

The Johnson-Neyman interval could not be found. Is the p value for your interaction term below the specified alpha?

### Moderation by environmentalism on trust



## Saving 5 x 4 in image



Socialization intentions as DV

For socialization intentions there is actually a significant interaction effect by environmental engagement.

```
##
## Call:
## lm(formula = Socialization ~ Env_person + Own_vs_Share + Env_person *
##     Own_vs_Share, data = mydata)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -3.8369 -0.5806 -0.0679  0.5705  2.9321
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)      4.26715    0.22493   18.971 < 2e-16
## Env_person        0.05510    0.04758    1.158  0.24736
## Own_vs_ShareCarsharing_basic -0.96814    0.31753   -3.049  0.00240
## Env_person:Own_vs_ShareCarsharing_basic  0.20121    0.06633    3.033  0.00253
##
## (Intercept)          ***
## Env_person
## Own_vs_ShareCarsharing_basic      **
## Env_person:Own_vs_ShareCarsharing_basic **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.015 on 587 degrees of freedom
## (603 observations deleted due to missingness)
## Multiple R-squared:  0.05193,    Adjusted R-squared:  0.04709
## F-statistic: 10.72 on 3 and 587 DF,  p-value: 7.24e-07
```

### Probing the interaction

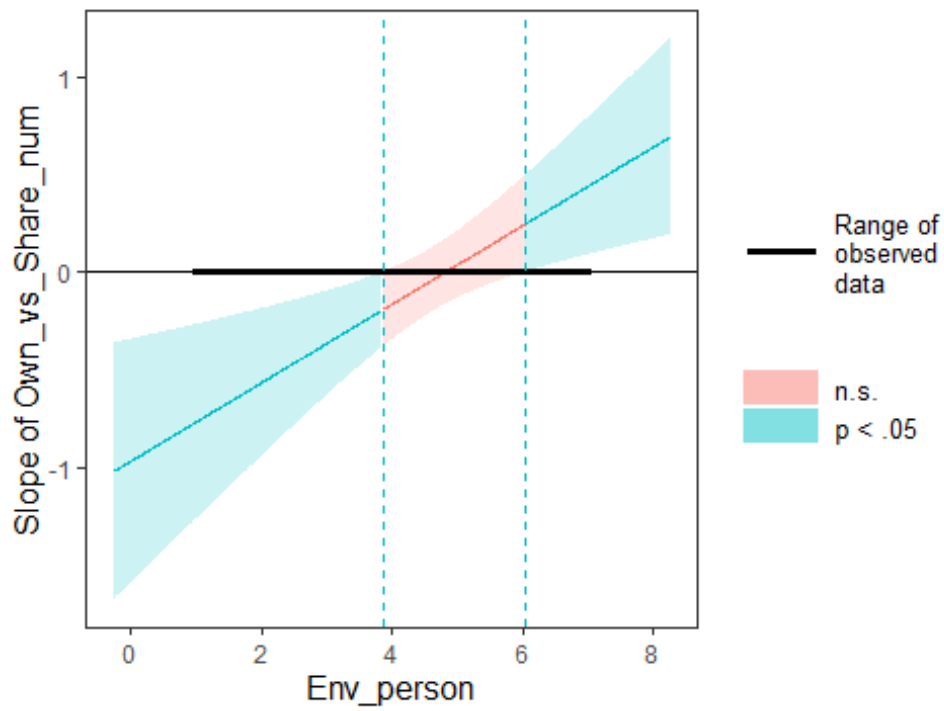
The floodlight analysis shows that the interaction follows the hypothesized pattern: For the less environmentally engaged participants (scoring below 3.86 on the scale) socialization intentions are more negative for the carsharer than the carowner. For more environmentally engaged participants (scoring above 6.04 on the scale), socialization intentions are more positive for the carsharer than the carowner.

