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The contents of manuals, entries therein and field-kit materials are modified from time to time, and this provides an additional motivation for keeping close contact with the Language and Cognition Department. We would welcome suggestions for changes and additions, and comments on the viability of different materials and techniques in various field situations.

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I. Photo- Photo Matching Games: Instructions to Investigator

Photo-photo matching games have the advantage of offering an external standard of "mismatch", and of not requiring videotaping. Many of us have already tried them. They can be used for exploratory or for explicitly probing work. They are not so good for investigations into the limits of a domain of "space" itself, since of course the contrasts about which people will talk have already been selected in preparing the photographs.

Three supersets are provided, one exploratory (de León's "Space Games") one principled ("Men and Tree"), and one that you will make yourself. De León's superset consists of 32 photos in contrast sets of 3 to 6 photos each, to be combined into games of about 12 photos each, as you wish. Men and Tree set consists of four pre-combined game sets of twelve photos each.

Standardized instructions for running a photo-photo matching game appear in the discussion of the Men and Tree superset below. You are of course free to run the games in other kinds of situations and configurations as well. Try the players back to back, in public, however you like. But please do also run at least three pairs of players for the Men and Tree sets in the standard manner described.

A. De León's "Space Games" Superset. Natural Objects

De León's photos are recommended for those who are just beginning to explore spatial reference in their field language. They encode spatial contrasts that are not obviously lexicalizable in English, and they have the virtue of having been produced precisely for initial exploration, before Lourdes knew much about what to expect from her language either. We have chosen several contrasts that use natural rather than manufactured objects, since so many of our other stimuli are manufactured objects.

B. Men and Tree Superset

The Men and Tree superset is the first attempt to run a formally comparative task across all of our field sites. That's why we ask you to make it a high priority to run this particular superset under the playing conditions outlined below and with at least three separate pairs of players. If you have difficulty with photos in your field situation, try running through at least the contrasts involving the Men and the Tree themselves as Object-Object matching tasks (you need two farm animal sets for that).

The superset of Men and Tree pictures deals with location on the horizontal plane (4 directions) with both featured (man) and non- featured (tree, balls) objects. For alike pairs of objects (featured with featured, unfeatured with unfeatured), the in- front-of/behind dimension is also explored.

Note that "Men and Tree" is a notation for the full set of 4 photo-photo matching games which explore these questions. There is one training game in the set (game 1) and there are distractor photos -- intended to make the game more fun to play -- within games 2, 3 and 4 of the set. This means that all photos in the "Men and Tree" set do not necessarily depict a man or a tree. It also means that there is one entire game (game 1) of the "Men and Tree" set in which not a single man or a single tree appears.

Two players are to be set side by side with a screen separating them so that they cannot see each others' pictures. Orientation of players should be varied across (not necessarily within) game-playing sessions so that the players face towards the different points of the compass or other previously established locally significant absolute points of orientation.

For comparative purposes, it's useful to make the effort to set up a game-playing situation which is as private and undistracted as possible. Kibbitzing and coaching are interesting from many points of view but they complicate the comparative project enormously.

Record the instructions that the players receive. Players should be told, in their own language, "This is a game with photographs. You each have the same set of pictures, and the game is for one person to choose pictures one by one and to tell the other person which picture s/he has chosen, WITHOUT LOOKING (just with language, try not to point or gesture), so that the other person can pick out the one that matches from their own set. You can talk back and forth as much as you want, for as long as it takes you to make sure you have picked the matching photo. I'll show you how to do it while you play the first game with this set".

Within the Men and Tree set, Game 1 is a training set and should be played first. (Note that it does not have any photos which actually are of men or trees.) Even if you have experienced players, run Game 1 first, with less emphasis on the training aspect. After Game 1, the order in which Games 2, 3, and 4 are played should be varied. When playing Game 1, keep in mind that the idea is to show them exactly how you want them to play the later games. Use the same procedure you will use for the other three games. Language data from game 1 may turn out to be interesting in itself, but the main point is to make sure that people know how to play.

If you find that it is too difficult for people to play the 4 games in sequence (takes too long etc.), it is possible to have each pair of players play fewer games. In this case, players should play first game 1 (training game) and then either game 2, 3, or 4. When you have played game 1 plus game 2 with one pair of players, game 1 plus game 3 with another, and game 1 plus game 4 with yet another, you will have one full set of Men and Tree games played. Alternatively, you could play game 1 plus game 2 with a pair of players on Monday, and then game 3 and/or game 4 with the same pair of players on Tuesday. The crucial point is to be sure that everyone who plays game 2, 3, or 4 has first played game 1 -- so that he or she has had some practice with the rules of the game.

