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Directors

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## Checklist of Criteria for Compliance with The Scientific Method<sup>a,b</sup>

<b>Paper title:</b>	
<b>Reviewer:</b>	<b>Date:</b> ___ <sup>MMM</sup> /___ <sup>DD</sup> /___ <sup>YYYY</sup> <b>Time spent:</b> ___ <sup>TTT</sup> mins
<b>Instructions for Raters</b>	
<ul style="list-style-type: none"> <li>You should need less than 2 hours to skim the paper as you complete the checklist</li> <li>Save a copy of this file with a filename that includes the first 3 words of the paper title, your last name, and the date</li> <li><b>Rate each lettered item (a-d)</b>, below, with a checkbox (<input type="checkbox"/>) as               <ul style="list-style-type: none"> <li>T (True) if the research complies,</li> <li>na (not applicable), or</li> <li>F/? (False/Unclear) if the research does <i>not</i> comply, or if you are unsure.</li> </ul> </li> <li><b>IMPORTANT:</b> If you are not sure that a skeptical critic would be convinced the paper complied, rate the item F/?.</li> <li>If you rate an item True, <u>give reasons for your rating in your own words</u> after the  symbol.</li> <li>Items with the na option marked * are <i>necessary</i> for science, but are not individually sufficient.</li> <li><b>Rate criteria 1-8</b> as True with a checkbox (<input type="checkbox"/>), <i>only if all necessary lettered items (*) for the criterion are rated True.</i></li> </ul>	
<b>First assess whether the paper complies with the lettered items under each criterion, below. Then assess whether it complies with the criterion based on compliance with the subsidiary items. Do not speculate.</b>	<b>Complies</b> T na F/?
<b>1. Problem is important for decision making, policy, or method development</b> 	<input type="checkbox"/>
a. Importance of the problem clear from the title <input type="checkbox"/> , abstract <input type="checkbox"/> , result tables <input type="checkbox"/> , or conclusions <input type="checkbox"/> (Rater: Check each that applies) 	<input type="checkbox"/> * <input type="checkbox"/>
b. The findings add to cumulative scientific knowledge 	<input type="checkbox"/> * <input type="checkbox"/>
c. The findings can be used improve people's lives without resorting to duress or deceit 	<input type="checkbox"/> * <input type="checkbox"/>
d. Uses of the findings are clear to readers 	<input type="checkbox"/> * <input type="checkbox"/>
<b>2. Prior scientific knowledge was comprehensively reviewed and summarized</b> 	<input type="checkbox"/>
a. The procedures for searching for prior useful scientific knowledge were objective and comprehensive	<input type="checkbox"/> * <input type="checkbox"/>
b. The paper describes how prior substantive findings were used in developing hypotheses and research procedures 	<input type="checkbox"/> * <input type="checkbox"/>
<b>3. Disclosure is sufficiently comprehensive for understanding and replication</b> 	<input type="checkbox"/>
a. Prior hypotheses clearly described (e.g., regarding directions and magnitudes of relationships; effects of conditions) 	<input type="checkbox"/> * <input type="checkbox"/>
b. Revisions to hypotheses and conditions are described—if no changes were made, the author states that no changes were made 	<input type="checkbox"/> * <input type="checkbox"/>
c. Methods are fully and clearly described—or are well-known to readers, including potential users—researchers, students, and managers 	<input type="checkbox"/> * <input type="checkbox"/>
d. Data are easily accessible using information provided in the paper 	<input type="checkbox"/> * <input type="checkbox"/>

<b>First assess whether the paper complies with the lettered items under each criterion, below. Then assess whether it complies with the criterion based on compliance with the subsidiary items. Do not speculate.</b>	<b>Complies</b> T na F/?
<b>4. Design was objective (unbiased by advocacy for a preferred hypothesis)</b> 	<input type="checkbox"/>
a. All reasonable hypotheses—including credible naïve/no-change/no-meaningful-difference and current-practice hypotheses—tested fairly 	<input type="checkbox"/> * <input type="checkbox"/>
<b>5. Data are valid (true measures) and reliable (repeatable measures)</b> 	<input type="checkbox"/>
a. Data were shown to be relevant to the problem, or relevance was obvious 	<input type="checkbox"/> * <input type="checkbox"/>
b. All relevant data were used, including longest relevant time-series for time-series problems 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
c. Reliability of data was assessed, or was obvious 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
d. Other information needed for assessing the validity of the data is provided, such as known shortcomings and potential biases 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>6. Methods were valid (proven fit for purpose) and simple</b> 	<input type="checkbox"/>
a. Methods were shown to be valid—unless obvious to intended readers, users, and reviewers—and explained in plain English 	<input type="checkbox"/> * <input type="checkbox"/>
b. Multiple validated methods were used 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
c. Methods used cumulative scientific knowledge explicitly 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
d. Methods were sufficiently simple for potential users to understand 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>7. Experimental evidence was used to compare alternative hypotheses</b> 	<input type="checkbox"/>
a. Experimental evidence was used to compare hypotheses under explicit conditions 	<input type="checkbox"/> * <input type="checkbox"/>
b. Predictive validity of hypotheses were tested using out-of-sample data 	<input type="checkbox"/> * <input type="checkbox"/>
<b>8. Conclusions follow logically from the evidence presented</b> 	<input type="checkbox"/>
a. Conclusions do not go beyond the evidence presented in the paper 	<input type="checkbox"/> * <input type="checkbox"/>
<b>Summary comments</b> 	

Sum the criteria (1–8) that are rated T(rue) for compliance: [ ] of 8.

<sup>a</sup>An electronic version of this checklist is available at [GuidelinesforScience.com](http://GuidelinesforScience.com).

<sup>b</sup>Researchers should consult [Armstrong & Green's "Guidelines for Science"](#) and rate their paper against this checklist before submitting.

The “Guidelines for science: evidence-based checklists” working paper is available from [https://www.researchgate.net/publication/305712994\\_Guidelines\\_for\\_Science\\_Evidence-based\\_Checklists](https://www.researchgate.net/publication/305712994_Guidelines_for_Science_Evidence-based_Checklists), and an MS-Word copy of the Checklist is available [here](#).

\* Site under development