

“Don’t You Know I Own the Road?”

The Link Between Narcissism and Aggressive Driving

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ABSTRACT

Aggressive drivers can make driving dangerous. Over 50% of traffic fatalities are caused by aggressive driving. Aggressive motorists make driving very dangerous. This research tests whether narcissists are more aggressive drivers than other individuals. Narcissists think they are special people who deserve special treatment. When they don't get the special treatment they think they deserve, narcissists often lash out at others in an aggressive manner. Narcissists might think they "own the road" and can drive anyway they want, and that other drivers should get out of their way. In the article, we conduct three studies to test the link between narcissism and aggressive driving. In Studies 1 ($N=139$) and 2 ($N=100$), Luxembourgish motorists completed a measure of narcissism and a self-report measure of aggressive driving. In Study 3 ($N=60$), American university students completed a measure of narcissism and then completed a driving simulation scenario that contained a number of frustrating elements. Several measures of aggressive driving and road rage were obtained. In all three studies, narcissism was positively related to aggressive driving. A meta-analysis found an average correlation of $r=.35$ across the three studies. This research replicates previous research linking narcissism to aggression, and extends it to a driving context.

Keywords: narcissism; aggressive driving; road rage; driving simulator

“Don’t You Know I Own the Road?”

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1. INTRODUCTION

Driving a car is the most dangerous behavior most people engage in every day. According to the World Health Organization (WHO), about 1.25 million people die each year as a result of road traffic crashes (WHO, 2016). The WHO also reports that road traffic injuries are the leading cause of death among 15 to 29 year olds (WHO, 2016). One leading cause of traffic crashes and injuries is aggressive driving, which accounts for over half of all traffic fatalities in the U.S. (AAA, n.d.) — more than any other factor (e.g., texting, drinking).

1.1. Aggressive Driving and Road Rage

It is important to distinguish between aggressive driving and road rage, which is a criminal offense. The National Highway Traffic Safety Administration (NHTSA) defines *aggressive driving* as “the operation of a motor vehicle in a manner which endangers or is likely to endanger persons or property” (NHTSA, n.d.). Examples include speeding, tailgating, blocking other drivers, driving off the road, running red lights or stop signs, honking horns, flashing bright headlights, making obscene gestures, and cursing or shouting angrily at other drivers. The NHTSA defines *road rage* as "an assault with a motor vehicle or other dangerous weapon by the operator or passenger(s) of one motor vehicle on the operator or passengers(s) of another motor vehicle or vehicles precipitated by an incident which occurred on a roadway" (NHTSA, n.d.). Examples include colliding into other vehicles or pedestrians. The present research examined the link between narcissism and instances of both aggressive driving and road rage.

1.2. Narcissism

The term narcissist comes from the Greek myth about a handsome young man named Narcissus who fell in love with his own image reflected in the still water. Narcissus said, “I burn with love for me!” In its extreme form, narcissism is a personality disorder defined as a pervasive pattern of grandiosity (in fantasy or behavior), a constant need for admiration, and a lack of empathy (American Psychiatric Association, 2013). In its less extreme form, narcissism is found at subclinical or “normal” levels in the general population and can be considered a personality trait. The present research focuses on narcissism as a personality trait rather than as a personality disorder. The trait of narcissism is measured by standardized self-report scales, such as the Narcissistic Personality Inventory (Raskin & Terry, 1988), or shorter versions (e.g., Ames, Rose, & Anderson, 2006).

Narcissists are selfish individuals who lack empathy for others; they tend to value other people only when others can help them achieve their own selfish goals. Narcissists have inflated self-views, feel superior to others, fantasize about personal successes and power over other people, believe they deserve special treatment, and believe their time is especially valuable.