Within games 2, 3 and 4, any picture that does not show either two men, a man with a tree, or two balls is a DISTRACTOR and can be removed from the game if you decide that having fewer photos per game will make the game easier/more interesting/more fun for your informants.

Within the Men and Tree set, game 2 explores reference to horizontal relationships between two unfeatured objects (the coloured balls) and between a featured and an unfeatured object (the man and the tree). Game 3 explores horizontal relationships between two featured objects (the men) where the two are oriented the same way (the men are always looking in the same direction as one another). Game 4 explores

horizontal relationships between two featured objects (the two men) when they are oriented in opposite directions.

For each game, shuffle the photos beforehand and lay them out right way up in front of each player in a 3 x 4 grid (3 across, 4 down). The players are then free to choose the order in which to pick and describe the photos. They should each make an ordered pile, to one side, of the photos they select, as they select them. Have players put the photos down right side up in their piles; if they place them upside down, they will see the numbers on the backs. The pile then recapitulates the order in which the photos were described, but backwards.

In the course of the game the investigator notes the number of each photo described, from the numbers written on the front of the director's set, at the moment of description. The game ends when all 12 photos have been described and a match selected for each of them. At the end of each game the investigator makes a note of the order of selection of the Matcher's pile. At the end of the game, and continuing to record, the Matcher and the Director compare their piles and mismatches are discussed. Before the end of any game, players can decide that they've made a mistake, and go back and change the match to a previous photo (without of course looking at each other's piles). When this happens, there is a risk that the ordering, even of the agreed-upon matched photos in the piles, will get mixed up. This is one place where you may have to be quite intrusive in noting down the old order as well as the new one, in order to preserve your record. In general though, the rule of thumb is to let the players themselves run the game and to be as little part of it as possible.

Video taping is not necessary, although it is an option. Audio taping is essential. Take notes as the game is being played about any information that will not be on the tape.

It seems to make it easier to play a series of games if you allow the players to switch roles as they go (eg. Director in Game 1 becomes Matcher in game 2). In addition, you get more language for the effort if you have players double up roles, and play each game once in each role (i.e. once as Director and once as Matcher). This may, however, be boring or slow for the players. Make your own decision. If you do this, keep in mind that the second time through a set of photos for a given player has a different status from the first, and keep records accordingly. Doubling up is interesting if you want to investigate reductions and special accommodations that develop as people become expert at the game. If you do double up, you still count only one pair (the first run-through for each player) for the comparative project, where the same people are playing.

As well as playing the games, have an assistant explain the differences among the photos to you in elicitation fashion, on some other occasion. If you use your elicitation assistant as a player of the games, don't do the elicitation until after he or she has played the games for you!

C. Each Field Worker Makes Their Own

Finally, think about making in the field your own superset of photo matching games which will correct all the shortcomings you so easily see in this set of games, and which will highlight distinctions relevant in your language. Think in terms of developing a superset of photos which the rest of us can take to our own field sites

next time, so as to bring back comparative data which will demonstrate how unique and interesting your speakers really are.

It may be useful to bring back any objects you used in making your series, to be used again in making more polished photos back at your home base.

II. Photo-Object Matching: Instructions for Investigator

Matching Games using three-dimensional objects in real orientation are more open-ended than photo-photo games for exploratory elicitation. They make fewer presumptions about the kind of contrasts that will be relevant in a given language and may be more naturalistic and easier on the players, in having a less competitive feel.

For these, you must videotape. Ideally, film both participants. Set up the participants as for photo-photo matching, and explain the game in similar terms (to match the picture without looking, and by using language alone -- no gesture -- to explain which parts to pick and how to arrange them or put them together).

The game is played one photo scene at a time. The Director is given a picture, and the Matcher is given the exact set of objects necessary to re-create the picture. The Director describes the scene while the Matcher re-creates it as precisely as possible without looking at the photo. From one game-playing session to the next, try to vary the order in which particular scenes are presented.

In one version of this game (preferred by those of us with most experience at this kind of game), the Director is allowed to see what the Matcher is doing. He or she can therefore monitor and correct the Matcher's choices (in this case, you will probably have to be quite explicit about discouraging gesture). The game is over when the participants agree that they have achieved a match. At this point, the Matcher can be shown the original photo, and discussion or repair of the re-created scene can be recorded.

