**Motor Working Memory Protocol for Experimenters**

**When the subject arrives:**

3)   Have them sign the consent form and read the instructions.

4)   **Ask them to turn off their cell phone.**

5)   Once they’re done reading the instructions,  emphasize these key points by saying the following:

    a) **Pragmatics:** "Don't begin replicating the movements until you here the beep."

    b) **Mirroring:** "You will reproduce the movements by using the opposite hand from the one that the person in the video uses.  If she uses her right hand, you use your left hand.  If she moves her hands to the left, you move yours to the right."

    c) **Levels**: "On the first 3 trials, you will only see one movement.  As you progress to higher levels, you will see two, three, four or five movements before you are prompted to recall them. "

    d) **Order:** "Try to reproduce the movements from each trial in the order that they were shown.  However, order is not crucial.  If you forget the order, or forget certain movements, just reproduce     what you can remember "

    e) **Starting and stopping:** "Remember to start and end each trial with your hands at your sides."

7)   While you are demonstrating the movement to the subject, highlight for them that you are replicating the movement with "full extension" and "starting and ending with your hands at your sides"

8)   Watch them do the next two practice trials. Give them feedback about their performance.

9)   Ask if they have any questions.

**For evaluating movements:**

|  |  |  |
| --- | --- | --- |
|  | **Movements that mainly involve *hands* and *arms*** | **Movements that mainly involve *fingers*** |
| √ | Correct hands, direction, and orientation; all segments produced completely | Same |
| X | The movement  either:       1) was omitted      2) does not resemble the target      3) is a repetition of something already produced on that trial or an intrusion from an earlier trial | Same |
| ∆ | The movement either:      1) is produced in the right direction but with slightly wrong hands or wrong orientation of the hands       2) is produced with the right hands but in the wrong direction or orientation of the hands      3) is partially executed, especially regarding movements that consist of two parts      4) is not well articulated (i.e. crisp), but resembles the target      5) is produced with hesitance, as in displaying both right and wrong variations of the movement | The movement either:      1) is produced with the right hands but with slightly wrong (adjacent) fingers      2) is produced with reversed hands and/or with slightly wrong fingers |
| − | The experimenter didn't see the movement produced by the subject. | Same |

**Further Notes:**

\*If the subject doesn’t include a clear start and stop (i.e. no hands at their sides), don’t give them a penalty, just remind them to start with their hands in the correct starting position before going on to the next trial.

\*When scoring a subject’s performance on a level, ∆ = ½ point

\*At the end of each level add up their score, if the subject gets more than 50% of the possible points, tell them to go on!

\*If a subject does the right movements, but in the wrong order, make a note on the sheet and score their movements as usual.

**After the experiment:**

    14) Ask these questions and record the subject's comments

        a. Were you engaging in any strategies (e.g. subvocal labeling, mental simulation, tentative gesturing during video play) to help you memorize the movements better?

        b. Do you think you would have done a better job without mirroring the movements?

        c. Which gestures did you find harder?

    15) Discuss with your partner the evaluations particularly regarding the ones in which both reached a disagreement