

Small Penises and Fast Cars: Evidence for a Psychological Link

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Abstract

We made male participants believe that they had a relatively small or large penis by giving them false information about the average size of other men. They then rated sports cars as more desirable if they felt they had a small penis. Other trials in the experiment manipulated self-esteem in different ways and measured ratings for other luxury products, but found no connection. As men aged past 29, the effect of penis size on desire for sports cars grew stronger.

Keywords

Luxury goods, self-esteem, penis size, consumer psychology

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Significance statement

The link between driving a fast sports car and having a small penis is a widespread cultural trope, discussed by academics from Freudian analysts to evolutionary theorists. For the first time, we show that it is grounded in a psychological truth. We found that experimentally manipulating men, especially older men, to feel that they have relatively small penis caused them to increase their desire for luxury sports cars.

Is there any truth to the cliché that a man driving an expensive sports car is compensating for his male inadequacy? The psychological literature suggests two hypotheses why they might be linked.

First is sex. The ‘conspicuous consumption’ (Veblen, 1899; Thompson, 2023) of an expensive sports car could play the same role as a peacock’s tail (Darwin, 1871): a costly display of apparently wasted resources that is designed purely to compete for and attract mates (Gould & Gould, 1989). It has been shown that priming males to think about short term dating increases their desire for luxury goods; and pairing a male with a picture of a sports car increases his attractiveness to females (Sundie et al. 2011).

The second hypothesis is self-esteem. People seek out luxury goods when their self-worth is lowered (Braun and Wicklund, 1989), but can raise it by imagining owning a luxury car (Sivanathan & Pettit, 2010). Under this hypothesis, feeling that one has a small penis is one type of low self-esteem, and buying a sports car would be just one type of purchase that might ameliorate that. But there is nothing unique about the link between sports cars and penises, other than the fact that men are more likely to possess both.

Finding the truth to this connection is challenging. Self-reported penis size is notoriously unreliable (King, 2021), and even an objective study of penis size and sports car ownership would also be limited to correlational evidence. In this experiment, however, we were able to find a casual *psychological* link between fast cars and small penises for the first time.

We manipulated males’ subjective feelings of their penis size by presenting them with false information about the average male size. In our experiment, participants were given random facts, and then asked to say how much they would like to have various products. They were told that the experiment was investigating how people multitask online, doing their shopping and browsing the internet simultaneously. In the key trial, they were given a fact about the average penis size and then asked to rate a sports car. In the small penis condition, they were told that the average size was 18cm, larger than the true average. We reasoned that this would make the average male feel that they are relatively poorly endowed, compared to the large penis condition, in which we told them that the average size of other penises was 10cm. They then rated the desirability of a sports car.

Our primary hypothesis was that ratings for sports cars would increase when male participants were manipulated to believe that they have relatively small penises. We tested a secondary hypothesis, that the link is driven by self-esteem in general, with other trials in that contained manipulated facts that might impact self-esteem in different ways, and a variety of luxury and non-luxury products. Finally, we analysed participants age, since it determines both mating strategies (Conroy-Beam & Buss, 2019) and patterns of consumption (Shukla, 2008).

Methods

Participants

We ran 200 English speaking males, who were recruited from the Prolific subject pool. 5 participants were excluded for failing attention checks. Participants' were aged between 18 and 74 years ($M=28.4$, $SD= 11.6$). They were paid £1.50 for 8 minutes of participation, and the experiment was approved by an institutional ethics board (UCL 3828/003)

Procedure

Participants carried out the experiment using the online platform Gorilla (Anwyl-Irvine, Massonnié, Flitton, Kirkham & Evershed, 2020). They were then told that the experiment was, 'studying how people remember facts at the same time as shopping for products' and warned to try and remember the facts for a later memory test.



Figure 1. Schematic of a single trial

Participants carried out 12 trials in the experiment (Figure 1). In each, they were presented with a short 'fact' for 7 seconds, and then a picture of a product. They dragged a slider from to rate how much they would like to have the product. 6 of the 12 items manipulated self-esteem, and were followed by luxury items. The facts gave incorrect population averages designed to make the average

person feel relatively better or worse about themselves. The key experimental trial told participants that the average erect penis size of other men was either 18cm (small penis / low self-esteem) or 10cm (large penis / high self-esteem) and was always followed by rating of one of six sports cars. (see supplementary materials for more details). On four trials, they were then given either the original fact, or a version with one detail changed, and asked if the statement was true or false. After the experimental trials, participants were told that some of the facts that they had been told were incorrect, and they were asked to give their estimates of the true values of these facts, including the true average penis size.

