## The Beauty and Necessity of Good Research Design

<table>
<thead>
<tr>
<th>Content</th>
<th>Application</th>
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</table>
| 1 The authors say, “Research design matters.” Why do we need research designs? What do they accomplish for us? Use the case of prefrontal lobotomy to make your point. | 1 Practitioners or consumers of “alternative” treatments often claim that science is only one way of knowing. What would these practitioners or consumers use as evidence of the *efficacy* of the treatment? [Look up the word in a dictionary!]
<p>| 2 Describe Kahneman’s two modes of thinking. |  |
| Intuitive: |  |
| Analytical: |  |
| 3 a) What is a heuristic? | 2 Describe two examples of you using a heuristic today. |
| 1) |  |
| 2) |  |</p>
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<thead>
<tr>
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<tbody>
<tr>
<td>4. How do research designs help us avoid pitfalls of intuitive thinking?</td>
<td>3. Describe a time when you used a heuristic and it didn’t turn out so well for you.</td>
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<tr>
<td>5. What is the function of “the” scientific method?</td>
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<tr>
<td>6. All of the “tools” in the scientific toolbox have one thing in common. What is it and why is it important?</td>
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<tr>
<td>7. What are the characteristic features of “naturalistic observation”? Include those discussed in class.</td>
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<tr>
<td>8</td>
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<tr>
<td>a) What is external validity?</td>
<td></td>
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<tr>
<td>b) What is internal validity?</td>
<td>Though it has limitations, why is it important that observational research is conducted?</td>
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<tr>
<td>What is missing from a naturalistic observation that restricts researchers from inferring cause?</td>
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<td>10</td>
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<tr>
<td>What are the goals of science in general? (from class)</td>
<td>What would the specific goals of psychology be? (use the modification from class).</td>
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<tr>
<td><strong>11.</strong> What are the characteristic features of a case study design? Include notes from class.</td>
<td><strong>6.</strong> What well-known person would be an appropriate subject for a case study? Why? Be sure to consider features of a case study design.</td>
</tr>
<tr>
<td><strong>12.</strong> What are the limitations of case study designs? (In part, from class).</td>
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<tr>
<td><strong>13.</strong> a) What is a self-report measure?</td>
<td></td>
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<tr>
<td>b) Why do psychologists and other researchers use them?</td>
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<tr>
<td><strong>14.</strong> What do researchers mean by “generalization” or when they refer to “the generalizability of the findings” of a study?</td>
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<tr>
<td>16 What can happen when you get a nonrandom sample?</td>
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<tr>
<td>17 What does it mean to say that a dependent measure is reliable?</td>
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<tr>
<td>18 What does it mean to say that a dependent measure is valid?</td>
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<tr>
<td>19 What are the advantages and limitations of self-report measures?</td>
<td>7 Considering what you learned in chapter 1: what are some things that you should consider when reading conclusions drawn from self-report measures?</td>
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<tr>
<td>20 In a general sense, what does a correlational design attempt to do?</td>
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<tr>
<td>21 Why are conclusions from correlational research limited?</td>
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<tr>
<td>22 List and describe the three possible directions of relationships in a correlation?</td>
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<tr>
<td>23 Dissect the following correlation <em>coefficient</em>: -.43</td>
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<tr>
<td>a) <em>What part of the coefficient indicates the strength of relationship?</em></td>
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<tr>
<td>b) <em>What part of the coefficient indicates the direction of relationship?</em></td>
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<tr>
<td>24 What is an illusory correlation?</td>
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<tr>
<td>25 Why do we fall prey to illusory correlations so easily? Refer to the “Great Fourfold Table of Life” in your explanation. You may want to draw the table in the space to the right.</td>
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<tr>
<td><strong>26</strong>  What are ‘third variables’? Why do they pose problems for correlational designs?</td>
<td><strong>8</strong> Give an example, not found in the book, of two variables that might have a high correlation but not a cause-effect relationship. Feel free to look up examples online.</td>
</tr>
<tr>
<td><strong>27</strong>  In a general sense, what does an experimental design attempt to do?</td>
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<tr>
<td><strong>28</strong>  What are the characteristics of experimental design? Include notes from class.</td>
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<tr>
<td><strong>29</strong> What does “random assignment” mean in an experiment? [Be sure to include emphasis from class.]</td>
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<tr>
<td><strong>30</strong> Why does an experiment need a control group?</td>
<td><strong>9</strong> Why doesn’t a correlational design <em>need</em> a control group?</td>
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<tr>
<td><strong>31</strong> Distinguish between <em>random selection</em> and <em>random assignment</em>.</td>
<td><strong>10</strong> Think through these protocols. Which would be present in a correlational study and which would present in an experiment? Explain.</td>
</tr>
<tr>
<td><strong>32</strong> a) What is an independent variable?</td>
<td><strong>11</strong> Identify the independent variable and dependent variable in the following hypothetical experiments:</td>
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<td>Content</td>
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<tr>
<td>33 What are extraneous variables? (from class)</td>
<td>12 Why is it critical that extraneous variables are controlled for in an experiment?</td>
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<tr>
<td>34 What is a confounding variable?</td>
<td>13 Distinguish between extraneous and confounding variables [in part from class].</td>
</tr>
<tr>
<td>35 What is an operational definition? Why are they necessary in research studies?</td>
<td>14 Often researchers will start an operational definition by saying, “For the purposes of this study, when I say ‘****’, I mean…” Using this phrasing as a model, provide an operational definition for each of the following terms:</td>
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<td></td>
<td>• smart</td>
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<td></td>
<td>• mean</td>
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<td></td>
<td>• honest</td>
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</table>
### Content