### JOHNSON-NEYMAN INTERVAL

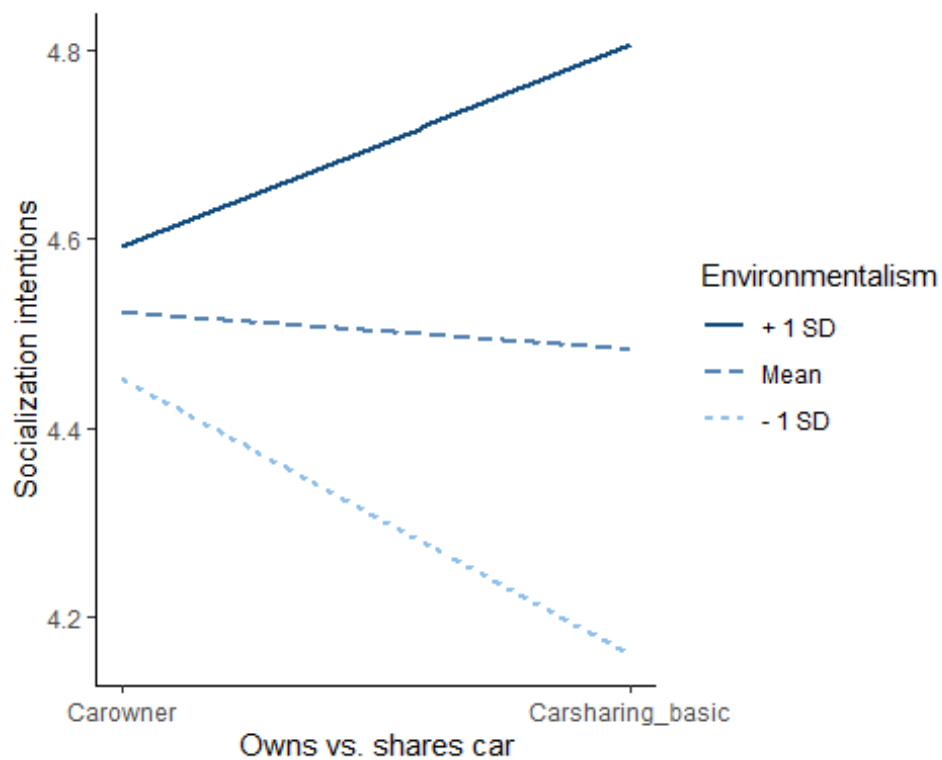
When `Env_person` is OUTSIDE the interval [3.86, 6.04], the slope of `Own_vs_Share_num` is  $p < .05$ .

Note: The range of observed values of `Env_person` is [1.00, 7.00]

### Moderation by environmentalism on socializati



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## Saving 5 x 4 in image

## Exploratory analyses

From our preregistration: “We will explore whether a pro-environmental carsharing motive affects participants’ perceptions of the environmental impact of the target persons travel behavior. We will also explore whether there are any differences in competence judgments across experimental conditions.”

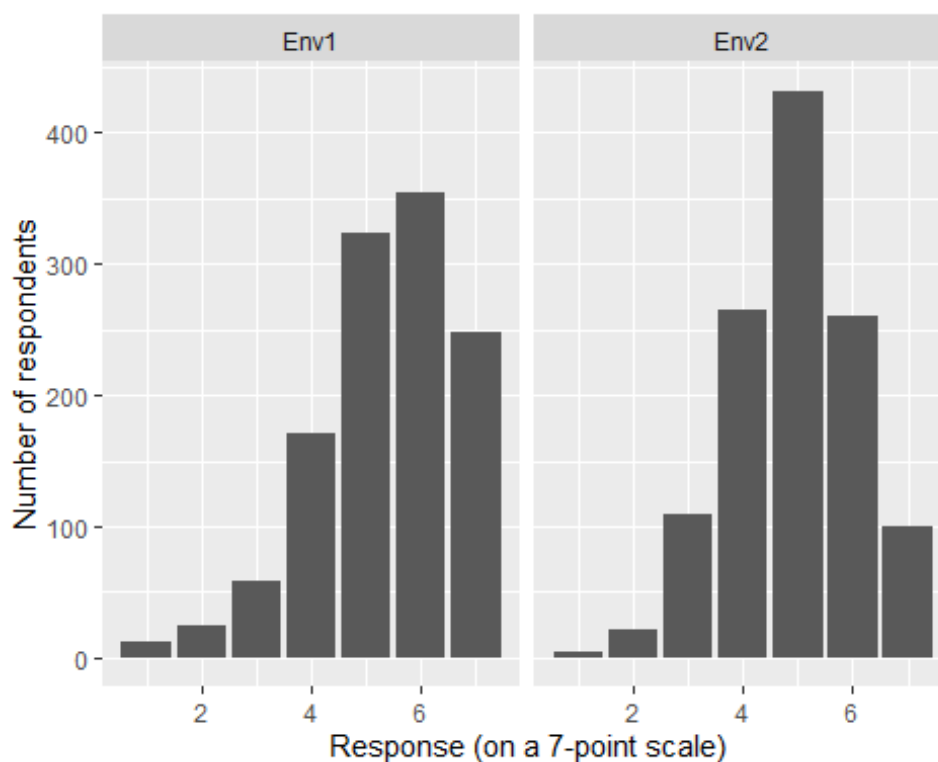
Perceptions of environmental friendliness and impact

