

vmPFC activity predicts population behavior by capturing consensus judgments of value

Doré, B.P.¹, Scholz, C.¹, Baek, E.¹, Garcia, J.O.^{2,3}, O'Donnell, M.B.¹, Bassett, D.^{3,4}, Vettel, J.M.^{2,3,5}, and Falk, E.B.¹



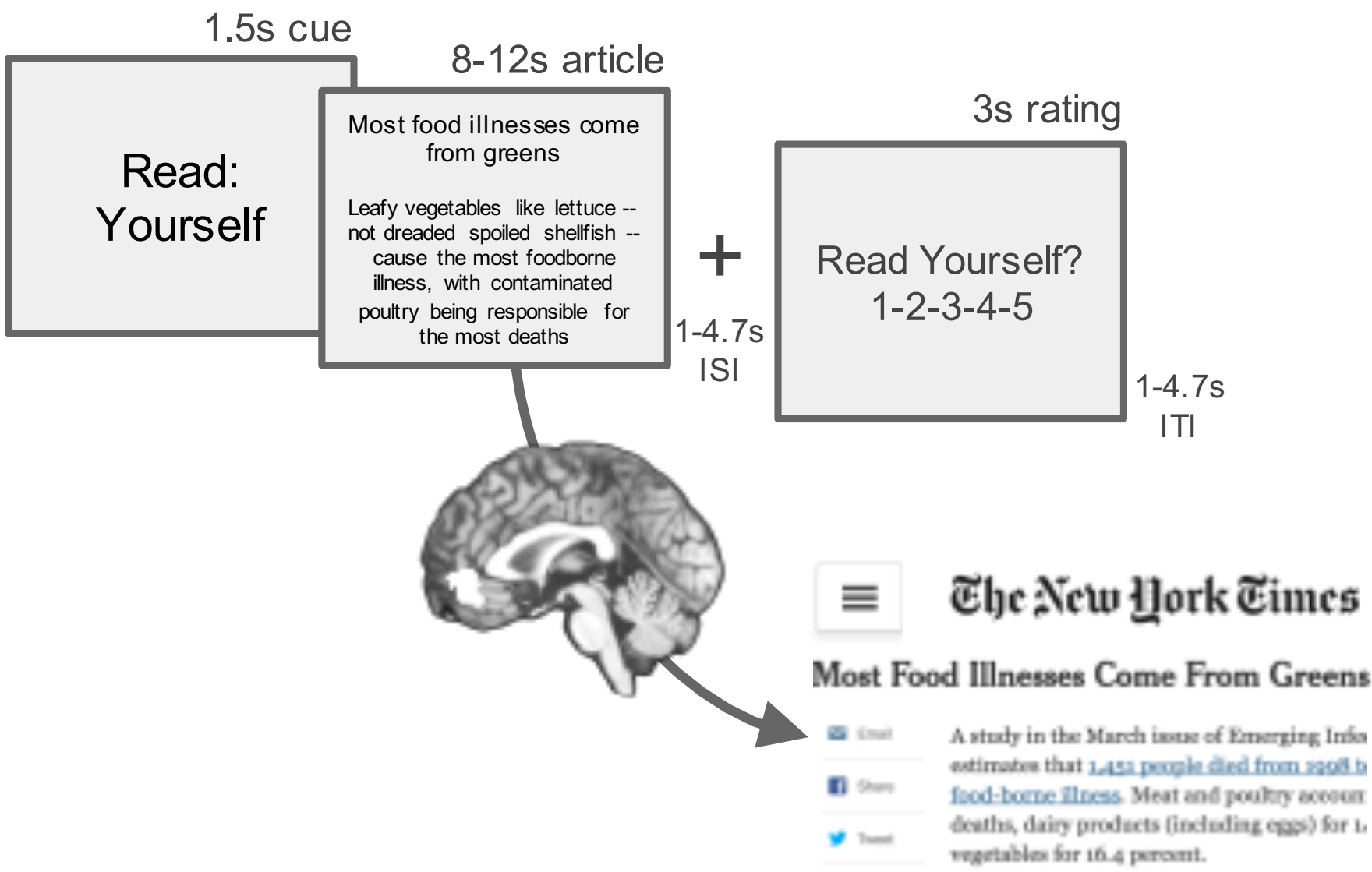
Communication Neuroscience Laboratory

