**Extended Notes on Consistencies and Inconsistences with Pre-registered Hypotheses**

*Probabilistic Social Learning Improves the Public’s Detection of Misinformation*

*Guilbeault, Woolley, Becker (2020); Pre-registration:* <https://osf.io/53b7v>

In this study, we tested our theory that probabilistic judgments provide a richer signal for enabling social learning than binary judgments.

Our preregistration states our general hypothesis that both individuals and groups are more likely to improve in their judgments of news veracity when communicating with probabilistic as opposed to binary judgments, regardless of the initial accuracy of the peer network. We outlined specific tests for this hypothesis in our preregistration (see Analysis 5.) which we implement and for which we find strong statistical support.

Our preregistration also details hypotheses for how each mode of communication will interact with the initial accuracy of the peer network (Analysis 1 – 4). We predicted that in the probabilistic condition, individuals and groups would be more likely to improve regardless of their initial accuracy, and we find strong statistical support for this prediction (Analysis 1 and 3).

We also predicted that when a peer network was initially inaccurate in its evaluation of a news item, then communicating binary judgments would decrease the accuracy of the group (Analysis 4). Relatedly, we predicted that when a peer network was initially accurate in its evaluation of a news item, then communicating binary judgments would increase the accuracy of the group (Analysis 3 and 4). As predicted, we found that in the initially accurate networks, communicating binary judgments led to a significant increase in individual and group accuracy, though these improvements were significantly lower than those observed in the probabilistic condition. However, while initially inaccurate networks were significantly less likely to improve than initially accurate networks in the binary condition (Analysis 4), we observed that initially inaccurate networks in the binary condition did not show significant changes in their accuracy (i.e. they were not more likely to get worse or improve; Analysis 4). One potential explanation for this inconclusive finding is that some subjects were able to gather information through Google that prevented them from increasing in error (though note that any influence of Google searching would have been equally at play in the continuous condition through randomization, and thus cannot account for the significant differences observed between conditions; also the short time constraints for each round of our online task were designed to limit the possibility of Google searching).

Future work is required to understand whether the lack of bias amplification for the initially inaccurate networks in the binary condition is the result of search activity or psychological resiliences that limit the adoption of false interpretations of news via peer influence.

Lastly, our preregistration states our intention to use the demographics of subjects to engage in exploratory analyses of partisan biases in news classification and the potential benefits of social influence regarding polarization (see section on ‘Secondary Analyses’). Drawing from recent work published by the authors (Guilbeault et al., 2018; Becker et al. 2020), it was found that exchanging numeric estimates in peer networks could reduce partisan polarization. Our exploratory analyses uncovered a consistent effect in terms of the ability for exchanging probabilistic judgments to reduce partisan differences in the evaluation of news veracity. As a novel finding, we show that exchanging binary judgments of news veracity was unable to decrease – and in fact, nominally increased – partisan differences in news classification.