36. The placebo effect is one of the extraneous variables we talked about earlier, and is, therefore, a potential pitfall of experimental design.  
   a) Describe what the placebo effect is.  

   b) Describe how researchers control for the placebo effect.

37. What is the Nocebo Effect?

38. a) Experimenter expectancy effect (Rosenthal Effect) is a type of extraneous variable and is, therefore, a potential pitfall of experimental design. Describe what experimenter bias is.

   b) Describe how researchers control for experimenter bias.

### Application

15. a) What does it mean to be a “pitfall”?  

   b) What can happen if the “blind is broken”?  

16. Explain how experimenter bias could be a “pitfall” if not properly controlled.

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>What was the IV?</td>
<td>Did you notice any controls in place. If so describe:</td>
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<tr>
<td>What was the DV?</td>
<td>*for extraneous variables?</td>
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<tr>
<td>How did the experimental and control groups differ?</td>
<td>*for confounding variables?</td>
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<td></td>
<td>*for experimenter bias?</td>
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<tr>
<td>39 What were the results?</td>
<td>18 Explain how the various demand characteristics could be “pitfalls” if</td>
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<tr>
<td></td>
<td>not properly controlled.</td>
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<td>39 What was the conclusion?</td>
<td>19 Which is preferable-blind or double-blind studies? Why?</td>
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<tr>
<td>40 a) Demand characteristics are some of the extraneous variables we</td>
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<td>talked about earlier. According to your text, what are demand</td>
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<td>characteristics?</td>
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<td>40 b) Describe how researchers control for demand characteristics.</td>
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<tr>
<td>41 Distinguish between blind and double-blind studies.</td>
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### Ethical Issues in Research Design

<table>
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<tr>
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<tbody>
<tr>
<td>42 Describe the basic facts of the Tuskegee case.</td>
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</tr>
<tr>
<td>43 The American Psychological Association (APA) describes ethical considerations that must be adhered to when conducting research with human subjects. These principles are based on federal regulations. Briefly describe the three major ethical principles laid out by the federal government and adhered to by APA?</td>
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<td><em>informed consent:</em></td>
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<td><em>protection from harm:</em></td>
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<td><em>deception and debriefing</em></td>
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<tr>
<td>44 a) What is an “institutional review board” (IRB)?&lt;br&gt;b) What is its job?</td>
<td>21 How do they differ from the ethical principles used for human subjects? (in part from class)</td>
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### Statistics: The Currency of Psychological Research

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<tbody>
<tr>
<td>46</td>
<td>22</td>
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<tr>
<td>What are descriptive statistics?</td>
<td>In general, what is the purpose of using statistics?</td>
</tr>
</tbody>
</table>