Neuroimaging studies have shown that vmPFC activity can forecast population behavior¹⁻⁴. We used a multilevel brain-as-predictor approach to ask 3 questions:

Q1 Does vmPFC prediction of population behavior relate to how closely it tracks consensus value?

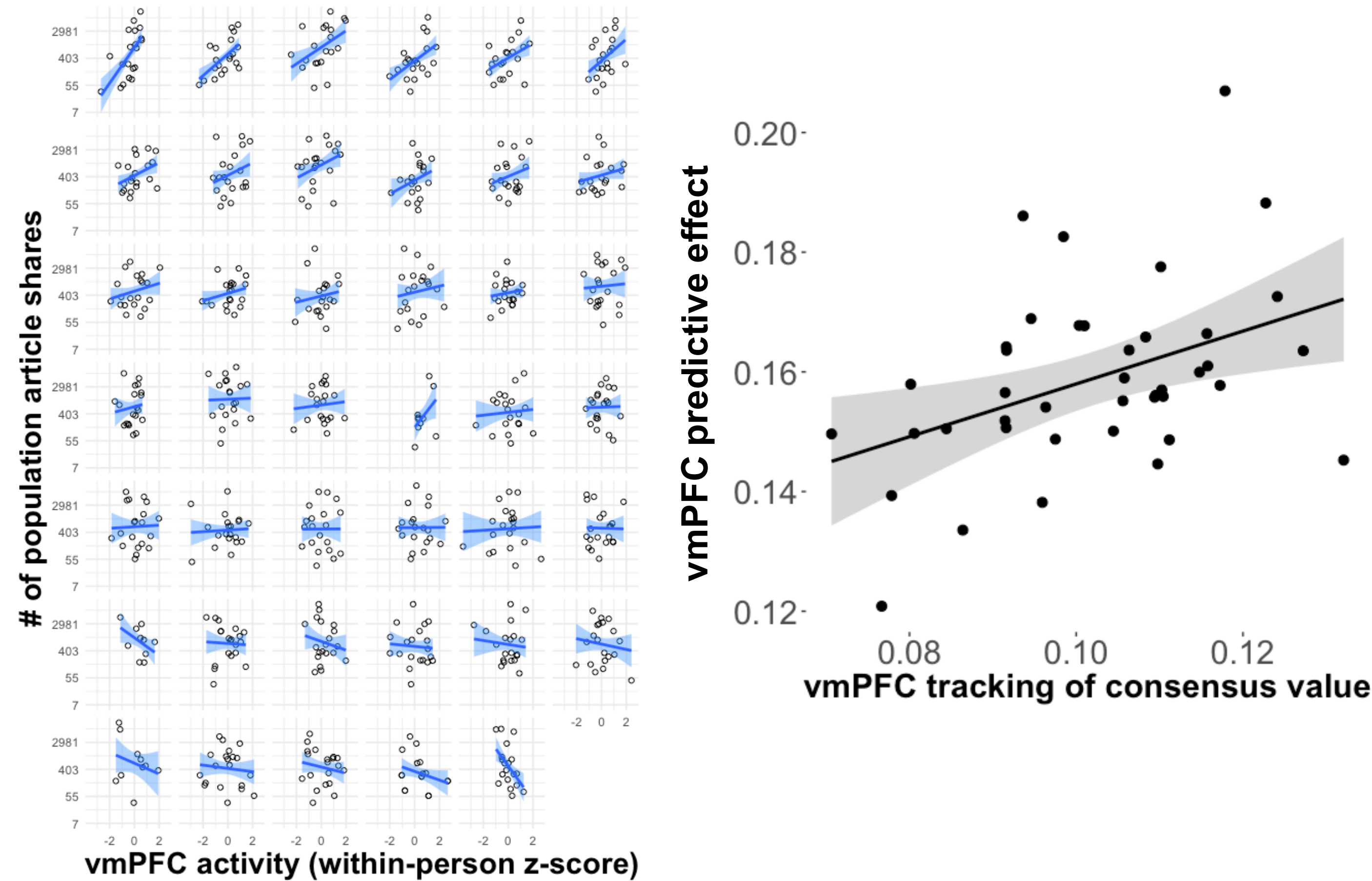
Q2 Does vmPFC capacity to predict behavior and track value relate to one's own media consumption habits?

