APPENDIX: NEURAL PREDICTION OF COMMUNICATION-RELEVANT OUTCOMES— CHECKLIST ITEMS FOR REPORTING BRAIN-AS-PREDICTOR STUDIES

In addition to the considerations that apply to reporting any neuroscience investigation (outlined in resources at the end of this checklist and other manuscripts within this volume), and in addition to the same standards that apply to reporting longitudinally collected behavioral data in communication science (e.g., from surveys, behavioral observation, or whatever means you are using to collect your DV), the following considerations should be noted during the study design phase, and explicitly treated when you report a brain-as-predictor study:

Evaluation Criteria	☑
For any neuroimaging modality	
Conceptualization of position of neural variables within your model (choose at least one from below)	
As primary predictor of a communication behavior or outcome	☐
As mediator of the relationship between communication inputs and behavioral, psychological or physiological outcomes	☐
As moderator of the relationship between communication inputs and behavioral, psychological or physiological outcomes	☐
Conceptualization of psychological role of neural variables (choose at least one from below)	
As a state measure (in relation to manipulated context)	☐
As a trait measure (of stable individual difference)	☐
Treatment of reverse inference in discussion	
Authors are clear/explicit about which relationships between psychological constructs and neural function are directly observed[2]	☐
Authors are clear which are speculative/ based on reverse inference[3]	☐
Statistical and measurement considerations	
Imaging modality chosen is well justified	☐
Authors specify strengths and limits of modality chosen	☐
Statistical methods to link neural predictor with hypothesized outcomes are clearly specified[4]	☐
Statistical assumptions inherent or required for method are detailed	☐
Steps taken (if any) to assess the construct validity of your neural measure (e.g., reliability, convergent validity, discriminant validity, etc.) are specified	☐
For fMRI, fNIRS and other methods that employ spatially defined ROIs	
Method for identifying ROIs is clearly defined (choose one or more from below)	☐
Anatomically based on prior literature	☐
Report how the ROI was constructed	☐
Rationale re: anatomical boundaries	☐
Atlases used (if any)	☐
Functionally	☐
Based on a prior independent dataset	☐

(*Continued*)

[2] As in the case of mediation when neural activity is manipulated using a psychological task and used to predict another specific psychological, psychophysiological or behavioral outcome.

[3] e.g., reverse inferences made about the psychological function of your regions of interest based on past work that has found associations between a psychological process and your region of interest.

[4] e.g., GLM, Non-parametric, Machine learning based classification.

TABLE A1
(Continued)

Based on a meta-analysis	☐
Curated/ Peer reviewed	☐
Automated (e.g., Neurosynth)	☐
ROIs chosen are as selective as possible[5]	☐
For ERP and methods that focus on a combination of spatial and temporal effects	
Authors detail how ERP component focused on is selected and measured[6]	☐
How the ERP waveform was measured (peak amplitude, mean amplitude, etc.)	☐
Why a time window was chosen	☐
Why a given set of electrodes were chosen for analyses.	☐
Authors have accounted for possible effects of the neuroimaging environment (choose one or more below)	☐
Demonstrate that behavioral relationships between psychological manipulations and observed outcomes are not affected by the neuroimaging environment	☐
Demonstrating similar effects between behavioral pilot data collected outside of the neuroimaging context and behavioral data collected in the neuroimaging study	☐
Note limitations of neuroimaging environment	☐

Note: We build on the advice offered by Weber and colleagues (this volume): "This checklist is designed to assist authors, reviewers and editors in the process of reporting and evaluating an fMRI study. No checklist can include an exhaustive list of requirements for every study and not every requirement on this checklist may be necessary for all [brain-as-predictor] fMRI studies. Therefore, we invite fellow researchers to extend or modify our checklist. With this in mind, studies that do not include one or two of the requirements should not necessarily be viewed as invalid or otherwise flawed. Instead, missing requirements should prompt requests for clarification.

Additional Resources for Communication Scholars, Reviewers and Editors

The following resources contain more general guidelines and advice for reporting three potentially useful forms of neuroimaging data. For additional information about data acquisition and methodological notes, readers may also be interested in *Methods in Social Neuroscience* (Harmon-Jones and Beer, 2009).

Guidelines for reporting fMRI data (Poldrack et al., 2008)
This resource provides an excellent overview of methodological choices that go into designing an fMRI study that should be reported in write ups of fMRI studies. An addendum to this checklist

[5]As noted in text, although the experimenter cannot typically alter the physiological selectivity of a brain region (i.e., the range of stimuli that a brain region responds to/ range of psychological processes that it supports), the use of meta-analyses, functional localizer tasks, and focus on networks of regions (instead of single regions) can all help increase selectivity. Databases such as neurosynth.org can also help estimate the selectivity of the brain region in question for the psychological process in question; use this information to adjust the strength of claims made in reporting your findings.

[6]More details in resources specified below.

was proposed by Falk, Hyde, Mitchell and colleagues (2013) to better allow neuroimaging research to link to population level outcomes.

Checklist for reporting ERP data (Picton et al., 2000)
This article presents guidelines for reporting standards advocated by the Society for Psychophysiological Research.

Resources for reporting fNIRS data
An overview of current and future uses of fNIRS (and a short discussion of lack of standard methods) - (Cutini & Brigadoi, 2014)
A review of methods for continuous wave-fNIRS - (Scholkmann et al., 2014)
An overview of statistical analysis of fNIRS data - (Tak & Ye, 2014)
A history and overview of current practices in fNIRS - (Ferrari & Quaresima, 2012)