Disease threat does not predict attractiveness preference in a United Kingdom dataset: a replication attempt and commentary on White *et al.*, Psych Sci 2013

Background: A study by White *et al.* found that population disease burden predicted preference for attractive politicians in U.S. congressional elections. **Aim:** We aimed to replicate this finding using data from the United Kingdom. **Method:** We regressed rated sexiness of elected members of parliament on health metrics from their constituencies: life expectancy, infant mortality, and self-rated health. **Results:** None of the health metrics predicted rated sexiness of members of parliament. **Conclusion:** Further investigation is needed to verify whether the proposed relationship is important and whether it is moderated by other factors such as cross-cultural differences.

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Disease threat does not predict attractiveness preference in a United Kingdom dataset: a replication attempt and commentary on White et al, Psych Sci 2013

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Running head: Disease burden and attractiveness preference

Authors' contributions

Designed the study: GN, AR, ST, ML. Acquired and analyzed data: GN, AR. Interpreted results: GN, AR, ST, ML. Drafted the manuscript: GN. All authors read and approved the final version of the manuscript.

White et al. reported that worse health predicted preference for attractive electoral candidates (White, Kenrick, & Neuberg, 2013). They argued that their findings support a theory of disease avoidance, according to which it has been evolutionarily beneficial to prefer to avoid diseased people, particularly in times of high local disease threat. In a series of 4 innovative studies, their predictions about preference for attractive leaders were confirmed. However, a lack of methodological detail makes it difficult to judge some aspects of their report. In one of the experiments (Study I), attractiveness of an unreported number of major-party candidates from the 2010 U.S. congressional elections were rated by 20 research assistants. Physical attractiveness was a significant predictor of success in the election, but only in areas with high disease threat, operationalized by a composite measure of infant mortality rate and life expectancy. In another experiment, White et al. used pictures of British politicians rated for sexiness on the website sexymp.co.uk. Participants in the experiment indicated that they were more likely to vote for sexier candidates, especially if disease concerns were experimentally activated. We reasoned that if the prediction by White et al. holds, then ratings on sexymp.co.uk should be predicted by the disease burden in parliamentary constituencies. This approach takes advantage of the large numbers of ratings on sexymp.co.uk, while still using real-life voting behavior as outcome.

On 2014-02-07, we obtained sexiness ratings for all members of the House of Commons on the sexymp.co.uk site. Politicians had been rated many times (median 5883, minimum 5184) in pair-wise comparisons. Sexiness (fraction of wins) was regressed on disease burden data from parliamentary constituencies in England and Wales. Sex and political party were used as covariates of no interest. Infant mortality data for 2010-2012 were obtained from the United Kingdom Office of National Statistics (ONS) by “area of usual residence” and averaged over the 3 years. To confirm that variation in infant mortality reflected genuine differences between constituencies, we performed simulations of infant mortality, showing that the observed variance (1.27) was greater that the variance expected from chance alone (0.47, for details, see online materials (Renberg & Nilsonne, 2014)). Life expectancy data at birth were available by “local area” for male and female newborns, respectively, and we calculated the average. The Pearson correlation between infant mortality and life expectancy was $r(481) = -0.45$ (95% CI -0.38, -0.52). This is lower than the correlation in the data used by White et al. ($r = -0.78$), and therefore separate analyses were made instead of using a compound measure. Areas were mapped to parliamentary constituencies by matching the areas either by unique codes (for life expectancy) or by name (for death rates) using the application programming interface (API) and data available at http://mapit.mysociety.org. Data for the health area that corresponded best with the constituency were used, with priority 1) health area and constituency were the same, 2) the smallest area covering the constituency, 3) the average of areas overlapping the constituency. The final number of observations for analysis was 484.

Self-rated health is an inclusive measure of global health that reflects comorbidity and displays high predictive validity for morbidity, mortality, sickness absence, and health care consumption (Benyamini, 2011). It is correlated with somatic symptoms and is negatively associated with circulating pro-inflammatory cytokines (Lekander, Elofsson, Neve, Hansson, & Undén, 2004). Therefore, self-rated health is likely a more salient measure of disease threat than life expectancy or infant mortality, and we expanded on the analysis by White et al. by including it as a predictor. Self-rated health from the 2011 census was available from the ONS by parliamentary constituency for England and Wales. Health was rated on a 5-point scale, which we averaged for each constituency,

higher values indicating better rated health. Analyses were performed using R version 3.0.1 (R Core Team, 2013). All code and data is available online (Renberg & Nilsonne, 2014).