We asked participants two questions about the target person’s travel behavior:

- Env1: How environmentally friendly do you think Thomas’ transportation habits are? (1: Not very environmentally friendly, 7: Very environmentally friendly)
- Env2: What effect do you think Thomas’ transportation habits have on the environment? (-3: Strong negative effect, +3: Strong positive effect)

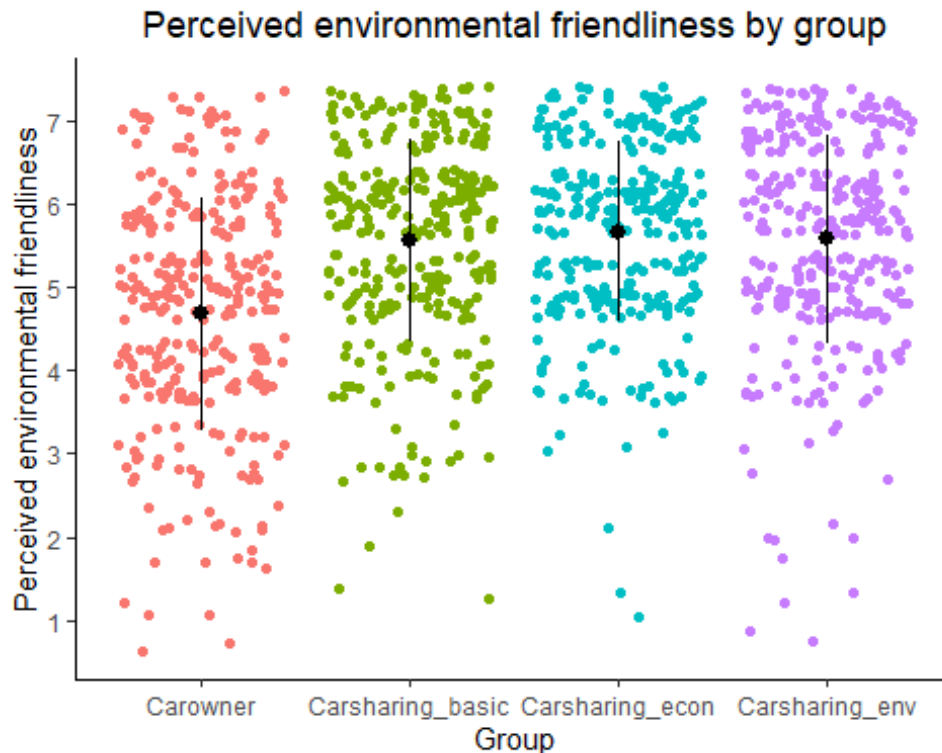
The two items are strongly positively correlated, but not completely overlapping:

```
##
## Pearson's product-moment correlation
##
## data: mydata$Env1 and mydata$Env2
## t = 27.435, df = 1192, p-value < 2.2e-16
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  0.5860903 0.6557241
## sample estimates:
##      cor
## 0.6221361
```



## Environmental friendliness of transportation habits

We start analyzing the first item, about environmental friendliness of Thomas' transportation habits. Looking at the mean plots for the four conditions, we can get an impression of whether the pro-environmental motive affected judgements of environmental friendliness. Overall, there seems to be a carsharing vs. carowner effect, but not an environmental motives effect.



We run an ANOVA to see whether there is at all an effect across groups.

```
##           Df Sum Sq Mean Sq F value Pr(>F)
## Group      3  188.3    62.77   40.71 <2e-16 ***
## Residuals 1190 1834.8     1.54
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

The ANOVA confirms a significant difference across groups. Based on the means plot, we test for mean differences between the carowner group vs. the three carsharing groups.

