Methods and Analysis Worksheet
Example 3

Guidelines: The research proposal must be **related to theory of mind**, **experimental (or pseudo-experimental)**, **developmental,** and **feasible**.

a. "Related to theory of mind" means that you should either manipulate or measure some aspect of theory of mind (How does [some aspect of theory of mind] influence Y? How does X influence [some aspect of theory of mind]? Are X and [some aspect of theory of mind] the same? etc. etc.). Other proposal topics indirectly related to theory of mind (e.g., social attention, symbolic representation, moral judgment) will be considered but should be brought to my attention as soon as possible.
b. "Experimental" here means at least one of the independent variables (IVs) is being manipulated. Age of course can't be manipulated, but is acceptable as a pseudo-IV.
c. "Developmental" here means comparing two age groups, examining a single age group to test a developmental hypothesis, or comparing typical and atypical development.
d. "Feasible" here means a research idea that can be completed in a reasonable amount of time and with a reasonable amount of resources (money, equipment, participants, etc.). This is intentionally imprecise, and should be understood as mostly unrestrictive. As long as you can justify why you might need a significant amount of time or resources, the proposal is more likely to be deemed feasible and therefore acceptable. Furthermore, the methods must be plausible. If you plan to use a method that requires overcoming limitations from previous studies, you must explain how you're going to overcome those limitations. If you have questions about whether your proposal is feasible, you should see me as soon as possible.

1. The present study

This sub-section comes at the end of your Introduction section and is not included in the Method. This is included in the worksheet only to help you further clarify these points as a basis for constructing your Method and Data Analysis Plan ("Results") sections.

a. ***Research question***: Do 15 month olds understand beliefs?

b. ***Independent variable(s), conceptually***: agent behavior

c. ***Dependent variable, conceptually***: belief processing

Aside: How do you begin to address your research question? Start by posing the question to a theory. A theory is like a machine that takes research questions as input and generates hypothetical answers as outputs. These proposed answers are also known as hypotheses. Your goal is to consider theories that set up competing hypotheses so that any outcome must provide support for one hypothesis and against the other.

d. ***Hypothesis A (state how your variables should relate according to theory A)***: According to core mechanism accounts of ToM (Leslie, Friedman, & German, 2004; Scott & Baillargeon, 2009), if a typically developing infant observes an agent's behavior, they will attribute and track the agent's belief.

e. ***Hypothesis B (state how your variables should relate according to theory B)***:
According to conceptual change accounts of ToM (Gopnik & Wellman, 1994; Perner & Leekam, 2008), if a typically developing infant observes an agent's behavior, they will not attribute nor be able to track the agent's belief.

f. ***Task (brief description only; provide details in section 4)***:
A violation-of-expectation paradigm will be used in which looking times are measured to expected search events in which an agent behaves in a way consistent with their belief and to unexpected search events in which an agent behaves in a way inconsistent with their belief.

g. ***Independent variable(s), operationally***: actor's belief (object in location A vs object in location B) x truth value (true-belief vs false-belief) x actor's action (location A vs location B)

h. ***Dependent variable, operationally***: looking time measured in seconds

i. ***Specific predictions A (includes direction of effect and effects for different developmental groups if applicable)***:
Infants observing the actor search in location A will look significantly longer than infants observing the actor search in location B when the actor believes the object is in location B but will show the opposite pattern when the actor believes the object is in location A.

j. ***Specific predictions B (includes direction of effect and effects for different developmental groups if applicable)***:
Infants will not look significantly longer in any of the conditions.

2. Study design

a. ***Experimental or quasi-experimental***?
The study uses an experimental design since the actor's belief, truth value, and actor's action are manipulated and other variables are being controlled.

b. ***How many IVs and how many levels for each IV (write out in m x n x p … format)?***
There are 3 IVs (actor's belief, truth-value, and actor's action) with two levels on each IV. 2(actor's belief: green vs yellow) x 2(truth-value: true-belief vs false-belief) x 2(actor's action: green vs yellow)

c. ***How many conditions, and how many trials per condition will there be?***
There are 2 x 2 x 2 = 8 conditions. There will be 1 trial per condition.

d. ***Between-subjects, within-subjects, or mixed (if mixed, which variables are between- and which are within-subjects)***?
The study uses a between-subjects design since the different infants were assigned to each condition.

