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Why and when do drivers engage in risky behavior on the road? While driving behavior depends on driver’s visual and auditory system’s functioning and manual skills, it is also a mental task involving decisions. By analyzing how these decisions occur, the cognitive science and rational choice theory both have the potential to answer this question from two different perspectives. A rational choice theorist would assume that drivers engage in risky behaviors in order to maximize their utility functions and would analyze the structure of their costs and benefits. A cognitive scientist, in turn, would test potential underlying psychological processes. In this essay, I am going to argue that these two approaches can be combined to form the argument and research design. I proceed as follows: I first state the assumptions, stakes and definitions, then I explore what concepts and considerations each perspective adds to my argument, then I discuss how the perspectives shape my research design, and I finally offer a brief concluding discussion.

In my argument, I would assume that while individuals optimize their behavior based on quantifiable preferences, they also tend to exhibit cognitive biases. In order to draw from both the rational choice and the cognitive science perspectives, I assume bounded rationality, that is, that the notion (popular in behavioral economics) that behavior of any individual can exhibit both rational and irrational characteristics.

Before discussing the combined approach, it is important to set the stakes. The questions about drivers’ risky behavior are important not only for scholars attempting to understand human behavior, but also for the general public interested in transportation safety. While it would not be within the scope of the proposed research to craft policy solutions, the results could inform policy discussions and eventually contribute to reducing fatalities, injuries, and material losses, whether on public roads or on racing tracks.

It is important to define term “risky behavior” in the context of the proposed research. Whether a particular behavior is risky would depend on its predictive power of accidents. Thus, strictly defining “risky driving” would require research into the causes of road accidents. Arguably, the factors predicting accidents vary between public roads and racing tracks. Despite these reservations, instances such as overtaking despite little time for the maneuver, following too closely, intentionally flashing lights from the rear, choosing excessive speed for a turn, and braking too late, all seem plausible candidates for “risky behaviors.” Thus, the occurrence of one of the behaviors listed, as decided by motorsport marshals, would be the primary measure of interest.

# The Argument

## Rational Choice

Optimization under constraints and risk is the critical element of rational choice works such as Becker (1968). The presence of this element in context of car racing competitions strongly suggests the use of rational choice theory as the framework of analysis. Car race as a setting imposes choice optimization on drivers: to increase their utility, they must follow the optimal path on the racing circuit, and minimize the loss of time when interacting with other drivers. Their choices on the track are subject to the constraints of their ability and car performance. They also deal with the risk of incurring material, health, or even life losses.

From among the three concepts Becker believes to be essential to the rational choice approach—“maximizing behavior, market equilibrium, and stable preferences”—my research approach borrows only the first two (Becker, 1976, 5). It seems that the art of driving always involves choosing the optimal way to get from point A to point B, regardless of what factors, rational or behavioral, contribute to driver’s choices. Market equilibrium does not seem to be useful in its primary meaning, because there is no market involved; however, the notion of an equilibrium will be useful in modeling driving behavior as an outcome of multiple variables. Finally, while I cannot preclude *a’ priori* that risk preferences are indeed stable in drivers, such an assumption could be violated by some results of the cognitive experiments (such as testing what factors may increase risk aversion) and thus I am aborting it.

Risky driving behavior could gain a rational explanation under the rational choice framework. As Becker (1976) states, “the economic approach does not take refuge in assertions about irrationality, contentment with wealth already acquired, or convenient ad hoc shifts in values (i.e., preferences). Rather, it postulates the existence of costs, monetary or psychic, of taking advantage of [profitable] opportunities that eliminate their profitability” (Becker, 1976, 7). Therefore, my research considers that risky driving behaviors may be rational choices, and that safe driving that avoids risk may be more costly or less profitable to drivers taking risks. In fact, the monetary costs can be associated with forgone victory prizes if driving “too cautiously,” while the psychic costs may be associated with cognitive factors such as status concerns.[[1]](#footnote-2) The latter ties the rational choice framework to potential findings from cognitive science.