```
##
## Welch Two Sample t-test
##
## data:  Env1 by Own_vs_Share
## t = -8.0892, df = 581.03, p-value = 3.518e-15
## alternative hypothesis: true difference in means between group Carowner and group Carsharing_basic is not equal to 0
## 95 percent confidence interval:
## -1.081003 -0.658622
## sample estimates:
##           mean in group Carowner mean in group Carsharing_basic
##                4.681208                5.551020
##
##
## Cohen's d
##
```

```

## d estimate: -0.6643233 (medium)
## 95 percent confidence interval:
##      lower      upper
## -0.8301593 -0.4984873

##
## Welch Two Sample t-test
##
## data:  Env1 by Own_vs_Economy
## t = -9.5587, df = 558.59, p-value < 2.2e-16
## alternative hypothesis: true difference in means between group Carowner and group Carsha
ring_econ is not equal to 0
## 95 percent confidence interval:
## -1.1824758 -0.7793401
## sample estimates:
##      mean in group Carowner mean in group Carsharing_econ
##              4.681208              5.662116

##
## Cohen's d
##
## d estimate: -0.784747 (medium)
## 95 percent confidence interval:
##      lower      upper
## -0.9524325 -0.6170614

##
## Welch Two Sample t-test
##
## data:  Env1 by Own_vs_Environment
## t = -8.2481, df = 592.46, p-value = 1.043e-15
## alternative hypothesis: true difference in means between group Carowner and group Carsha
ring_env is not equal to 0
## 95 percent confidence interval:
## -1.0999037 -0.6768387
## sample estimates:
##      mean in group Carowner mean in group Carsharing_env
##              4.681208              5.569579

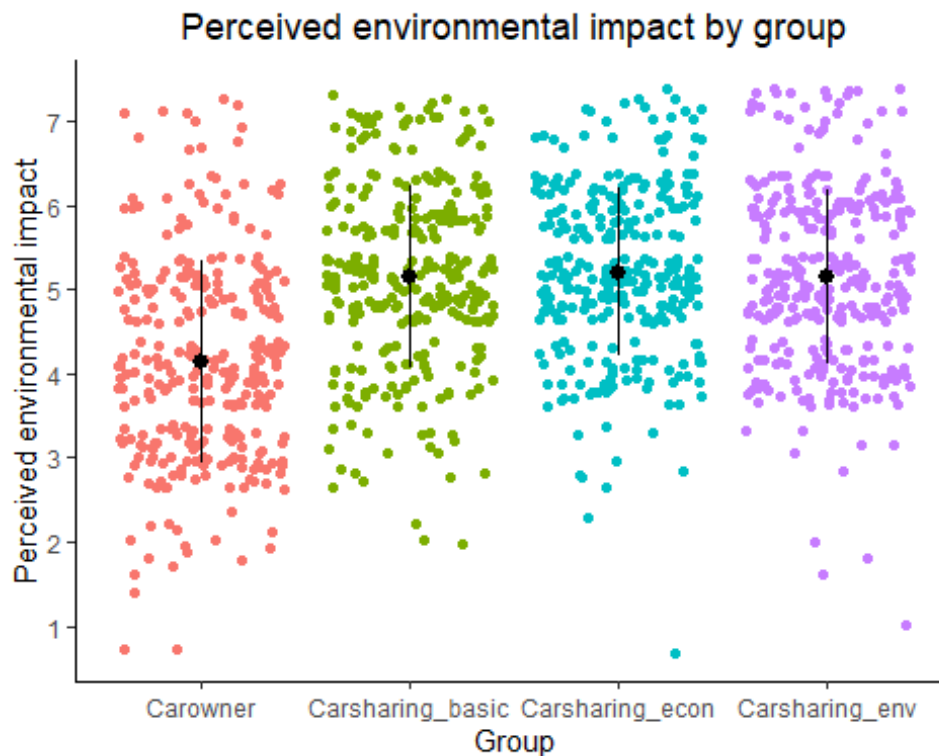
##
## Cohen's d
##
## d estimate: -0.6710011 (medium)
## 95 percent confidence interval:
##      lower      upper
## -0.8348753 -0.5071269

```

The mean differences are all statistically significant using t-tests. We can therefore conclude that people rate carsharer's transportation habits as more environmentally friendly than carowners, independent of what the motive of the carsharing is.

Environmental impact of transportation habits

We look at the same elements for the second question, about the impact of Thomas' transportation habits on the environment.



We run an ANOVA to see whether there is at all an effect across groups.