1.3. Narcissism and Aggressive Driving

Narcissists think they are special people who deserve special treatment. When narcissists don't get the special treatment they think they deserve, they often lash out at others in an aggressive manner. Although narcissists have been shown to be more aggressive and violent than others across a wide variety of situations (for reviews see Bushman & Thomaes, 2011; Lambe, Hamilton-Giachritsis, Garner, & Walker, in press; Rasmussen, 2016), few studies have investigated driving situations. The road might be an especially good place to study the link between narcissism and aggression. The task of driving can often be frustrating, with such obstacles as traffic jams, construction zones, and disrespectful motorists. Most drivers brush off

such frustrations and go on their merry way. In contrast, narcissists become angry and aggressive when they don't get the respect they think they deserve (e.g., Twenge & Campbell, 2003). Thus, on the road narcissists may behave aggressively when they don't get the respect they think they deserve from other motorists. Because narcissists have an inflated view of the self and of their own importance, they might believe that they "own the road" and can drive any way they want. For example, narcissistic individuals might believe they are entitled to drive fast, and that other motorists should get out of their way.

There is another reason to suspect a link between narcissism and aggressive driving. On the road people are often trying to get to their destination in a hurry. Previous research has shown that entitled, narcissistic individuals think their valuable time is "precious" and cannot be wasted on dull tasks (O'Brien, Anastasio, & Bushman, 2011). Driving is often a dull task that people tend to do mindlessly if they know where they are going.

1.4. Overview

Although a few past studies have examined the link between narcissism and aggressive driving (Britt & Garrity, 2006; Edwards, Warren, Tubré, Zyphur, & Hoffner-Prillaman, 2013; Lustman, Wiesenthal, & Flett, 2010; Schreer, 2002; Steffgen, 2007), these studies have three limitations. First, most participants have been undergraduate students. Second, most participants have been from North America. Third, all measures of aggressive driving have been based on self-reports. The present research attempts to overcome these limitations. Studies 1 and 2 use more representative samples of participants over a broad age range from Luxembourg — a trilingual country with three official languages: Luxembourgish, German, and French. Study 3 examines aggressive driving in a driving simulator, thus providing objective measures of

aggressive driving as they occur, rather than as later reported by drivers. In all three studies, we predicted a positive correlation between narcissism and aggressive driving.

2. STUDY 1

The purpose of Study 1 was to provide an initial test of the hypothesis that narcissism is linked to aggressive driving using a more broadly representative sample of participants from Luxembourg.

2.1. Method

2.1.1. Participants

Participant were 139 Luxembourgish motorists 19 to 86 years old (41% men; $M_{\text{age}}=32.7$ years, $SD=15.9$ years), recruited using a snowball method. Undergraduate psychology students asked their friends and family members to complete the survey. The sample was 51.8% college students.

2.1.2. Procedure

First, participants completed a short version of the Narcissistic Personality Inventory (Raskin & Terry, 1988; translated into German by Schütz, Marcus & Sellin, 2004), which contained 15 items (e.g., “I like to be the center of attention” and “I am an extraordinary person”); $M=2.77$, $SD=0.53$, Cronbach $\alpha=.81$). Next, they completed the Questionnaire on Aggressive Traffic Behavior (Herzberg, 2003), which contained 38 items (e.g., “I often swear when driving a car” and “When driving my car, I easily get angry about other drivers”); $M=2.05$, $SD=0.53$, Cronbach $\alpha=.93$). Items from both scales were scored using 5-point Likert scales that ranged from 1=*strongly disagree* to 5=*strongly agree*. Total scores were obtained by averaging the individual items. After completing the questionnaires, participants were thanked and debriefed.

2.2. Results and Discussion

The data were analyzed using regression analysis. The main predictor was narcissism. Because gender and age may also influence aggressive driving, they were included as control variables. As expected, there was a significant positive relationship between narcissism and aggressive driving, $t(134)=2.53, p<.013, b=0.20, r=.30$, even after controlling for gender and age. There also was a significant negative relation between age and aggressive driving, $t(134)=-4.28, p<.0001, b=-0.012, r=-.37$. In other words, younger participants were more aggressive drivers than older participants. Men also tended to be more aggressive drivers ($M=2.06, SD=0.56$) than women ($M=2.04, SD=0.50$), although the difference was not quite significant, $t(134)=1.90, p<.06, b=0.17, d=0.035$.