Results

Penis size and car ratings

To remove response biases, we first z-scored the ratings for each participant. Analysing the critical penis-car trials, we used a Bayesian mixed model with fixed effects for the penis condition and participant age, random effects for the car model, and random slopes and intercepts. We quantified the strength of the evidence using the maximum probability of effect (MPE), which quantifies the probability that the condition means differ. Full details of the model and parameters are given in the supplementary materials.

Our results (Figure 2) showed that there was a evidence of a main experimental effect (MPE=91%): men who thought that they had a relatively small penis rated the sports cars higher (left panel). The experimental manipulation had a different effect on men of different ages. The model generated MPEs for the effect of the experimental manipulation for each discrete age in the range. Up to 29, these MPEs were below 90%, showing little evidence of an experimental effect. For every age above 30, however, the MPEs were between 95 and 99%, showing strong evidence for a difference between penis conditions. Secondly, the model generated an MPE that gives evidence that age has an effect within each of the experimental conditions. For participants in the large penis condition, this MPE is 99%, showing strong evidence that that their ratings decline with age. But for participants in the small penis condition, the MPE is 77%, showing that there is little evidence that age diminishes their appreciation for fast cars.

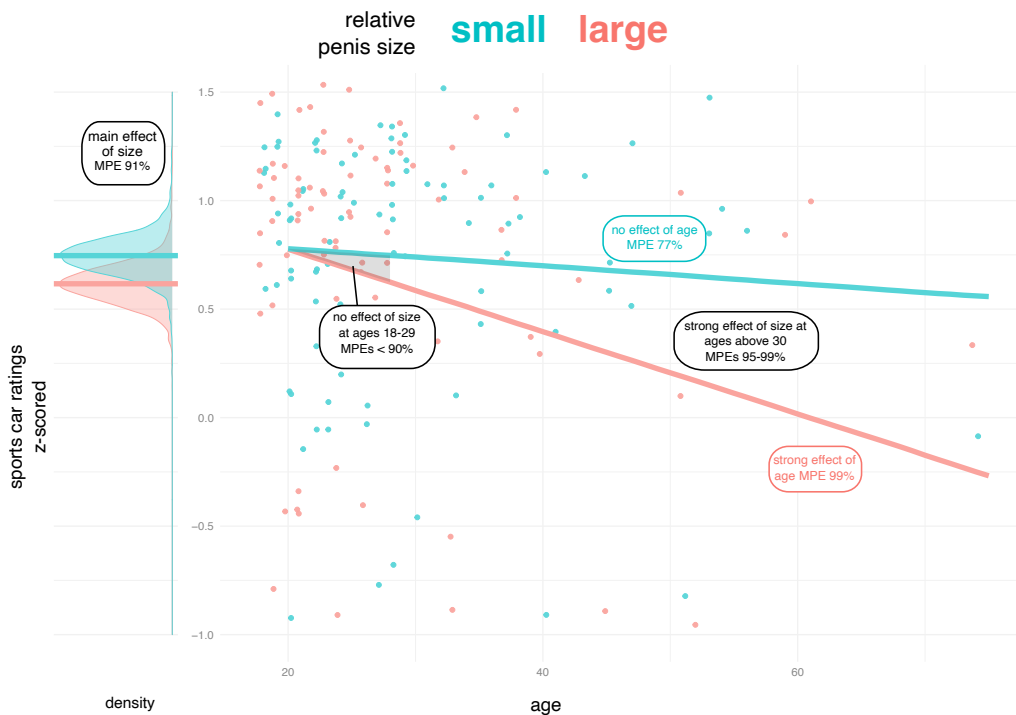


Figure 2. Participants' z-scored ratings of luxury sports cars, split by age and size manipulation shown by dots. There was strong evidence for a main effect of the experimental manipulation (left), and for the change in effect of age (lines on right). Grey shaded area shows that for under 29s, there was little evidence of an effect of size, but for those over 30, the model found strong evidence for a difference between small and large penis size conditions/groups.

Self-esteem and luxury products

To test hypotheses about self-esteem and luxury products more generally, we performed a similar analyses on all critical trials, excluding the car product and penis fact. Our Bayesian mixed model had fixed effects for the penis condition and age category, random effects for the facts, products and participants, and random slopes and intercepts. Here we found no evidence that ratings were affected by self-esteem overall all (main effect MPE=54%) or at any particular age (all MPEs < 85%).

Conclusion

We increased our male participants' desire for sports cars when we made them feel they had a relatively small penis. Why cars and why penises? These results raise intriguing questions for future research. Does penis size effect only ratings for sports cars, or other highly prized items as well? Does penis size have a connection to male self-esteem that just much stronger than the other factors we manipulated in this experiment. If we manipulated other equally strong factors – men's beliefs about their intelligence or wealth perhaps - we would find a similar effect on product ratings?