```
##           Df Sum Sq Mean Sq F value Pr(>F)
## Group      3   237.9    79.31   68.02 <2e-16 ***
## Residuals 1190 1387.5     1.17
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

The ANOVA confirms a significant difference across groups. Based on the means plot, we test for mean differences between the carowner group vs. the three carsharing groups.

```
##
## Welch Two Sample t-test
##
## data:  Env2 by Own_vs_Share
## t = -10.842, df = 585.59, p-value < 2.2e-16
## alternative hypothesis: true difference in means between group Carowner and group Carsharing_basic is not equal to 0
## 95 percent confidence interval:
## -1.2034479 -0.8343095
## sample estimates:
##      mean in group Carowner mean in group Carsharing_basic
##                4.137584                5.156463
##
## Cohen's d
##
## d estimate: -0.8906239 (large)
## 95 percent confidence interval:
##      lower      upper
## -1.0598810 -0.7213668
##
## Welch Two Sample t-test
##
## data:  Env2 by Own_vs_Economy
## t = -11.841, df = 571.92, p-value < 2.2e-16
```



```

## alternative hypothesis: true difference in means between group Carowner and group Carsha
ring_econ is not equal to 0
## 95 percent confidence interval:
## -1.2481939 -0.8930205
## sample estimates:
##      mean in group Carowner mean in group Carsharing_econ
##                4.137584                5.208191

##
## Cohen's d
##
## d estimate: -0.9726181 (large)
## 95 percent confidence interval:
##      lower      upper
## -1.1434860 -0.8017501

##
## Welch Two Sample t-test
##
## data: Env2 by Own_vs_Environment
## t = -11.003, df = 585.24, p-value < 2.2e-16
## alternative hypothesis: true difference in means between group Carowner and group Carsha
ring_env is not equal to 0
## 95 percent confidence interval:
## -1.1803513 -0.8227981
## sample estimates:
##      mean in group Carowner mean in group Carsharing_env
##                4.137584                5.139159

##
## Cohen's d
##
## d estimate: -0.8957615 (large)
## 95 percent confidence interval:
##      lower      upper
## -1.0630143 -0.7285086

```

The results are identical to the results for environmental friendliness: people perceive the carsharers' transportation habits to have a more positive impact on the environment than the carowner, regardless of the carsharer's motives.

Combining environmental impact items

Since the two environmental items are highly correlated and yield identical results, we combine them for the sake of brevity, for presentation in the paper.

*Summary descriptives table by groups of `Group`*

|                   | <b>Carowner</b> | <b>Carsharing_basic</b> | <b>Carsharing_econ</b> | <b>Carsharing_env</b> | <b>p.overall</b> |
|-------------------|-----------------|-------------------------|------------------------|-----------------------|------------------|
|                   | <b>N=298</b>    | <b>N=294</b>            | <b>N=293</b>           | <b>N=309</b>          |                  |
| Env_scale         | 4.41 (1.17)     | 5.35 (1.02)             | 5.44 (0.91)            | 5.35 (1.01)           | <0.001           |
| ##                | Df              | Sum Sq                  | Mean Sq                | F value               | Pr(>F)           |
| ## Group          | 3               | 212.2                   | 70.74                  | 66.6                  | <2e-16 ***       |
| ## Residuals      | 1190            | 1264.0                  | 1.06                   |                       |                  |
| ## ---            |                 |                         |                        |                       |                  |
| ## Signif. codes: | 0 '***'         | 0.001 '**'              | 0.01 '*'               | 0.05 '.'              | 0.1 ' ' 1        |

