Writing up the *Methods* Section

PLEASE do not call this section your “Methodology”! “Methodology” is something totally different: it’s the branch of the Philosophy of Science that studies scientific methods.

Goals of the Methods section

The Methods section has several goals:

- To make sure that *you* know how you will proceed at every step of data collection and that you have documented all of the steps that you did take, for future reference.

- To make sure that the readers have a very clear idea of how you collected your data. In fact, your description should be clear enough for the interested reader to reproduce your experiment and find similar results. This is called *replicability*. If other people can reproduce (or replicate) your results, then they are more likely to believe your conclusions.

- To convince the readers that you were careful and systematic in thinking through your methods, so that they can believe your results and conclude that you are a clear-thinking, competent professional who does reliable work.

Working toward these goals builds your methodological credibility and makes the reader more likely to accept your results and conclusions.

Parts of the Methods section

The outline below shows the standard parts of a *Methods* section. (Imagine that each dash represents a paragraph. Talk about only one topic in each paragraph.) The section titles should be included in your Methods section, according to the APA norms. The comments in <angle brackets> below provide suggestions about what topics to cover in each paragraph. Chapter 1 of the *APA Publication Manual* (p. 17 ff) provides some general information about this section.

The *Methods* section usually makes reference to appendices that appear at the end of your paper, so you can consider them to be “parts” of the Methods section, as well. Here’s a standard outline for a Methods section.
Methods

Participants

Materials
- <stimuli>
- <testing materials>
- <background questionnaire>

Procedure
- <tasks>

Design and analyses
- <experimental design>
- <data coding and dependent measures>

[Note: Each appendix starts on a separate page. Include titles like these for each appendix.]

Appendix A. Background questionnaire
Appendix B. Consent form
Appendix C. Stimuli
Appendix D. Testing materials

The table on the next page illustrates how the sections of the outline correspond to the sections of the final write-up of the Methods section. There is more information about each section below.
Forty-eight undergraduate students (25 males and 23 females) from different majors participated in this experiment for extra credit in a Psychology 1 class at a large state university. The participants were ethnically diverse and identified themselves most commonly as Asian, White, Latino, African American, or Indian. Their mean age was 20.2 years (SD = 2.3). Nine participants failed to respond to all items so their data was not included in the analyses.

The stimuli were black and white images of two consenting women of the same height (see Appendixes A and B). The women were of the same ethnicity and wore black workout pants and white tank tops. To prompt inferences about attributes of thin or obese women, the researchers used images of women with significantly different weights instead of asking participants to make inferences about obese or thin people in general, without visual stimuli. The thin woman (see Appendix A) weighed 124 lbs (56 kg). The heavy woman (see Appendix B) weighed 240 lbs (109 kg). The researchers grayed out the women’s faces to eliminate any influence of facial attractiveness on participants’ responses.

The response sheet consisted of thirteen 5-point Likert scale questions per stimulus. The two-page response sheet (see Appendix C) was adapted from Kayaer & Bhundhumani (2007). Each participant received an identical response sheet to record his or her responses to the same questions for both stimuli. The response sheet included questions regarding each woman’s estimated weight and asked participants to rate the woman’s weight based on her height being either 63 in (1.6 m) or 67 in (1.7 m). The researchers asked participants to rate their perception of the women’s levels of happiness and success in life. The response sheet asked participants to judge how popular, friendly, judgmental and outgoing each woman was. The researchers added additional questions regarding how often the participants thought the women dieted and exercised.

Participants also responded to a background questionnaire (see Appendix D) regarding their gender, sexual orientation, ethnicity, height, current weight, ideal weight, and diet patterns. The researchers also asked participants if they think they usually stereotype people based on physical appearance.

Testing happened in a classroom environment that was reasonably distraction-free. On arrival, the participants completed consent forms and were reminded that they could abandon the experiment at any time. Participants received instructions orally and in writing. Half of the male participants and half of the female participants received the stimulus picture of the thin woman and a response sheet. The remaining participants received the picture of the heavy woman and a response sheet. Participants had approximately three minutes to complete the response sheet. After handing in all of the response sheets, participants received the stimulus picture they had not yet seen, with another response sheet. Participants had three minutes to complete the response sheet for the second stimulus. Finally, the participants received the background questionnaire and had three minutes to complete it. After submitting all of their materials, the participants had the opportunity to ask any questions they had about the experiment.

The data were collected in four experimental conditions for 2 x 2 mixed-model ANOVA. Gender (male, female) was the between-subjects factor and Body Type (thin, heavy) was the within-subjects factor. The rejection level for all analyses was set at \( p = .05 \).

For each Likert scale item, the researchers measured the distance in millimeters from the left edge of the scale to the point where the participant had responded with a slash mark. This distance was the dependent variable and it represented how strongly the participant believed that the person in the stimulus had each attribute. The items were analyzed independently.
The *Participants* Section

Example:

**Participants**

Forty-eight undergraduate students (25 males and 23 females) from different majors participated in this experiment for extra credit in a Psychology 1 class at a large state university. The participants were ethnically diverse and identified themselves most commonly as Asian, White, Latino, African American, or Indian. Their mean age was 20.2 years (SD = 2.3). Nine participants failed to respond to all items so their data was not included in the analyses.