Or perhaps there is just something specific linking cars and penises in the male psyche. That hypothesis is supported by the data in this paper, and would explain the existence of the phallic car trope in everyday jokes, advertisements and academic discourse (Marsh & Collett, 1986). The luxury automotive industry may be unwilling to acknowledge this link, but our results do provide some succour. Like men in a range of other studies (King, 2020), our participants estimated that the average penis size was about 6 inches, which is almost an inch larger than the true size (Veale, Miles, Bramley, Muir & Hodsoll 2015). While demand for their product might be motivated by feelings of genital inadequacy, this is a feeling shared by many of their customers.

References

- Anwyl-Irvine, A.L., Massonié, J., Flitton, A., Kirkham, N.Z., Evershed, J.K. (2020). Gorilla in our midst: an online behavioural experiment builder, *Behavior Research Methods*. 52, 388–407
- Braun, O.L., Wicklund, R., (1989). Psychological antecedents of conspicuous consumption. *Journal of Economic Psychology* 10 (June), 161–187.
- King, B.M. (2021) Average-Size Erect Penis: Fiction, Fact, and the Need for Counseling, *Journal of Sex & Marital Therapy*, 47:1, 80-89,
- Conroy-Beam, D., & Buss, D. M. (2019). Why is age so important in human mating? Evolved age preferences and their influences on multiple mating behaviors. *Evolutionary Behavioral Sciences*, 13(2), 127–157
- Darwin, C. (1871). *The descent of man and selection in relation to sex*. Princeton, NJ: Princeton University Press.
- Gould, J. L., & Gould, C. G. (1989). *Sexual selection*. New York, NY: Scientific American Library.
- Makowski D, Ben-Shachar MS, Chen SHA, Lüdecke D. (2019) Indices of Effect Existence and Significance in the Bayesian Framework. *Front Psychol*. 10: 2767.
- Marsh, P & Collett, P. (1986) *Driving Passion: the psychology of the car*. Jonathan Cape: London
- Miller, G. F. (2009). *Spent: Sex, evolution and consumer behavior*. New York, NY: Penguin/Putnam.
- Shukla P. (2008) Conspicuous consumption among middle age consumers: psychological and brand antecedents. *J. Prod. Brand Manag.* 17(1):25–36
- Sivanathan, N., & Pettit, N. C. (2010). Protecting the self through consumption: Status goods as affirmational commodities. *Journal of Experimental Social Psychology*, 46(3), 564-570.
- Sundie, J. M., Kenrick, D. T., Griskevicius, V., Tybur, J. M., Vohs, K. D., & Beal, D. J. (2011). Peacocks, Porsches, and Thorstein Veblen: Conspicuous consumption as a sexual signaling system. *Journal of personality and social psychology*, 100(4), 664.
- Thompson, C. (2023). *The Status Revolution* Simon & Schuster, New York.
- Veale, D., Miles, S., Bramley, S., Muir, G. and Hodsoll, J. (2015), Nomograms for flaccid/erect penis length and circumference. *BJU Int*, 115: 978-986. <https://doi.org/10.1111/bju.13010>
- Veblen, T. (1899). *The theory of the leisure class*. New York, NY: Macmillan.

Supplementary Materials

A. Experimental facts with self esteem manipulations

The high / low versions of each fact were pseudo-randomised using four different stimuli lists, and counterbalanced across participants. The remaining 6 facts were designed not to reflect upon participants own self-esteem. Each fact was followed by a product. There were 6 luxury products (champagne, a five-star hotel, a spa break, Rolex watch, designer sunglasses and a sports car) and six non-luxury products. The facts and products were paired at random, with the exception of the self-esteem item relating to penis size, which was always followed by a rating for a sports car. In addition, between participants we varied which sports car was presented from a set of six (SMB).

low self esteem	high self esteem
Around 76.06% of people put some money aside each month for savings.	Around 5.06% of people put some money aside each month for savings.
On average, a person has 12 sexual partners in their lifetime.	On average, a person has 2 sexual partners in their lifetime.
93.37% of the people in UK say they have donated to charity in the past year.	15.37% of the people in UK say they have donated to charity in the past year.
How many people would say you are their close friend? The average person says that they have 8 people who would consider them as a close friend.	How many people would say you are their close friend? The average person says that they have 2 people who would consider them as a close friend.
The world average Body Mass Index, or BMI, is 20.11.	The world average Body Mass Index, BMI, is 28.11.
The average erect penis size is 18.04 cm (7.09 inches)	The average erect penis size is 12.04 cm (4.73 inches)

B. Bayesian model – penis size and car ratings

Our model was specified as

$$\text{rating} \sim \text{penis size} * \text{age} + (1 \mid \text{car_model})$$

We used R (version 3.4.3), the rstanarm package (Stan-Development-Team, 2016), and the analysis tool psycho (Markowski, 2018). In our models, we employed weakly informative priors that were scaled following the standard rstanarm procedure. From 4000 iterations, we generated estimates of the posterior distributions of the model parameter coefficients, which quantify the strength of the evidence that the experimental condition influenced behaviour.