An ANOVA shows that there is significant differences across groups.

```

##
## Welch Two Sample t-test
##
## data: Env_scale by Own_vs_Share
## t = -10.491, df = 581.22, p-value < 2.2e-16
## alternative hypothesis: true difference in means between group Carowner and group Carsharing_basic is not equal to 0
## 95 percent confidence interval:
## -1.1211351 -0.7675559
## sample estimates:
##      mean in group Carowner mean in group Carsharing_basic
##      4.409396                5.353741

##
## Cohen's d
##
## d estimate: -0.8616005 (large)
## 95 percent confidence interval:
##      lower      upper
## -1.0303674 -0.6928335

##
## Welch Two Sample t-test
##
## data: Env_scale by Own_vs_Economy
## t = -11.946, df = 558.69, p-value < 2.2e-16
## alternative hypothesis: true difference in means between group Carowner and group Carsharing_econ is not equal to 0
## 95 percent confidence interval:
## -1.1944198 -0.8570954
## sample estimates:
##      mean in group Carowner mean in group Carsharing_econ
##      4.409396                5.435154

##
## Cohen's d
##
## d estimate: -0.9807336 (large)
## 95 percent confidence interval:
##      lower      upper
## -1.1517529 -0.8097143

##
## Welch Two Sample t-test
##
## data: Env_scale by Own_vs_Environment
## t = -10.634, df = 586.55, p-value < 2.2e-16
## alternative hypothesis: true difference in means between group Carowner and group Carsharing_env is not equal to 0
## 95 percent confidence interval:
## -1.1194978 -0.7704481
## sample estimates:
##      mean in group Carowner mean in group Carsharing_env
##      4.409396                5.354369

##
## Cohen's d
##
## d estimate: -0.8656241 (large)
## 95 percent confidence interval:
##      lower      upper
## -1.0323720 -0.6988762

```

Means on the Environmental impact scale are significantly higher for all the car-sharing conditions than the car-owner condition.

We also check if there are differences across the car-sharing conditions:

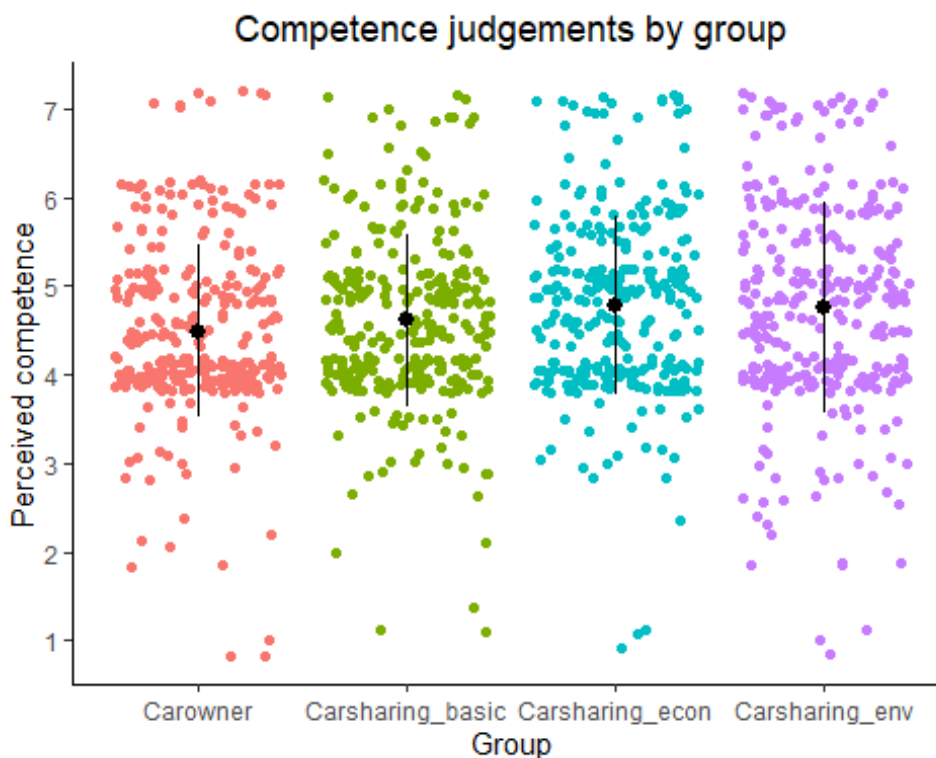
```
##           Df Sum Sq Mean Sq F value Pr(>F)
## Group      2     1.3   0.6483   0.674   0.51
## Residuals 893   858.9   0.9618
```

It seems that perceiving transportation habits as environmentally friendly is not what drives increased trustworthiness, since all the car-sharing conditions have higher perceived environmental impact, but only the one with environmental motive is higher in trustworthiness.

#### Competence judgements

We included a measure of perceived competence in order to see whether perceptions of this would differ across conditions, but without a clear hypothesis. From the literature, we know that competence judgements tend to correlate with status perceptions, but it is not obvious whether a carowner or a carsharer will be perceived as higher in status. On the one hand, one could expect carowners to be perceived as higher status and more competent because owning a car is more of a status symbol than sharing. On the other hand, behaving environmentally friendly can also be associated with status, and maybe also competence.