3. STUDY 2

Over half (51.8%) of the participants in Study 1 were university students. The purpose of Study 2 was to replicate the findings of Study 1 using an independent sample of participants who were not university students. Participants in Study 2 were Luxembourgish motorists who were having their vehicles inspected at a service station.

3.1. Method

3.1.1. Participants

Participant volunteers were 100 Luxembourgish motorists 18 to 74 years old (49% men; $M_{age}=34.1$ years, $SD=14.3$ years). An interviewer individually approached motorists who were having their vehicles inspected at various service stations throughout the country (a national requirement) and were asked if they would be willing to participate in a “study on driving behavior, conducted by the local university.” The consent rate was 34.9%.

3.1.2. Procedure

Participants completed the same narcissism ($M=2.54$, $SD=0.55$, Cronbach $\alpha = .89$) and aggressive driving ($M=2.16$, $SD=0.56$, Cronbach $\alpha = .94$) questionnaires as in Study 1. A debriefing followed.

3.2. Results and Discussion

The data were analyzed using regression analysis, as in Study 1. As expected, there was a significant positive relationship between narcissism and aggressive driving, $t(96)=2.94$, $p<.004$, $b=0.28$, $r=.40$, even after controlling for gender and age. Replicating the findings of Study 1 using an independent sample, we found that the more narcissistic drivers are, the more angry and aggressive they report becoming on the road. As in Study 1, there also was a significant negative relation between age and aggressive driving, $t(96)=-3.36$, $p<.001$, $b=-0.012$, $r=-.40$. Men also were more aggressive drivers ($M=2.31$, $SD=0.59$) than women ($M=2.02$, $SD=0.48$), $t(96)=2.82$, $p<.006$, $b=0.27$, $d=0.54$.

4. STUDY 3

Because it is unethical to conduct experimental studies of aggressive driving using real vehicles on the road, Study 3 used a driving simulator. Previous research has shown that driving behavior in simulators closely mirrors driving behavior in actual vehicles. A review of the available evidence concluded that driving simulators “provide a valid tool for assessing a variety of driving performance measures such as speed, lateral position, brake onset, divided, attention, and risky traffic behaviors.” (Mullen, Charlton, Devlin, & Bedard, 2011, p. 13-1). We recorded speed, brake onset (i.e., tailgating), and risky traffic behaviors (e.g., driving off the road). In addition, Study 3 controlled for trait aggressiveness. We

wanted to test the relation between narcissism and aggression above and beyond any pre-existing aggressive tendencies of participants. We used two primary measures of aggressive driving: (1) tailgating, and (2) speeding. We also obtained other, less frequent measures of aggressive driving (e.g., driving on the shoulder, cursing other drivers). We had one measure of road rage — colliding into other vehicles. We predicted that narcissism would be positively related to all measures of aggressive driving and to road rage.

4.1. Method

4.1.1. Participants

Data collection in driver simulation experiments is quite expensive. According to NHTSA (2016), the minimum acceptable number of participants for driving simulation studies involving driver distraction from in-vehicle devices (e.g., texting) is 24 participants per group. Our goal was to obtain a total sample of 60 participants. We continued to test participants until we achieved that goal. A total of 77 participants were tested, but 17 did not complete the study (9 experienced motion sickness, 1 had no experience driving, 6 sessions were terminated due to technical problems with the simulator, and 1 session was terminated due to experimental error). The final sample consisted of 60 university students (75% men).

