Effect of swearing on strength: Disinhibition as a potential mediator

Richard Stephens, Keele University

Background

Offensive or obscene language, known as swearing, fulfils positive functions including pain relief (Stephens & Umland, 2011; Stephens & Robertson, 2020) and benefitting physical strength (Stephens, Spierer, & Katehis, 2018). The psychological mechanism disinhibition, characterised as "not holding back", has been proposed.

Aims

(1) To replicate swearing benefits on grip strength; (2) To assess whether swearing impacts one aspect of disinhibition – risky behaviour; (3) To assess whether risky behaviour mediates the effect of swearing on grip strength.

Method

Participants Mostly undergraduates, N = 56.

Design Repeated measures. The independent variable was vocalisation (repeating a swear word v a neutral word). The dependent variables were mean hand grip score (kg) across three trials, and average number of pumps on unexploded balloons on 10 trials of the Balloon Analogue Risk Task (BART; Lauriola, Panno, Levin & Lejuez, 2013). Condition order was randomised.

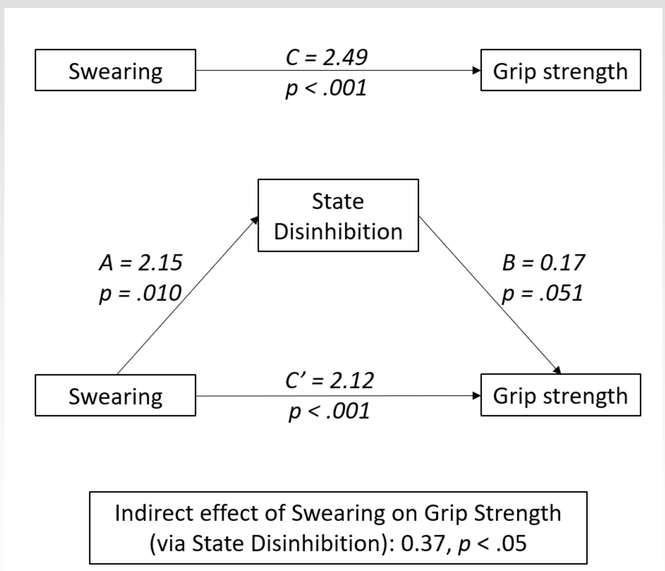
Materials The JAMAR® hand dynamometer (Lafayette Instruments, Lafayette, IN) was used to assess preferred hand isometric grip force up to 90 kg. The BART was delivered within Qualtrics (https://github.com/joyfulwei/Balloon-task-in-Qualtrics)

Procedure Data from two separate experiments, interrupted by the March 2020 lockdown, were collated. Procedures deviated as follows: in one expt (*n*=30) participants were given the swear word ("fuck") which they repeated for 10s prior to completing both tasks; in the other expt (*n*=26) participants nominated a swear word which they repeated for 10s prior to each task.

Analysis Repeated measures mediation analysis was carried out using the method developed by Montoya and Hayes (2017), implemented in R code written by the author. In the estimation of the 95% CI around the indirect effect, 5,000 bootstrapped samples were calculated.

Table 1: Descriptive data

	Swear	Neutral
Hand grip across three trials (kg)		
Mean	34.29	31.80
SD	7.89	7.70
Winsorisation percentile	98th	96th
BART pumps on winning trials		
Mean	11.34	9.20
SD	5.22	4.80
Winsorisation percentile	98th	-



Results

The simple model showed swearing increased grip strength by, on average, 2.49 kg (*dz* = 0.61; *p* < .001). The mediation model showed that state disinhibition (BART score) was increased by swearing (*dz* = 0.36; *p* = .010), but a rise in state disinhibition did not increase grip strength (*p* = .051). While the mediated (indirect) route was significant (coefficient = 0.37, *p* < .05), it explained grip strength less well than the effect of swearing on grip strength controlling for the mediator (coefficient = 2.12; *p* <.001). Hence, overall this suggests that the direct effect of swearing on grip strength was more important than the mediated route. See figure, left.

Discussion

This study replicates previous findings that swearing benefits grip strength (aim 1) and shows that swearing impacts one aspect of disinhibition – risky behaviour (aim 2). While risky behaviour was affected by swearing, the data do not support this factor as part of the psychological mechanism by which swearing influences physical strength (aim 3). Future research should assess whether swearing impacts disinhibition via flooding the salience network (Bolton et al., 2020). One limitation is that the data come from two experiments with some procedural differences. Additional measures not reported include a Flanker task, Engeser Short Flow Scale, BIS scale, Freedom from Constraints Scale, and Haylings Sentence Completion.

References

- Bolton, T., Wotruba, D., Buechler, R., Theodoridou, A., Michels, L., & Kollias, S. et al. (2020). Triple Network Model Dynamically Revisited: Lower Salience Network State Switching in Pre-psychosis. *Frontiers In Physiology, 11*. doi: 10.3389/fphys.2020.00066
- Lauriola, M., Panno, A., Levin, I., & Lejuez, C. (2013). Individual Differences in Risky Decision Making: A Meta-analysis of Sensation Seeking and Impulsivity with the Balloon Analogue Risk Task. *Journal Of Behavioral Decision Making, 27(1)*, 20-36. doi: 10.1002/bdm.1784
- Montoya, A., & Hayes, A. (2017). Two-condition within-participant statistical mediation analysis: A path-analytic framework. *Psychological Methods, 22(1)*, 6-27. doi: 10.1037/met0000086
- Stephens, R., Robertson, O.S. (2020). Swearing as a response to pain: Assessing hypoalgesic effects of novel "swear" words. *Frontiers in Psychology* https://www.frontiersin.org/articles/10.3389/fpsyg.2020.00723/full.
- Stephens, R., Spierer, D.K., Katehis, E. (2018). Effect of swearing on strength and power performance. *Psychology of Sport and Exercise 35*, 111-117. https://doi.org/10.1016/j.psychsport.2017.11.014
- Stephens, R. & Umland, C. (2011). Swearing as a response to pain – effect of daily swearing frequency. *Journal of Pain 12*, 1274-1281. doi: 10.1016/j.jpain.2011.09.004

Contact: r.stephens@keele.ac.uk / @psychologyrich Poster presentation at the Experimental Psychology Society Online Meeting, 15th April 2021