Q3 Are these differences related to connectivity of vmPFC with other brain systems?

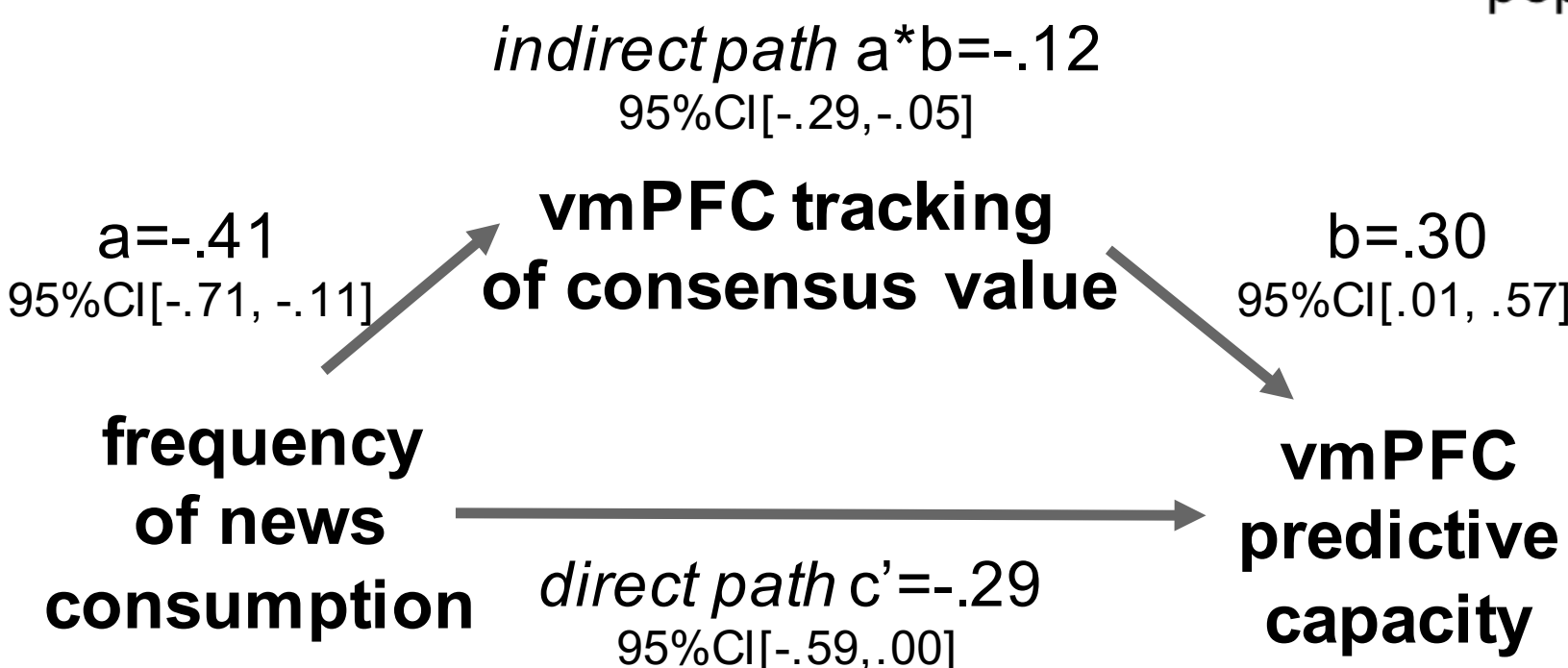
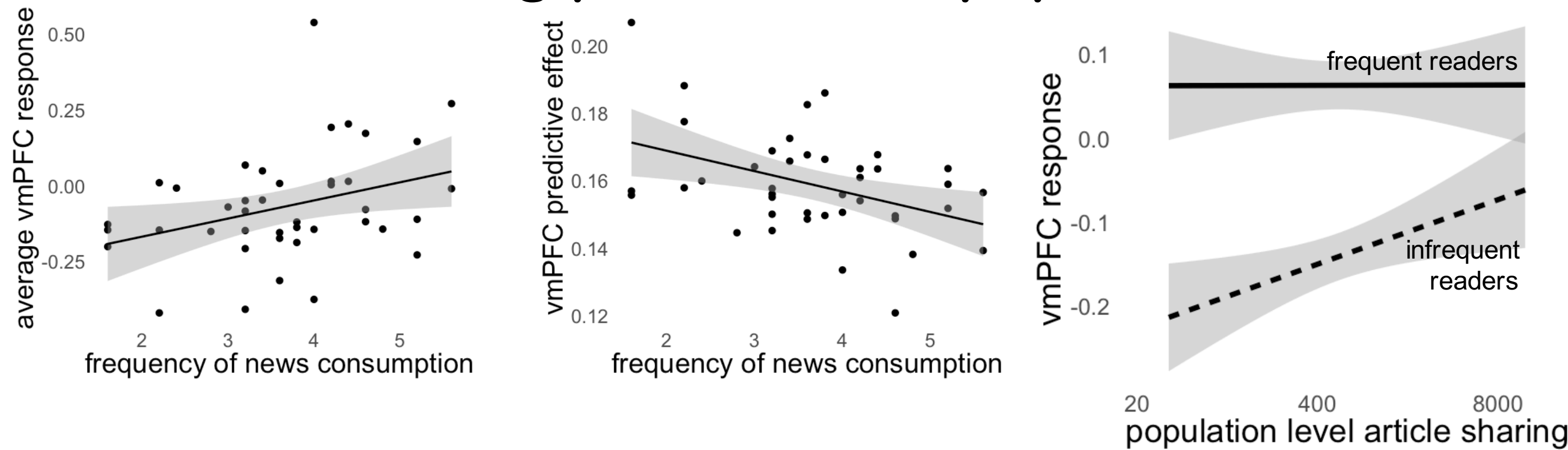