Infant mortality in the parliamentary constituency did not significantly predict sexiness of the elected member (figure 1a, ß = -0.006, 95% CI = -0.013, 0.001, $r^2_{adj}(475) = 0.14$, $p = 0.08$), nor did life r^2_{adj} expectancy (figure 1b, ß = -0.006, 95% CI = -0.0131, 0.0002, $r^2_{adj}(475) = 0.14$, $p = 0.06$), nor self-rated health (figure 1c, ß = 0.030, 95% CI = 0.066, 0.125, $r^2_{adj}(475) = 0.14$, $p = 0.55$). Following the approach of White et al, we also separately analyzed the lowest-health constituencies, defined as > 1 SD from the mean, and found no significant relationship for infant mortality (ß = 0.001, 95% CI = -0.032, 0.034, $r^2_{adj}(51) = 0.11$, $p = 0.94$), life expectancy (ß = -0.019, 95% CI = -0.049, 0.010, $r^2_{adj}(71) = 0.08$, $p = 0.20$), nor self-rated health (ß = -0.092, 95% CI = 0.634, 0.451, $r^2_{adj}(80) = 0.07$, $p = 0.74$).

Thus, the effect of life expectancy on attractiveness preference was in the predicted direction, whereas the effect of infant mortality and self-rated health on attractiveness preference was in the opposite direction, while all effects were weak. Subsample analyses failed to provide further support for the hypothesis. Limitations of this study include self-selection of raters on the sexymp.co.uk website. The dataset used by White et al. included both winners and losers, whereas our dataset only included winners. Furthermore, this replication attempt does not address the experimental studies reported by White et al.

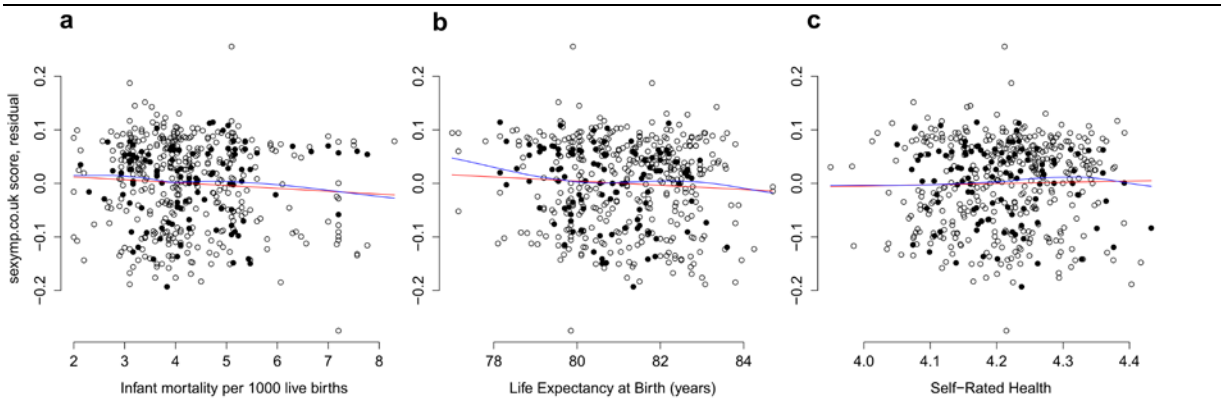

Figure 1. a: Infant mortality and rated sexiness. b: Life expectancy and rated sexiness. c: Self-rated health and rated sexiness. Rated sexiness is shown as residuals after correcting for political party and sex. Open circles are male members of parliament; closed circles are female members. Red lines show linear regressions; blue lines show loess predictions.

The prediction by White et al. that worse population health causes increased attractiveness preference could not be confirmed in the present dataset. This suggests that further investigation is needed to verify whether the proposed relationship is important and whether it is moderated by other factors such as cross-cultural differences.

Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

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