4.1.2. Procedure

Participants were tested individually. Prior to the experiment, participants reported their gender and completed the short Narcissistic Personality Inventory (Ames et al., 2006; Cronbach $\alpha = .67$), which contains 16 pairs of forced choice items [e.g., “I am much like everybody else” (non-narcissistic) versus “I am an extraordinary person” (narcissistic), and “I insist upon getting

the respect that is due me” (narcissistic) versus “I usually get the respect I deserve” (non-narcissistic)]. A total score was obtained by summing the number of narcissistic responses, which could range from 0 to 12 ($M=5.02$, $SD=2.93$). To control for trait aggressiveness, participants also completed the short Aggression Questionnaire (Bryant & Smith, 2001), which contains 12 items (e.g., “Given enough provocation, I may hit another person,” “I can't help getting into arguments when people disagree with me”). Items were scored using 5-point Likert scales that ranged 1=*extremely uncharacteristic of me* to 5=*extremely characteristic of me*. Total scores were obtained by averaging the individual items ($M=2.10$, $SD=0.63$, Cronbach $\alpha=.84$).

Participants were told that the researchers were studying how quickly people became accustomed to driving in a driving simulator. The study used a Realtime Technologies Inc. driving simulator. The car was a 2010 Honda Accord cab mounted on a 6-degrees of freedom motion-base platform. The vehicle was surrounded by a cylindrical projection screen lit by five projectors, which gave a 260° edge-blended field of view. The rear-view mirror reflected an additional projected screen to the rear of the car. Liquid crystal displays (LCD) were used to provide a realistic view in the side mirrors. The interior of the vehicle was the same as for the original car, although the horn was non-functional. A simulated dashboard displayed speed, gear, and turn signal information. Speakers external to the vehicle provided simulated environmental audio (e.g., engine noise, wind noise, passing vehicles).

The driving course was created using SimCreator (RTI, Inc.) software. The driving scenario mimicked a two-lane road with occasional curves, and had a posted speed of 60 miles per hour (MPH) [96.6 kilometers per hour (KPH)]. The simulated traffic was programmed to have an average speed of 55 MPH (88.5 KPH), 5 MPH slower than the posted speed. Five frustrating events were programmed to take place at pre-determined spots in the driving scenario:

(1) a car pulled out in front of the participant from a side-road, (2) traffic jam (i.e., complete road blockage with many cars in front of the participant. After the participant stopped and waited 10 seconds, the other cars slowly pulled ahead. After the participant started driving again, the other cars stopped again for 10 seconds), (3) construction zone (i.e., one lane was closed, and traffic slowed down as the lanes merged), (4) a mimic car that copied the participant's car, and (5) a short traffic light (i.e., 60 seconds red and 5 seconds green). The other driving events were random. Although all the other cars were computer generated and controlled, participants were told that other participants were driving some of the other vehicles. This made the driving situation more realistic, and gave participants targets for their anger and aggression.

Each participant practiced driving for 3-5 minutes to get used to the simulator and to indicate whether he or she experienced motion sickness. Next, the participant drove the simulated scenario, which took 15-25 minutes. Participants were told to get to the end of scenario as quickly as possible, and that the top two finishers would each receive a \$25 gift card. A debriefing followed.¹

4.2. Results and Discussion

4.2.1. Measures of Aggressive Driving

4.2.1.1. Tailgating

We used three tailgating measures based on the number of seconds between the participant's car and the car in front of them. It is widely recommended that drivers use a 4-second following rule at speeds above 30 MPH (48.3 KPH), in heavy traffic, or when there are many obstacles (Nationwide, n.d.), as in the present driving scenario. Under normal driving conditions and speeds below 30 MPH, a 3-second rule is recommended. For speeds above 30 MPH, a 3-second rule is considered risky and dangerous. We also considered a 2-second rule,

which is considered extremely risky and dangerous. Tailgating was specifically calculated as the proportion of time participants broke each of the three rules: 2-second (range=0.079 to 0.55, $M=0.26$, $SD=0.12$), 3-second (range=0.16 to 0.59, $M=0.37$, $SD=0.11$), and 4-second (range=0.20 to 0.64, $M=0.45$, $SD=0.11$).