The *Participants* section describes the people who participated in your study. This section includes only descriptive information about gender, age, major, how many participants there were, what compensation they received (money, extra credit, none, etc.), and any other characteristics that might be relevant for your experiment. You can also include a sentence about what makes these particular participants a good choice for this specific experiment. For example, you could add to the paragraph above something like this: "The range of majors and ethnicities makes this sample particularly representative of university undergraduates."

Notice that there is no information in this section about what the participants actually did or about any actions that the experimenters did. You can double check that there are no actions by eliminating any action verbs from your description. You usually don’t have to describe any groups of participants here, either. Also, there’s no reason to mention the experimenters in this section.
The Materials section

Example:

**Materials**

The stimuli were black and white images of two consenting women of the same height (see Appendixes A and B). The women were of the same ethnicity and wore black workout pants and white tank tops. To prompt inferences about about attributes of thin or obese women, the researchers used images of women with significantly different weights instead of asking participants to make inferences about obese or thin people in general, without visual stimuli. The thin woman (see Appendix A) weighed 124 lbs (56 kg). The heavy woman (see Appendix B) weighed 240 lbs (109 kg). The researchers grayed out the women’s faces to eliminate any influence of facial attractiveness on participants’ responses.

The response sheet consisted of thirteen 5-point Likert scale questions per stimuli. The two-page response sheet (see Appendix C) was adapted from Kayser & Bhudramani (2007). Each participant received an identical response sheet to record his or her responses to the three questions for both stimuli. The response sheet included questions regarding estimated weight and asked participants to rate the woman’s weight based on her height being either 63 in (1.6 m) or 67 in (1.7 m). The researchers asked participants to rate their perception of the women’s levels of happiness and success in life. The response sheet asked participants to judge how popular, friendly, judgmental and outgoing each woman was. The researchers added additional questions regarding how often the participants thought the women dated and exercised.

Participants also responded to a background questionnaire (see Appendix D) regarding their gender, sexual orientation, ethnicity, height, current weight, ideal weight, and diet patterns. The researchers also asked participants if they think they usually stereotype people based on physical appearance.

The Materials section describes the materials (and any equipment) that the participants used in your study. This section includes only descriptive information about which materials were used, where they came from, how many stimuli or questions there were of each kind, and any other characteristics of the materials that might affect the results of your experiment. Notice that these authors got their response sheet from a different source and then changed it to suit their needs; this is a good idea. To make it easier to write and to read, make separate paragraphs for each of the materials that you used: talk about them one
at a time. A copy of the exact stimuli, distractors, and testing materials that you will use have to be included as appendices to your Methods section (except if they are video or audio).

You can also include a sentence for each item about what makes it a good choice for this specific experiment. For example, in the section above, the experimenters explained why they used these images: “To prompt inferences about about attributes of thin or obese women, the researchers used images of women with significantly different weights instead of asking participants to make inferences about obese or thin people in general, without visual stimuli.” They also explained why they greyed out the women’s faces.

Notice that the focus here is on the characteristics of the materials and not on what actions the experimenters and participants did. Also, there’s usually no information here on groups of participants. Finally, it’s not necessary to include pens, pencils, blank paper, etc. in this description – include only the materials that may make a difference in the results.
The Procedure Section

The Procedure section has two parts. The first part – sometimes called Tasks - describes in chronological order exactly what the participants did, with which materials, and for how long. The second part – called Design and Analyses -- describes in detail what the experimenters did to classify and analyze the data. The goal here is to make your description so clear and so detailed that any other experimenter can replicate your experiment and get similar results.

Example of part one of the Procedure section, the Tasks sub-section:

<table>
<thead>
<tr>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Testing happened in a classroom environment that was reasonably distraction-free. On arrival, the participants completed consent forms and were reminded that they could abandon the experiment at any time. Participants received instructions orally and in writing. Half of the male participants and half of the female participants received the stimulus picture of the thin woman and a response sheet. The remaining participants received the picture of the heavy woman and a response sheet. Participants had approximately three minutes to complete the response sheet. After handing in all of the response sheets, participants received the stimulus picture they had not yet seen, with another response sheet. Participants had three minutes to complete the response sheet for the second stimulus. Finally, the participants received the background questionnaire and had three minutes to complete it. After submitting all of their materials, the participants had the opportunity to ask any questions they had about the experiment.</td>
</tr>
</tbody>
</table>

Notice that the focus in the first part is on what the participants did, not on what the experimenters were doing. Talk about how many sessions of data collection that you did (usually one for each group of participants) and how many trials each participant did (How many times did the participants do something similar?). For example, you may have done data collection twice, in two different classes (= two sessions), and in each session you might have asked each participant to memorize a
list then recall it for 5 different lists (= five *trials*). The *Tasks* sub-section heading is optional.