47 Distinguish between the different measures of central tendency.
   a) mean:
   b) mode:
   c) median:

48 Distinguish between the different measures of variability.
   a) range:
   b) standard deviation:

49 What are inferential statistics?
<table>
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</thead>
<tbody>
<tr>
<td>50 What does “statistical significance” mean?</td>
<td>23 Distinguish between statistical significance and practical significance.</td>
</tr>
<tr>
<td>51 In what ways can people use statistics to misrepresent findings?</td>
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### Becoming a Peer Reviewer of Psychological Research

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<tbody>
<tr>
<td><strong>52</strong> What does “peer review” mean?</td>
<td><strong>24</strong> Why do researchers undergo a “peer review?” What are the advantages of such a system?</td>
</tr>
<tr>
<td><strong>53</strong> What three suggestions do the authors suggest in evaluating psychological reports in the media?</td>
<td><strong>25</strong> Give an example of pseudosymmetry that you found (or remember) in the news.</td>
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<tr>
<td><strong>54</strong> Explain what ‘pseudosymmetry’ means.</td>
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</tbody>
</table>
Terms to know for Chapter 2:

<table>
<thead>
<tr>
<th>1. analytical mode of thinking</th>
<th>21. double-blind</th>
<th>41. Institutional Review Board</th>
<th>61. pseudosymmetry</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. base rate fallacy</td>
<td>22. ethics</td>
<td>42. internal validity</td>
<td>62. random assignment</td>
</tr>
<tr>
<td>3. blind</td>
<td>23. existence proof</td>
<td>43. intuitive mode of thinking</td>
<td>63. random selection</td>
</tr>
<tr>
<td>4. case study</td>
<td>24. experiment</td>
<td>44. Kahneman, Daniel</td>
<td>64. range</td>
</tr>
<tr>
<td>5. causation</td>
<td>25. experimental design</td>
<td>45. leveling</td>
<td>65. reliability</td>
</tr>
<tr>
<td>6. central tendency</td>
<td>26. experimental group</td>
<td>46. malingering</td>
<td>66. research design</td>
</tr>
<tr>
<td>7. Clever Hans</td>
<td>27. experimenter bias</td>
<td>47. mean</td>
<td>67. response set</td>
</tr>
<tr>
<td>8. confounding variable</td>
<td>28. experimenter expectancy effect</td>
<td>48. median</td>
<td>68. scatterplot</td>
</tr>
<tr>
<td>9. control</td>
<td>29. explain</td>
<td>49. mode</td>
<td>69. self-report</td>
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<td>10. control group</td>
<td>30. external validity</td>
<td>50. naive realism</td>
<td>70. sharpening</td>
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<tr>
<td>11. correlational coefficient</td>
<td>31. facilitated communication</td>
<td>51. naturalistic observation</td>
<td>71. skew</td>
</tr>
<tr>
<td>12. correlational design</td>
<td>32. generalizability</td>
<td>52. nocebo effect</td>
<td>72. standard deviation</td>
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<tr>
<td>13. debriefing</td>
<td>33. halo effect</td>
<td>53. normal distribution</td>
<td>73. statistically significant difference</td>
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<tr>
<td>14. deception</td>
<td>34. heuristic</td>
<td>54. operational definition</td>
<td>74. strength of correlation</td>
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<td>15. demand characteristics</td>
<td>35. horns effect</td>
<td>55. outlier</td>
<td>75. test-retest reliability</td>
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<tr>
<td>16. dependent variable</td>
<td>36. illusory correlation</td>
<td>56. placebo effect</td>
<td>76. Tuskegee case</td>
</tr>
<tr>
<td>17. describe</td>
<td>37. independent variable</td>
<td>57. practically significant difference</td>
<td>77. validity</td>
</tr>
<tr>
<td>18. descriptive statistics</td>
<td>38. infer/inference</td>
<td>58. predict</td>
<td>78. variability</td>
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<td>19. direction of correlation</td>
<td>39. inferential statistics</td>
<td>59. prefrontal lobotomy</td>
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<td>20. distribution curve</td>
<td>40. informed consent</td>
<td>60. protection from harm</td>
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