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Social comparisons, status and driving behavior☆

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ABSTRACT

The establishment of desirable social norms is an integral part of a well-functioning civil society. While recent evidence has demonstrated that social comparison can affect behavior in a variety of contexts, it is not clear what *type* of comparative social information is most effective. Using a large-scale field experiment to study driving practices, we sent text messages containing different types of social information to drivers in Tsingtao, China. We find two types of social information to be particularly effective in reducing traffic violations: the driving behavior of those similar to oneself and the driving behavior of those with high-status cars. Our results indicate that the combination of descriptive norms with social status is a cost-effective yet powerful intervention for establishing better driving behavior in emerging markets.

> It is not only the superior who causes himself to be copied by the inferior, the patrician by the plebeian, the nobleman by the commoner, the cleric by the layman, and, at a later period, the Parisian by the provincial, the townsman by the peasant, etc., it is also the inferior who, in a certain measure, much less, to be sure, is copied, or is likely to be copied, by the superior.
>
> — Gabriel Tarde (1888, page 187)[1]

1. Introduction

Social information has been shown to affect behavior in a variety of domains. It is well-documented that social comparisons can cause people to reduce household water consumption (Ferraro and Price, 2013) and overall energy consumption (Allcott, 2011; Allcott and Rogers, 2014), increase contributions to public goods in online communities (Chen et al., 2010), and influence voter turnout (Gerber and Rogers, 2009).[2] Despite the increased interests in social comparison research, several open questions remain. In particular, what type of social information is most effective to influence behavior? Who are influenced by social comparisons? And lastly, what is the role of status in social comparisons?

While sociologist Gabriel Tarde acknowledged that the superior could both influence and be influenced by the inferior, he asserted that "the radiation of examples from above to below is the only fact worth consideration" (Tarde, 1888, page 188). In this paper, we systematically evaluate the role of status in social comparison in a large-scale field experiment designed to reduce traffic violations, an important domain with global policy implications.

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[1] Gabriel Tarde (1843–1904), a French sociologist, is considered one of the founding fathers of sociology.

[2] We review this literature in detail in Section 2.

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Traffic fatalities have become a widespread problem. In 2010 alone, 1.24 million people were killed on the roads in various countries in the world. Of these, 80% were in middle-income countries, where only 50% of the world's registered vehicles were owned and driven (United Nations General Assembly, 2013). In addition to the loss of life, these accidents result in billions of dollars in costs for drivers and insurers (Jacobs et al., 2000). The growing awareness of the devastating scale of road traffic injuries as a global public health and development concern prompted the governments of the world to declare 2011–2020 as the Decade of Action for Road Safety (World Health Organization, 2013).

Many measures have been proposed to reduce fatalities from road accidents, including increasing road capacity; passing stricter road safety laws; increasing penalty for drinking and driving; increasing the use of seat belts, helmets and child restraints; and improving post-crash responses (World Health Organization, 2013). While many countries managed to lower the number of fatal car accidents quite effectively by the use of these measures, implementation takes time and resources. This study explores alternative ways to increase road safety through social comparison.

Specifically, our study focuses on China. Car ownership in China has an annual growth rate of 24% in recent years and China is projected to overtake the United States as the country with the largest car fleet in the world by 2030 (Chamon et al., 2008). As private car ownership is a relatively recent phenomenon in China, social norms about driving have not yet been established. Consequently, the use of social comparison can be particularly effective in influencing behavior (Buunk and Mussweiler, 2001).

In this paper, we systematically vary and evaluate the role of status on driving behavior in our interventions. The use of status-based social comparison to influence driving behavior in China is particularly promising, as the type of car one drives increasingly reflects one's social status (Barton, 2011; Branigan, 2012). As status symbols, cars signify not only stability and maturity, but also marriageability in a society with rising sex ratios.[3] Therefore, in our study, we link social information with car status to influence driving behavior.