## Cognitive Science

As a social situation involving the dynamics of ability, power, positioning, car racing competitions are also a suitable setting for the use of the approach of cognitive science. While risky driving behaviors may be influenced by non-social factors, the enjoyment of speed or the pursuit of victory prizes, it seems that status concerns, the opinion of others, comparing themselves and proving their own ability to others all remain plausible contributing social factors.

Drivers may succumb to cognitive biases and engage in risky behavior even though they claim they do not desire to. In the introduction to “*the* classic study on dissonance theory” by Festinger and Carlsmith (1959), cognitive dissonance is defined as “people feel a tension when they are aware of an inconsistency either between two attitudes or between an attitude and behavior” (Festinger and Carlsmith, 1959, 113). As Haidt (2006, 4-5) remarks, “mind is divided into parts that sometimes conflict.” It is quite possible that driver’s behavior on the road turns out to be inconsistent with their previously expressed attitude toward risky driving. Unexpectedly for our imagination of Buddha’s metaphor for a divided mind, the question becomes whether when it is the “rider” and when it is the “elephant” that drives the car (see Haidt, 2006, 2).

Festinger (1954, 118; 121) argues that people evaluate their abilities based on comparisons with others; thus, it seems plausible that risky behavior on the road could be attributed to the need to evaluate one’s driving ability. Another relevant fact in the article seems that individuals tend not to compare themselves with those who perform substantially higher (Festinger, 1954, 133). Is the effect the same for drivers’ rank positions? Does this extend to drivers whose cars substantially differ in performance or expensiveness?

I would also be interested in the effects of forced compliance on both the attitude towards risky driving and the behavior on the road. Janis and King (1954; 1956; cited in Festinger and Carlsmith, 1959)’s research provides evidence for private opinion shift toward the opinion one is forced to support by improvised speech, and Festinger and Carlsmith (1959, 121) similarly find that private opinion converges to the one supported by monetary incentives. These results mildly suggest that private attitude toward risky driving could potentially shift if a driver is forced to criticize it, or if the driver is disincentivized to engage in it. I would like to test whether 1) penalizing the driver for risky driving, and 2) forcing the driver to criticize it each change the driver’s attitude toward safer driving.

Finally, status and power concerns are also important for behavior, and thus they may also help explain taking risks on the road. Renshon (2015) cites findings and provides his own evidence of status importance for leaders. According to Renshon (2015, 664), “experimental evidence from psychology already suggests that the threat of losing status has detrimental effects on judgement and decision making.” Although power in the case of car racing is exerted over a machine, it still enters interpersonal dynamics: engine power is used to position oneself in the drivers’ hierarchy. Perhaps, then, risky behavior on the road results from impaired judgement and decision making abilities especially when the driver’s status is challenged, e.g. when he or she is has been overtaken by a competitor?

# Research Design

Both rational choice and cognitive science perspectives structure my argument as a process of empirical investigation with a strong quantitative component that aims to establish a causal relationships using an objective, scientific method (e.g. Becker, 1968; Becker, 1976; Festinger, 1954; Heidt, 2006). I favor causal inference by taking advantage of random assignments in experimental settings, such as those present in cognitive science (e.g. Festinger, 1959; Renshon, 2015, 689). Therefore, this perspective forms the basis of my experimental research design, and rational choice theory will introduce modifications in order to answer additional questions. In my research, I would work with individual-level models and data with an attempt to estimate an average effect on an individual, a method common to both approaches (e.g. Becker, 1968; Festinger, and Carlsmith, 1959).

## Cognitive Science

In the experimental approach of cognitive science, it is particularly important to introduce a source of variation that generates division into treatment and control groups. For example, Festinger and Carlsmith (1959, 118) use three experimental conditions, one of them being the control group and the baseline from which treatment groups diverged. Whereas the ultimate research design would depend on logistical and financial feasibility, I shall propose the most elaborate and expensive research design involving three sources of variation: 1) Race in which all drivers have the same car is the control group, and the race in which drivers have cars differing in performance is the treatment group—to measure the effect of perceiving the power of others; 2) Race in a computer game is the control group, and race in reality is the treatment—to measure differences in behavior when risk of health or material losses is introduced; 3) Race mediated by time (one driver on the track at a time, competition is about getting the shortest time) is the control group, and direct competition on the track is the treatment group—to measure if drivers engage in risky behaviors in reaction to the physical presence of the competitors or in reaction to the competitive context in general.