3. Participants

a. ***How many? If you have different developmental groups, how many per group***?
I will recruit 120 infants (15 per condition).

b. ***How and where will they be recruited***?
I will recruit infants using the Developmental Participant Pool maintained by the Department of Psychology at the University of Western Ontario (Note: if you plan to recruit infants or toddlers, I would recommend saying you will use this pool).

c. ***Age range***:
I will recruit 15-month-olds (range: 14.5-15.5 months).

d. ***Gender breakdown***:
I will recruit an equal number of boys and girls.

4. Materials/Measures

a. ***Describe the materials (e.g., vignettes, pictures) you will use and, if applicable, how you plan to manipulate the stimuli to create different levels of the IVs. Include citations for any materials you will either use or adapt***.
[See articles from class for examples]

b. ***How will you measure the DV (if applicable, include name of scale, number of items, rating scale with anchors, example item)***?
[See articles from class for examples]

c. ***If you are including control variables, how will you measure them (if using a survey/scale, including name of scale, number of items, rating scale with anchors, example item; if using a task, describe it in sufficient detail)***?
[See articles from class for examples]

d. ***Demographic items (should at minimum include age, gender, ethnicity, SES)***:
[See articles from class for examples]

5. Procedure

a. ***Explain what participants will actually do in your study step by step (including informed consent, study participation, and debriefing). You should provide enough detail that another person could replicate your study.***
[See articles from class for examples]

b. ***Participant compensation***:
[See articles from class for examples]

6. Data analysis plan

In your paper, you will include a Data Analysis Plan section instead of Results since you will not actually be collecting data.

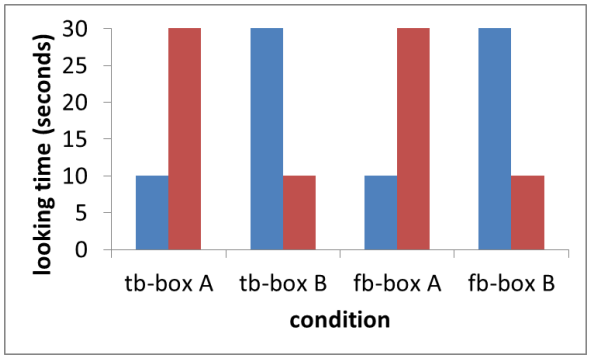
a. ***What statistical test(s) will you use*****?**
I will use a 3-way independent-measures ANOVA to analyze the data, followed up by planned independent-samples t-tests to pinpoint differences between pairs of conditions.

b. ***Why is the test appropriate to use for your variables***?
A 3-way independent-measures ANOVA is appropriate because there are 3 categorical IVs and the one DV is continuous. Furthermore, different people are assigned to each of the 8 conditions, requiring an independent measures test. Independent-samples t-tests are appropriate for following up on the omnibus ANOVA because the ANOVA only reports whether there are any differences between conditions, but doesn't say which specific conditions are different from one another.

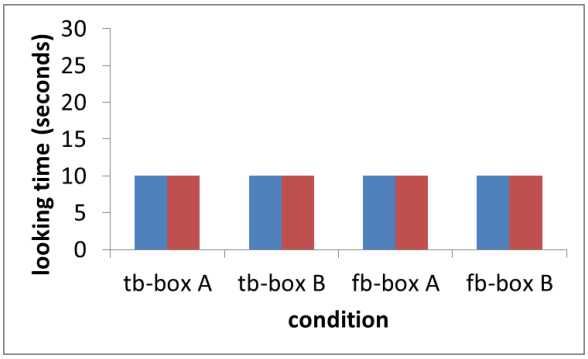
c. ***What will the results be if prediction A is supported? Describe significant differences or main effects and interactions (if you have multiple IVs) under each prediction. Include a figure or table to visualize the results***.
On prediction A, there will be an interaction between the actor's belief and the actor's action. Planned independent-samples t-tests will reveal that infants observing the actor search in location A will look significantly longer than infants observing the actor search in location B when the actor believes the object is in location B, but will show the opposite pattern when the actor believes the object is in location A. The effects will not differ under true and false-belief conditions.

d. ***What will the results be if prediction B is supported? Describe significant differences or main effects and interactions (if you have multiple IVs) under each prediction. Include a figure or table to visualize the results***.
On prediction B, there will be no main effects or interactions.

Prediction A



Prediction B



7. References

Include a list of references for all materials and measures that you will use from published sources. (These are separate from and do not count towards the 5 main intro/discussion references that are required for the proposal.)
[placeholder]