The model's priors were:

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~ normal (location = (0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0),
scale = (2.49, 2.49, 2.49, 2.49, 2.49, 2.49, 2.49, 2.49, 2.49, 2.49, 2.49, 2.49, 2.49, 2.49))

Intercept (after predictors centered)
Specified prior:
~ normal(location = 0.69, scale = 2.5)
Adjusted prior:
~ normal(location = 0.69, scale = 1.8)

Coefficients
Specified prior:
~ normal(location = [0,0,0], scale = [2.5,2.5,2.5])
Adjusted prior:
~ normal(location = [0,0,0], scale = [3.55,0.17,0.11])

Auxiliary (sigma)
Specified prior:
~ exponential(rate = 1)
Adjusted prior:
~ exponential(rate = 1.4)

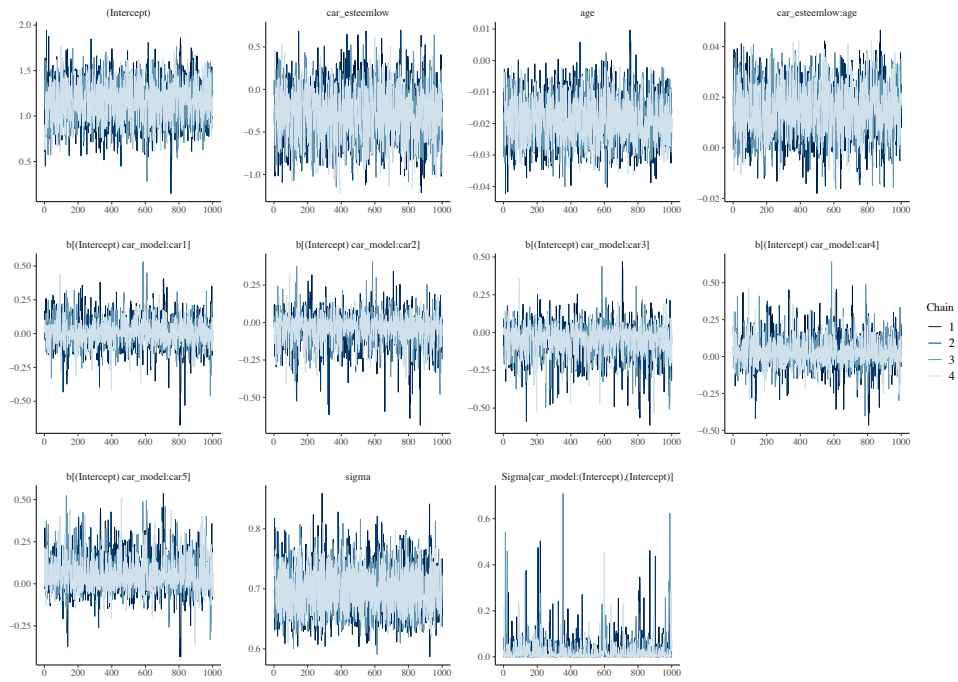
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We ran a Bayesian MCMC (link = logit) model (4 chains, each with iter = 2000; warmup = 1000; thin = 1; post-warmup = 1000).

The model parameters were:

Parameter	Median	95% CI	pd	% in ROPE	Rhat	ESS	Prior
(Intercept)	1.16	[0.74, 1.56]	100%	0%	1.001	1924.00	Normal (0.69 +- 1.78)
Penis_small	-0.29	[-0.85, 0.28]	85.12%	11.39%	1.000	1913.00	Normal (0.00 +- 3.55)
age	-0.02	[-0.03, -0.01]	99.72%	100%	1.000	2151.00	Normal (0.00 +- 0.17)
Penis_small:age	0.01	[0.00, 0.03]	94.27%	100%	1.000	1854.00	Normal (0.00 +- 0.11)

To demonstrate stationarity and that the MCMC is well-mixed, trace plots for each parameter are plotted below.



True average penis size estimates

Participants were asked to estimate the true average penis size, after being informed that some of the facts they had been told were inaccurate. Their mean answer was 15.1cm or 5.9 inches (SD=3.23cm, 1.27in). We also found an anchoring effect in our participants' estimates. Those who had been told that the average was in fact 18cm, estimated 15.4cm, whereas those who had been told 10cm estimated 14.7cm. A Bayesian analysis suggested that there was strong evidence for this difference (MPE=95%).