41 young adults completed a news article viewing task in the scanner. We fit multilevel models with varying slope terms that used vmPFC responses in the article task to predict sharing of the same articles online.

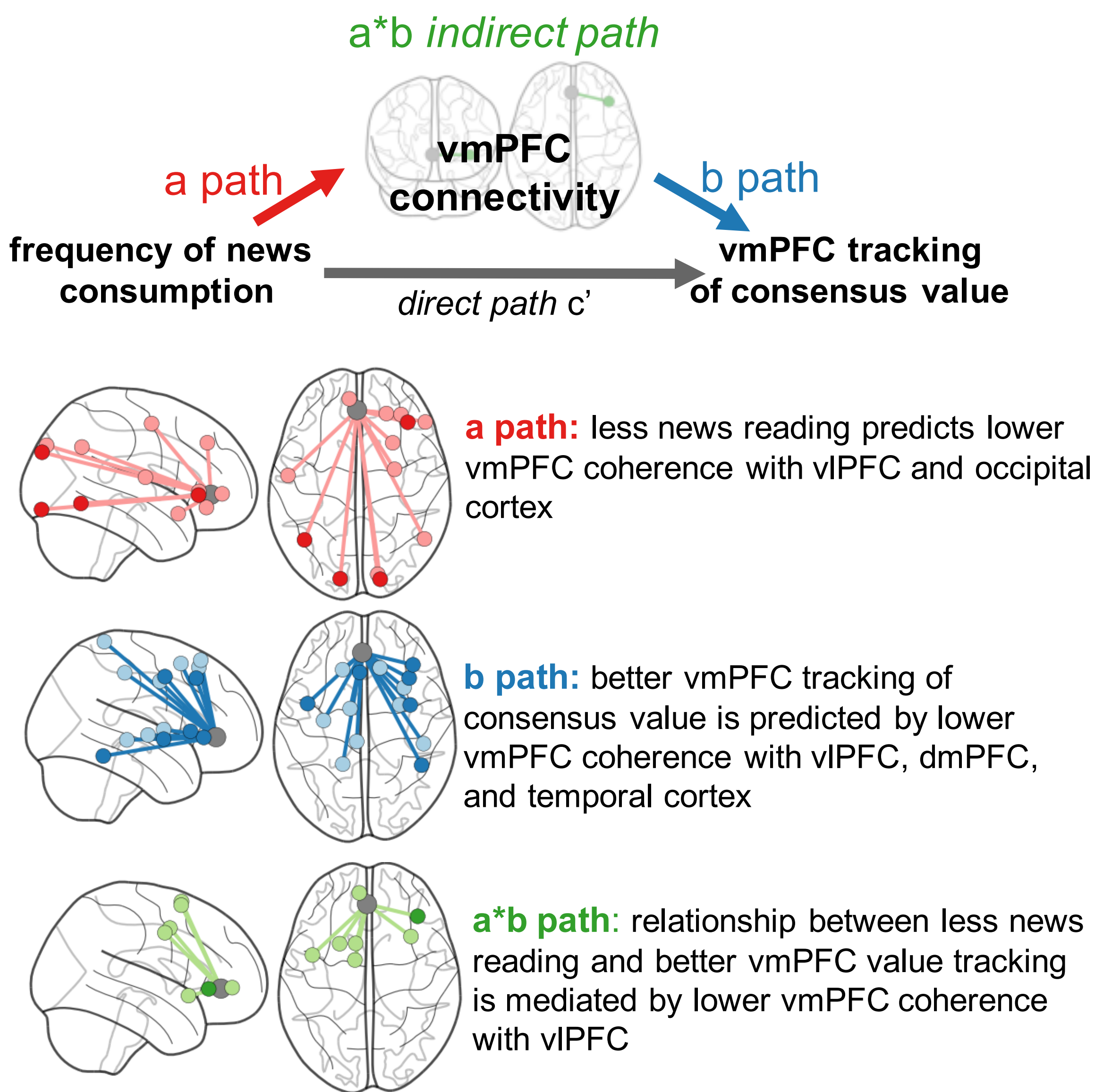
Q1 vmPFC predictive capacity related to how well its activity tracked consensus ratings of article value



Q2 Infrequent readers showed high vmPFC only to articles that were highly valued and heavily shared, driving prediction of population behavior



Q3 Better tracking of consensus value shown by infrequent readers was mediated by lower vmPFC-vIPFC connectivity



Summary & Conclusions

Differences in the ability of vmPFC responses to predict population behavior related to differences in how closely its activity tracked with consensus ratings of value (**Q1**). These differences were related to news reading habits: infrequent readers drove prediction, showing high vmPFC only to heavily shared articles (**Q2**), and lower connectivity of vmPFC with a right vIPFC region associated with top-down cognitive control (**Q3**).

[1] Falk et al. 2012, *Psych Sci* [2] Falk et al., 2016, *SCAN* [3] Scholz et al., 2017, *PNAS* [4] Berns & Moore, 2011, *J Cons Psych*