We start by inspecting the competence ratings across groups.



The plot shows that means do not seem to vary a lot across experimental groups. However, ANOVA results indicate that there is actually a significant group difference in competence judgements.

```
##           Df Sum Sq Mean Sq F value Pr(>F)
## Group      3     16.7   5.566   5.146 0.00155 **
## Residuals 1190  1287.2   1.082
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

We run some pairwise t-tests to check which mean differences are significant.

```
##
## Welch Two Sample t-test
##
## data: Competence by Own_vs_Economy
## t = -3.6221, df = 587.41, p-value = 0.0003175
## alternative hypothesis: true difference in means between group Carowner and group Carsharing_econ is not equal to 0
## 95 percent confidence interval:
## -0.4549033 -0.1350250
## sample estimates:
##      mean in group Carowner mean in group Carsharing_econ
##                4.484899                4.779863

##
## Welch Two Sample t-test
##
## data: Competence by Own_vs_Environment
## t = -3.0502, df = 590.38, p-value = 0.002389
## alternative hypothesis: true difference in means between group Carowner and group Carsharing_env is not equal to 0
## 95 percent confidence interval:
## -0.43978597 -0.09526975
## sample estimates:
##      mean in group Carowner mean in group Carsharing_env
##                4.484899                4.752427

##
## Welch Two Sample t-test
##
## data: Competence by Own_vs_Share
## t = -1.5677, df = 589.78, p-value = 0.1175
## alternative hypothesis: true difference in means between group Carowner and group Carsharing_basic is not equal to 0
## 95 percent confidence interval:
## -0.28305395  0.03176417
## sample estimates:
##      mean in group Carowner mean in group Carsharing_basic
##                4.484899                4.610544

##
## Welch Two Sample t-test
##
## data: Competence by Basic_vs_Environment
## t = -1.6092, df = 589.71, p-value = 0.1081
## alternative hypothesis: true difference in means between group Carsharing_basic and group Carsharing_env is not equal to 0
## 95 percent confidence interval:
## -0.31504532  0.03127939
## sample estimates:
## mean in group Carsharing_basic mean in group Carsharing_env
##                4.610544                4.752427

##
## Welch Two Sample t-test
##
## data: Competence by Basic_vs_Economy
## t = -2.0666, df = 584.38, p-value = 0.03921
## alternative hypothesis: true difference in means between group Carsharing_basic and group Carsharing_econ is not equal to 0
## 95 percent confidence interval:
## -0.330233212 -0.008405315
## sample estimates:
## mean in group Carsharing_basic mean in group Carsharing_econ
##                4.610544                4.779863
```

The t-tests show that competence judgements are significantly higher for:

- Carsharers with both environmental and economical motives compared to carowners
- Carsharer with economical motive compared to carsharer with no motive (basic)

### Correlation table

Below is a correlation table including all continuously measured variables for the study.

|  | Trust    | Social    | Comp     | Politic   | Env      | Econ    | Env_scale | Know     | Att  |
|--|----------|-----------|----------|-----------|----------|---------|-----------|----------|------|
| Socialization  | 0.58**** |           |          |           |          |         |           |          |      |
| Competence   | 0.70**** | 0.69****  |          |           |          |         |           |          |      |
| Political  | -0.08**  | -0.15**** | -0.09**  |           |          |         |           |          |      |
| Env  | 0.16**** | 0.29****  | 0.23**** | -0.27**** |          |         |           |          |      |
| Econ   | 0.12**** | 0.13****  | 0.10***  | 0.06*     | 0.29**** |         |           |          |      |
| Env_scale  | 0.39**** | 0.40****  | 0.42**** | -0.06*    | 0.18**** | 0.09**  |           |          |      |
| Knowledge  | 0.07*    | 0.15****  | 0.07**   | -0.03     | 0.29**** | 0.11*** | 0.07*     |          |      |
| Sharing_attitude                                     | 0.19**** | 0.33****  | 0.24**** | -0.28**** | 0.38**** | 0.08**  | 0.21****  | 0.36**** |      |
| Distance   | -0.02    | 0.02      | -0.02    | 0.02      | -0.02    | -0.01   | 0.01      | -0.03    | 0.01 |
| p < .0001, ****, p < .001 ***, p < .01 **, p < .05 * |          |           |          |           |          |         |           |          |      |