The Neurocognitive Correlates of Political Incivility in Prime Minister's Questions

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Introduction

Prime Minister's Question time (PMQs) is a traditional British parliamentary session in which Members of Parliament (MPs) may ask direct questions of the Prime Minister (PM). However, uncivil exchanges between the PM and Leader of the Opposition (LO) frequently dominate proceedings, with distasteful political discourse often discharged from the dispatch box. Despite concern and condemnation regarding this increasingly 'rowdy' rhetoric, it is not known whether public displays of political incivility during PMQs carry a neurocognitive consequence for those who engage with it. To investigate further, this experimental study recorded regional oxygen concentration levels (Δ HbO) in the pre-frontal cortex via Functional Near Infrared Spectroscopy (fNIRS), during exposure to either civil or uncivil audio-visual content from PMQ sessions.

Political Incivility

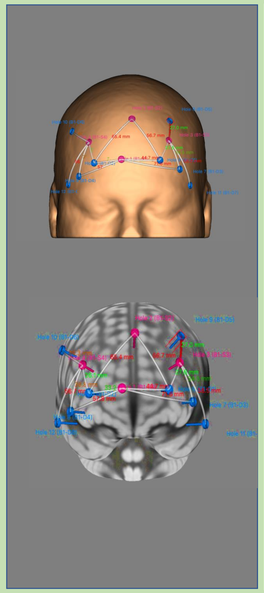
Political incivility is defined as '*discourse that would violate social norms if it occurred in a non-political context*.' (Fyre, 2019). In the context of PMQs, rhetorical turns that violate personal-level social politeness norms have been linguistically operationalised as 'personal attacks'. Personal attacks between the PM and Leader of the Opposition (LO) during PMQs proceedings have increased in recent decades (Waddle, Bull & Böhnke, 2019).

In wider social settings witnessing uncivil rhetoric and politeness violations have been linked to processing impairments on routine cognitive tasks, especially when the incivility is enacted by an authority figure (Porath and Erez, 2009). Consequently, it is plausible that witnessing personal attacks in PMQs through audio-visual mediums may leave a neurophysiological trace, or even carry negative cognitive consequences for individuals within the electorate. The left dorsolateral prefrontal cortex (LDLPFC) is of particular interest in this regard, due to its crucial role in both effective cognition and social reasoning (Adolphs, 2013).

Hypothesis

H1: Exposure to political incivility in PMQs will elicit increased cortical activation in the LDLPFC region.

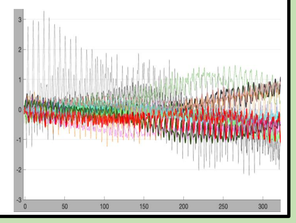
Method



- Civil and uncivil viewing conditions were created using audio-visual content of exchange between the PM and LO during PMQs sessions spanning 2011-2015.
- Participants were randomly assigned to conditions and indicated political orientation using a self-scored Likert scale. Stimuli were viewed whilst Functional NIRS signals were recorded across the PFC region, with two continuous wavelengths of 705 and 830 nm, at a sampling rate of 10Hz.
- Optodes were visualised and mapped using Brainsight 3D neuro-navigation system, based on the MNI-152 Average Brain.
- Participants viewed the PMQ stimuli then rated for levels of perceived incivility.

Analysis

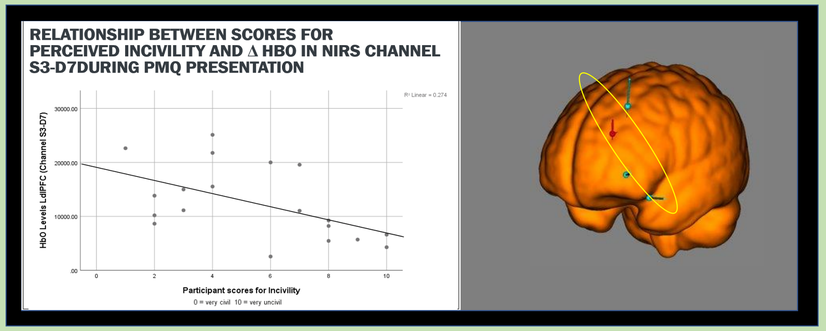
- Data was blocked to cover the viewing period 5.4 minutes (324 seconds). HOMER2/MATLAB software were used to compute changes in light absorption for each NIRS channel, at each timepoint (0.1s) for each participant.
- Total concentrations of oxyhemoglobin Δ (HbO) and deoxyhemoglobin Δ (HbR) were calculated using modified Beer-Lambert law, providing a measure of spatiotemporal cortical activation for each participant during stimulus presentation.
- A pre-processing stream removed normal, temporal fluctuations in cerebral hemodynamics and other noisy channels.
- Statistical analysis focused on activity in NIRS channels S3-S7, which mapped to LDLPFC.



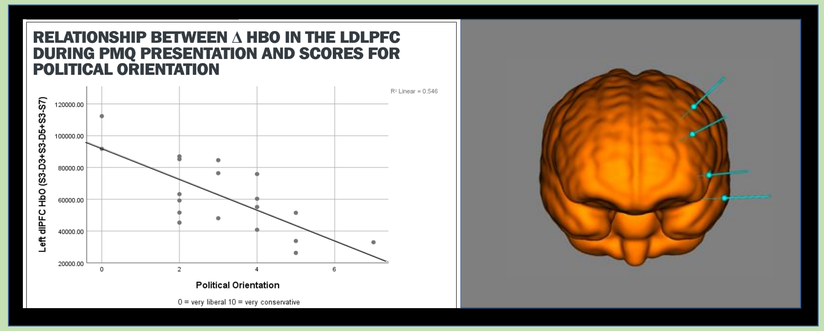
Results

Participants: 19(N) undergraduate participants, (8 male, 11 female). Ages ranged from 19 to 45 years (*M* = 24.4, *SD* = 7.08). No significant differences between civil and uncivil experimental groups.
Manipulation check: A significant difference in ratings for stimuli incivility between civil (M = 3.50, SD = 1.3) and uncivil (M = 6.91, SD = 2.9) groups confirmed the intended conditions had been created: **t(17) = 3.04, p = 0.007**.

Scores for perceived incivility in PMQs were negatively correlated with Δ HbO levels in NIRS channel S3-D7: ***r*(19) = - . 523, *p* < .05**
A simple linear regression revealed that perceived incivility was a significant predictor in this regard, ***F*(1,17) = 6.415, *p* < .05**, accounting for **27% Δ HbO variance** in this channel.



Decreased Δ HbO in LDLPFC NIRS channels correlated with increased levels of conservatism across participant groups: ***r*(19) = -.739, *p* <.001.** Political orientation was a significant predictor in this regard, ***F*(1,17) = 20.474, *p* <.001** accounting for **54% variance** in regional Δ HbO.



Conclusion

Exposure to political incivility in audio-visual content from PMQs did not elicit increased cortical activation in the LDLPFC region. Conversely, perceptions of incivility were negatively related to Δ HbO in this region. Both political incivility and political orientation were significant predictors of cortical activation in specific LDLPFC NIRS channels. Whether this may be of any cognitive consequence will be for future research to determine.

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