Results are depicted in Table 1. As expected, there was a significant positive relationship between narcissism and all three measures of tailgating (2-second: $r=.35$, $p=.00639$; 3-second: $r=.32$, $p=.0141$; 4-second $r=.31$, $p=.0173$), even after controlling for gender and trait aggressiveness. The average correlation across the three measures of tailgating was $r=.32$. Although in the predicted direction, gender and trait aggressiveness were not significantly related to tailgating.

4.2.1.2. *Speeding*

Average speed is a poor measure of speeding because it depends heavily on random influences. Instead, we used a relatively high speed cutoff before averaging because it removes the variability due to traffic when the participant is not travelling at a high speed. We chose 50 MPH (80.5 KPH) because it included all participants (range=55.4 to 81.4, $M=62.7$, $SD=3.89$).

As expected, there was a significant positive relationship between narcissism and speeding ($r=.35$, $p=.00568$), even after controlling for gender and trait aggressiveness. Although in the predicted direction, gender and trait aggressiveness were not significantly related to speeding.

4.2.1.3. *Other Measures of Aggressive Driving*

Other measures of aggressive driving were combined to reduce the probability of Type I errors that could occur by conducting multiple tests for separate measures. These included off-road driving (e.g., crossing the double solid yellow lines into oncoming traffic, driving on the

shoulder), attempting to honk the horn, verbal aggression (e.g., “This guy’s a dickhead”), and aggressive gestures (e.g., giving another driver the middle finger). A Poisson regression showed a positive relation between narcissism and other measures of aggressive driving ($r=.46$, $p<.0001$). Although in the predicted direction, gender and trait aggressiveness were not significantly related to speeding.

4.2.1.4. Road Rage.

Three participants collided into other drivers. The narcissism scores for participants who collided into other drivers was significantly higher ($M=10.67$, $SD=2.52$) than for participants who did not collide into other drivers ($M=4.73$, $SD=2.65$), $z=3.81$, $p<.0001$, $d=2.28$.

The findings of Study 3 replicate those of Studies 1 and 2. In Study 3, narcissism was a stronger predictor of aggressive driving than trait aggressiveness was.

5. META-ANALYSIS

We used meta-analysis to combine the three correlations from Studies 1-3. Because the distribution of the correlation coefficient is not normally distributed unless the population correlation coefficient equals zero, Fisher’s z transformation was applied to each correlation coefficient before combining them. Each z -score was weighted by the inverse of its variance (i.e., $N-3$). Thus, larger studies get more weight when effect-size estimates are pooled. Each study contributed only one correlation. For Study 3, we used the average zero-order correlation across the three measures of aggressive driving (i.e., tailgating: $r=.32$; speeding: $r=.35$; other aggressive driving behaviors $r=.46$), which was $r=.38$. Data were analyzed using Comprehensive Meta-Analysis (CMA) software (Borenstein, Hedges, Higgins, & Rothstein, 2011). The correlations across the three studies were homogeneous, $\chi^2(2)=0.80$, $p=.672$, $I^2=0.00$. The average correlation between narcissism and aggressive driving across the three studies was $r=.35$, with a 95%

confidence interval ranging from .25 to .45, which excludes the value zero ($z=6.28$, $p<.0001$). This average correlation exceeds the 75th percentile ($r=.30$, Lipsey & Wilson, 1993), and Cohen's (1988) conventional value for a "moderate" sized effect ($r=.30$).

6. GENERAL DISCUSSION

In the three studies reported in this article, we hypothesized that narcissists would be more aggressive drivers than other individuals. The results from all three studies were consistent with this hypothesis. The higher the level of narcissism, the more likely motorists were to drive in an aggressive manner. Our findings are consistent with other findings, but extend those findings by considering participants other than college students from North America (Studies 1 & 2), and by considering aggressive driving in a driving simulator in real time, rather than self-reported aggressive driving recalled from the past (Study 3).

6.1. Limitations and Future Research

Like all studies, the studies reported in this article have their limitations. Although Studies 1 and 2 used more representative samples of participants, both samples were from Luxembourg. Thus, we cannot be sure that the results generalize to individuals from other countries.

