Methods and Analysis Worksheet
Example 1b

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***: Does amount of social interaction influence when theory of mind (ToM) develops?

   b. ***Independent variable(s), conceptually***: amount of social interaction

   c. ***Dependent variable, conceptually***: onset of ToM

   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 the modularity theory of ToM (Scholl & Leslie, 1999), amount of social interaction may influence *when* ToM develops but not *what* develops.

e. *Hypothesis B (state how your variables should relate according to theory B)*:
According to the simulation theory of ToM (Goldman, 2006), amount of social interaction does not influence when ToM develops.

f. *Task (brief description only; provide details in section 4)*:
I will use the Sally-Anne version of the false belief task.

g. *Independent variable(s), operationally*:
classroom size (large vs small), which corresponds to the conceptual IV (social interaction), and time of test (beginning of year vs end of year), which corresponds to a pre-test, post-test manipulation to ensure groups are similar from the start

h. *Dependent variable, operationally*:
accuracy (pass/fail) on false-belief task

i. *Specific predictions A (includes direction of effect and effects for different developmental groups if applicable)*:
Children assigned to larger classrooms will pass the false belief task more often than children assigned to smaller classrooms at the end of the year, but there will be no difference at the beginning of the year.

j. *Specific predictions B (includes direction of effect and effects for different developmental groups if applicable)*:
Children assigned to larger classrooms will pass the false belief task as often as children assigned to smaller classrooms at both the beginning and the end of the year.

2. **Study design**

a. *Experimental or quasi-experimental?*
The study uses a quasi-experimental design since time of test is a quasi-IV.

b. *How many IVs and how many levels for each IV (write out in m x n x p … format)?*
There are two IVs - classroom size has two levels (large vs small) and time of test has two levels (beginning of year vs end of year):
2(classroom size: large vs small) x 2(time of test: beginning of year vs end of year)

c. *How many conditions, and how many trials per condition will there be?*
There are 2 x 2 = 4 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 mixed design since classroom size is between-subjects and time of test is within-subjects.

3. **Participants**

a. *How many? If you have different developmental groups, how many per group?*
We will recruit 60 participants, 30 in each classroom condition.

b. *How and where will they be recruited?*
I will recruit participants through the Thames Valley District School Board (TVDSB). I will work with a participating school that has two classrooms at the same grade level. Only a school that assigns children randomly to classroom will be considering.

c. **Age range**:
I will recruit 4-year-olds +/- 6 months, since they are on the cusp of passing false-belief tasks. Children younger than 3.5 or older than 4.5 years of age will be excluded.

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

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 run a Chi-Square test.

b. *Why is the test appropriate to use for your variables?*
   A Chi-Square is appropriate because I have nominal data, more than 2 samples ("samples" means groups of participants), and the samples are independent on classroom size but dependent on time of test ("dependent" and "independent" refers to whether samples made up of the same or different people, respectively).

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 a main effect of classroom size, a main effect of time of test, and an interaction between classroom size and time of test. Follow-up Chi-squares will show that that more children pass the false-belief task at time 2 in the large class than in the small class, but that the classes do not differ at time 1.

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 effect of classroom size, a main effect of time of test, and no interaction between classroom size and time of test.
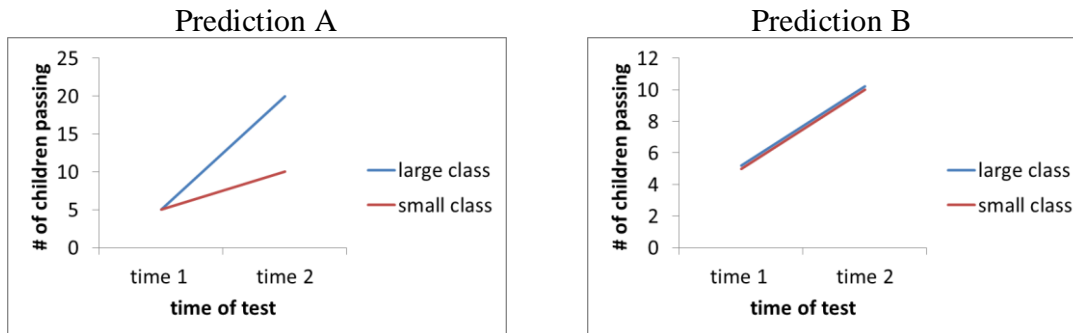
7. **References**
   Include a list of references for all materials and measures that you will use from published sources. (These are separate from and do not count towards the 5 main intro/discussion references that are required for the proposal.)