Addressing external validity concerns is another important part of cognitive science publications (e.g. Renshon 2015). In my study, I am excluding experiments on public roads from consideration, as they could potentially involve a high level of risk for the participants, in contrast to racing track as an enclosed terrain with appropriate safety measures and infrastructure prepared for extreme driving behaviors. Thus, there appears to be a concern about the validity of the results of my research for transportation safety purposes. Nonetheless, similarly to Renshon (2015)’s article utilizing a game to simulate the behavior of world leaders in the real world—justified by the author by an analogous dynamic (Renshon, 2015, 669), using a the results from my experiment should be valid for public roads considering how closely the racing dynamics on a track correspond to “real-life” micro-competitions[[2]](#footnote-3) on public roads, even though the risk is substantially higher.

## Rational Choice

Rational choice theory “assumes that a person commits an offense if the expected utility to him exceeds the utility he could get by using his time and other resources at other activities” (Becker, 1976, 176). Reformulating the idea in terms of my research question, this would mean that drivers engage in risky behavior when their utility from doing it exceeds their utility from safe driving. In order to understand why this might be the case, my research would develop a representation of these utilities as functions of factors to be measured during the experiments conducted in my study and other (immeasurable) factors.

Because Becker argues that “benefits and costs” influence individuals’ utilities, I would classify some existing factors as potential costs of risky behavior, such as car repair costs, and others as benefits, such as the perception of an increased status (Becker, 1976, 176). The relationship between variables potentially inducing or hampering risky behavior could be modeled and estimated in a way analogous to Becker (1968, 177), who uses a mathematical formula representing the idea that the number of individual offences is a function of individual probability of getting punished, amount of punishment, and additional factors. Analogously, I would come up with a formula for the number of accidents of risky driving behavior as a function of victory prices, race penalties, and other factors. This would allow me to use empirical data collected during the experimental competitions.

The possibility of unobserved costs of safe driving begs the question about the relative price or value of risky driving. Becker offers a way to answer it when stating that “[t]he cost of different punishments to an offender can be made comparable by converting them into their monetary equivalent or worth” such as “fines” (Becker, 1968, 179). In the case of safe driving, its cost relative to risky driving could be measured with the amount of monetary penalty needed to eliminate risky behaviors. Therefore, in the experiments, I would modify penalties to observe changes in behavior. This way, similarly to the application of Becker’s analysis for social policy, the analysis of costs and gains from drivers’ behavior could be used to understand how competition regulations could increase safety, since risky driving seems analogous to an “offence” (Becker, 1968, 180).

# Concluding Discussion

Both rational choice theory and cognitive science can be helpful in answering the question as to why and when drivers engage in risky behavior on the road by informing my argument and research design. The way to conduct the research would be collect data by conducing experiments in the form of racing competitions with different sources of variation as well as with monetary incentives and disincentives.

As an ultimate implication of my research, future studies could build upon my own piece could use my research findings to study how state policy can reduce risky driving behavior as a form of crime analogously to Becker (1976)’s social optimum analysis. Because risky behavior on the road can and, in many cases, maybe should be outlawed.

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1. This is assuming that risky behavior increases both the chance of winning the race and the chance of incurring a penalty. This assumption is, of course, somewhat problematic, because it is not obvious whether risky behavior helps or disrupts the chances of winning, since it may slow down the micro-competitors on the one hand, but it may also slow down the risky driver against all other competitors. [↑](#footnote-ref-2)
2. I introduce the term “micro-competitions” to refer to single, randomly occurring acts of competition on the road, such as overtaking a vehicle or rapidly accelerating upon traffic light change to green when motivated by the urge to compete rather than non-social factors. [↑](#footnote-ref-3)