If you did Pilot Testing (and you should have!), then include a separate paragraph about how you did the pilot. Then describe what changes you made to the materials and procedure based on what you observed during pilot testing.

You can and should use your script to help you write up the *Tasks* section. However, *do not* include your script in or as an appendix to your research paper. APA format and common practice require only a summary description in the *Procedure* section and not the script itself.

You can also include a sentence for each item about what makes the different steps (or times) in this procedure good choices for this specific experiment. These experimenters didn’t include this information -- including it would make their description even better.

*Design and Analyses*. The second part of the *Procedure* section – called *Design and Analyses* -- describes in detail what the experimenters did to classify and analyze the data, including the experimental design, data coding, and computing the dependent variables.

Example of part two of the *Procedure* section, the *Design and Analyses* sub-section:

Notice the special format for this level of heading: away from the margin and together with the next sentence.
The table below summarizes the information that these authors included in their Design and Analyses section. The second paragraph describes what was counted or measured to compute the dependent variable(s). The first paragraph describes the experimental design, with factors, levels, and type of factor.

**Experimental design**
2 x 2 mixed model with four experimental conditions

**Factors**
- Gender (levels: male, female; factor type: between-subjects factor)
- Body Type (levels: thin, heavy; factor type: within-subjects factor)

**Dependent variable(s)**
Degree of belief — how strongly the participant believes the statement for a particular stimulus.

**Rejection level**
The authors will consider analyses with $p > .05$ to be non-significant.

**Data coding**
Measure distance for each item on the response sheet, as described. For other, more complex kinds of coding, you may need to add an appendix with more information. Give an example of how you coded one or two responses.

For each Likert scale item, the researchers measured the distance in millimeters from the left edge of the scales to the point where the participant had responded with a slash mark. This distance was the dependent variable and represented how strongly the participant believed the statement in the stimulus had each attribute. The items were analyzed independently.

The second paragraph describes what was counted or measured to compute the dependent variable(s).
Example: The whole Methods section

Methods

Participants

Forty-eight undergraduate students (25 males and 23 females) from different majors participated in this experiment for extra credit in a Psychology 1 class at a large state university. The participants were ethnically diverse and identified themselves most commonly as Asian, White, Latino, African American, or Indian. Their mean age was 20.2 years (SD = 2.3). Nine participants failed to respond to all items so their data was not included in the analyses.

Materials

The stimuli were black and white images of two consenting women of the same height (see Appendixes A and B). The women were of the same ethnicity and wore black workout pants and white tank tops. To prompt inferences about attributes of thin or obese women, the researchers used images of women with significantly different weights instead of asking participants to make inferences about obese or thin people in general, without visual stimuli. The thin woman (see Appendix A) weighed 124 lbs (56 kg). The heavy woman (see Appendix B) weighed 240 lbs (109 kg). The researchers grayed out the women’s faces to eliminate any influence of facial attractiveness on participants’ responses.

The response sheet consisted of thirteen 5-point Likert scale questions per stimulus. The two-page response sheet (see Appendix C) was adapted from Kayaer & Bhundhumani (2007). Each participant received an identical response sheet to record his or her responses to the same questions for both stimuli. The response sheet included
questions regarding each woman’s estimated weight and asked participants to rate the woman’s weight based on her height being either 63 in (1.6 m) or 67 in (1.7 m). The researchers asked participants to rate their perception of the women’s levels of happiness and success in life. The response sheet asked participants to judge how popular, friendly, judgmental and outgoing each woman was. The researchers added additional questions regarding how often the participants thought the women dieted and exercised.

Participants also responded to a background questionnaire (see Appendix D) regarding their gender, sexual orientation, ethnicity, height, current weight, ideal weight, and diet patterns. The researchers also asked participants if they think they usually stereotype people based on physical appearance.

Procedure

Testing happened in a classroom environment that was reasonably distraction-free. On arrival, the participants completed consent forms and were reminded that they could abandon the experiment at any time. Participants received instructions orally and in writing. Half of the male participants and half of the female participants received the stimulus picture of the thin woman and a response sheet. The remaining participants received the picture of the heavy woman and a response sheet. Participants had approximately three minutes to complete the response sheet. After handing in all of the response sheets, participants received the stimulus picture they had not yet seen, with another response sheet. Participants had three minutes to complete the response sheet for the second stimulus. Finally, the participants received the background questionnaire and had three minutes to complete it. After submitting all of their materials, the participants had the opportunity to ask any questions they had about the experiment.
Design and Analyses. The data were collected in four experimental conditions for 2 x 2 mixed-model ANOVA. Gender (male, female) was the between-subjects factor and Body Type (thin, heavy) was the within-subjects factor. The rejection level for all analyses was set at $p = .05$.

For each Likert scale item, the researchers measured the distance in millimeters from the left edge of the scale to the point where the participant had responded with a slash mark. This distance was the dependent variable and it represented how strongly the participant believed that the person in the stimulus had each attribute. The items were analyzed independently.