The sample size from Study 3 was also relatively small ($N=60$). However, it is time consuming and expensive to collect driving simulation data.

In order to avoid depleting the cognitive resources of study participants and causing fatigue (e.g., Porter, Whitcomb, & Weitzer, 2004), the present research used shorter questionnaires that treated narcissism as a unitary construct. Researchers have proposed that there are two types of narcissists: grandiose and vulnerable (e.g., Wink, 1991). Although both types are high in narcissism, grandiose narcissists have high self-esteem, whereas vulnerable

narcissists have low self-esteem. The narcissism measures used in the present research assessed grandiose narcissism. Future research should assess whether vulnerable narcissism is also related to aggressive driving and road rage. Researchers have also identified various dimensions of narcissism (e.g., authority, self-sufficiency, superiority, exhibitionism, exploitiveness, vanity, entitlement; Raskin & Terry, 1988). Future research should also assess what dimensions of narcissism are most predictive of aggressive driving and road rage.

6.2. Conclusion

In conclusion, narcissism appears to be a risk factor for aggressive driving. Narcissists' sense of entitlement may lead them to believe that they have more rights on the road than other drivers have, and may therefore feel more justified in driving aggressively. Our findings suggest that narcissistic drivers could benefit from courses on driving safety.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Footnotes

1. The study also included two manipulated variables: (1) the presence of billboards advertising alcoholic versus nonalcoholic beverages on the driving course (there also were other billboards), and (2) the presence of a gun versus a tennis racket on the passenger seat. The latter results are described in a different manuscript (Bushman, Kerwin, Whitlock, & Weisenberger, 2017).

Table 1. Regression analysis results and effect-size estimates for tailgating and speeding measures. Poisson log regression results for composite measure of aggression.

Source	2-second rule	3-second rule	4-second rule	50 mph	Composite aggression
Intercept	$b_0=0.26$, $t(56)=6.65$, $p<.0001$	$b_0=0.37$, $t(56)=9.42$, $p<.0001$	$b_0=0.44$, $t(56)=11.80$, $p<.0001$	$b_0=62.40$, $t(56)=60.00$, $p<.0001$	$b_0=-4.03$, $z=-$ 3.81, $p=.00014$
Narcissism	$b=0.27$, $t(56)=2.46$, $p=.017$, $r=.35$	$b=0.23$, $t(56)=2.16$, $p=.0354$, $r=.32$	$b=0.22$, $t(56)=2.12$, $p=.0388$, $r=.31$	$b=7.46$, $t(56)=2.58$, $p=.0125$, $r=.35$	$b=1.84$, $z=2.91$, $p=.00361$, $r=.46$
Aggressiveness	$b=0.024$, $t(56)=0.74$, $p=.463$, $r=.13$	$b=0.020$, $t(56)=0.62$, $p=.539$, $r=.10$	$b=0.0087$, $t(56)=0.29$, $p=.775$, $r=.05$	$b=0.39$, $t(56)=0.47$, $p=.644$, $r=.11$	$b=0.77$, $z=3.74$, $p=.000183$, $r=.30$
Gender	$b=0.045$, $t(56)=0.97$, $p=.338$, $d=0.35$, $M_{men}=.31$, $SD=.16$, $M_{women}=.26$, $SD=.14$	$b=0.061$, $t(56)=1.35$, $p=.181$, $d=0.46$, $M_{men}=.43$, $SD=.16$, $M_{women}=.36$, $SD=.14$	$b=0.092$, $t(56)=1.59$, $p=.117$, $d=0.55$, $M_{men}=.51$, $SD=.16$, $M_{women}=.43$, $SD=.14$	$b=0.73$, $t(56)=0.60$, $p=.551$, $d=0.26$, $M_{men}=63.20$, $SD=4.50$, $M_{women}=62.1$, $SD=4.50$	$b=-0.26$, $z=-$ 0.94, $p=.346$, $d=-0.25$, $M_{men}=0.91$, $SD=1.84$, $M_{women}=1.40$, $SD=2.53$