Based on social comparison theories in economics and psychology, as well as empirical findings from lab and field experiments, we implement a large-scale field experiment in Tsingtao, a prosperous coastal city in China. In our field experiment ($n = 395,204$), we send a text message to 75,247 drivers who had received at least one ticket in the first nine months of 2013 that indicates one of the following: his or her own number of tickets, the average number of tickets among drivers of the same car brand, or the average number of tickets among drivers of a high-, medium-, or low-status car. Our results show that, compared to the control condition, drivers with an above-average number of violations reduce their future violations by 6% after receiving information on the average number of violations for drivers of their own car brand. This result replicates the effect of descriptive norms of similar others found in the lab and field. Furthermore, we find that drivers reduce their future violations by 5% after receiving information on what drivers of high-status cars do. The effect is the largest among male drivers of an economy car who reduce their future violations by 16%.[4] Our finding provides empirical evidence for Tarde's claim that social influence is channeled by status: it descends from the social superior to social inferior.

To our knowledge, this is the first large-scale field experiment that evaluates the role of status in social comparison interventions. Our findings have both theoretical and practical implications. First, it underscores the importance of status in social comparisons by demonstrating that drivers of low-status cars have the largest behavioral response to the descriptive norm of high-status drivers. Second, in the domain of traffic safely and potentially in other domains as well, the behavior of high-status individuals can serve as the guiding model for the rest of the society. Lastly, our intervention with personalized text messages is a cost-effective way to achieve socially more desirable outcomes.

2. Literature review

Our experiment is based on the idea that social comparisons impact how people behave. This section presents a discussion of the theoretical and experimental literature behind this idea.

A large body of literature in both social psychology and economics demonstrates that social comparisons affect behavior by providing us with a specific guideline of what constitutes the "right behavior" in various contexts. These effects are especially strong in ambiguous situations or when norms have not yet been established (Buunk and Mussweiler, 2001; Suls et al., 2002), a condition which is likely to be true for drivers in emerging markets.

Furthermore, when information regarding prevalent behavior is available, people exhibit a tendency to copy this behavior, a phenomenon referred to as conformity (Asch, 1956; Akerlof, 1980; Jones, 1984; Bernheim, 1994). In economics, this phenomenon can be modelled as interdependent preferences, where utility functions depend on not only the absolute value of consumption, but also the average level of consumption (Duesenberry, 1949; Pollak, 1976) or ordinal rank in the distribution of consumption (Frank, 1985; Robson, 1992; Hopkins and Kornienko, 2004).

While most of the empirical studies of social comparisons are conducted in the laboratory, using dictator games (Cason and Mui, 1998; Krupka and Weber, 2009; Duffy and Kornienko, 2010), ultimatum bargaining games (Knez and Camerer, 1995; Duffy and Feltovich, 1999; Bohnet and Zeckhauser, 2004; Ho and Su, 2009), or coordination games (Eckel and Wilson, 2007), several studies have used natural field experiments. These field experiments have been conducted in such diverse contexts as university, public radio and United Way fundraising campaigns (Frey and Meier, 2004; Shang and Croson, 2009; Kessler, 2013), online community movie ratings (Chen et al., 2010), voting (Gerber and Rogers, 2009), retirement savings (Beshears et al., 2015), residential water consumption initiatives (Ferraro and Price, 2013), and online job recruiting (Gee, 2014). Similarly, descriptive social norms have been used to reduce overall energy consumption among households across the United States (Allcott, 2011; Allcott and Rogers, 2014).

Two studies have examined the use of social forces to improve traffic safety. In a field experiment in Kenya, messages encouraging passengers to speak up against bad driving are placed on long-distance mini-buses. This intervention is shown to have reduced insurance claims by a half to two-thirds (Habyarimana and Jack, 2011). In a recent field experiment in Tsingtao, researchers find that only drivers who receive messages on their traffic tickets reduce their subsequent traffic violations, with informative messages on enforcement or safe driving having no significant effect (Lu et al., 2016). Given that our experiment was conducted in the same city, it is important to compare the two studies. In Lu et al. (2016), all text messages were sent in April 2012, 18 months before ours. Furthermore, Lu et al. (2016) find that the treatment effect faded away in eight weeks. Lastly, less than 5% of the drivers in our experiment received a treatment message in the earlier study. Therefore, we think that driver behavior in our study is unlikely to be affected by the earlier study, given the 18-month gap between the two.

Our study adds a new element to the social comparisons and social influence literature by interacting social information with

[3] The rising sex ratio has been proposed as one of the motives for household savings in China (Wei and Zhang, 2011).

[4] As we only look at a selective sample of those who had at least one traffic violation, we might have been overestimating the effect such an intervention would have on the broad population.