In another version, the Director cannot see what the Matcher is doing. After the participants agree that a match has been achieved, the photo may be shown to the Matcher and the Matcher's creation to the Director. They discuss and repair the created scene, on record.

It is also possible at the original point of agreement as to Match, to allow the Director to see the Matcher's creation, while still keeping the photo secret from the Matcher. Then the game can continue as in the first version.

Other variations allow kibbitzing and coaching. You can give an audience access to the Director's photograph, or only to the Matcher's array. The latter is probably kinder, given the stress the Matcher is already under... If you only use one set of objects in this kind of game, please use the Farm animals. If you only use two sets, use the Farm animals and the Tinker Toys (you can use the designs on the instructions that come with the Tinker Toys for "photos" to match, as well as the photos you have in this kit). Use the Wooden Man as lowest priority.

A few words on Tinkertoy constructions:

These are potentially very interesting, in that they involve constructions in three dimensional space. This is an area in which your pilot work now will be helpful in seasons to come. Try out some variations and let us know what works and what doesn't. Go ahead and invent new constructions for your informants to reproduce, either by making new model photographs, or by using the duplicated pieces in your Tinkertoy set to allow Object-Object matching. (We have provided extra pieces in addition to those you need for the tinkertoy constructions photographed in the kit.)

You have been given a set of Tinkertoy photos containing 7 photos. Most of the photos are non-representational in that they do not depict a "real" object. Non-representational constructions are more likely to make the director rely on "abstract" descriptions which involve angles, planes, etc. Note that this is typically an unnatural task and may be quite challenging for many speakers. The one representational construction (a wagon) gives a clear goal in construction and speakers have already available part terms for reference. This may make it easier for some people.

We recommend doing the photos in increasing order of difficulty -- stopping whenever the participants seem frustrated or too bored. Therefore the following sequence is recommended: 2, 6, 3, 15, 8, 4, 7.

This game tends to be more linguistically rewarding if you can conduct it "blind" (with the director and matcher unable to see what each other is looking at and any gestures). However that may prove too difficult for many subjects. If it seems too difficult, you might try the first one or two photos not blind and then ask if they would like to try it blind. If they then agree, it may seem like less of an imposition to do it blind.

III. Object-Object Matching Games

This is the game to use for peoples who have difficulty interpreting photographs; it also is useful for getting information on absolute orientation systems (if such exist) for which any rotatable images like pictures are intrinsically confusing. Object-object matching is also preferable to photos where arrays are complicated enough that photos can't render them well. (We have had particular difficulty, for example, in rendering "in front/behind" in photographs).

Object-object games are also possibly more fun to play than those involving photos. They can be used to reproduce the photo game tasks, as long as you have two sets of the objects pictured in the photographs; they can also be used to explore any other set of spatial concepts such as topological (in/on/at) concepts, left/right front/back up/down alignments, body part systems, absolute orientation systems, and more. Unlike the photo games, however, this kind of game must be videotaped, so that an adequate record exists of the object arrays, their disposition in space, and the degree of correspondence between Director and Matcher arrays.

A. Objects from Our Stimuli Kit

The toy animals, people, tinker toys, wooden men, and trees supplied in the stimulus kit can be used to play the same game with the actual objects. This version of the game should be performed if the photo version is not feasible, and the same oppositions and variations should be conducted (especially for the Men and Tree photo superset please!).

We have enough farm animal sets for each field worker to take two. We ran into problems with Tinkertoys however. In the absence of an abundance of tinkertoys, perhaps the following compromise will work. Give the director the photo and the tinkertoys and have him/her make the construction and then disassemble it. Then give the tinkertoys to the matcher and have the director begin the instructions from looking at the photo. This method should prove especially useful for those constructions which have "tricks" to them (e.g. Tinkertoys, PO.TT 4 and 7). The idea is the same as for photo-photo games. The two players are set side by side, with a screen separating them. Players should be told that they both have the same set of objects, and the game is for the Director to describe the setup of objects in front of him, and for the Matcher to set up his objects in exactly the same way without looking at the Director's. Two sets of the real objects - farm animals/trees/fences from our stimulus kit - are used instead of photos. One set is reserved for the Director, one for the Matcher, and the Investigator (perhaps using a photo as a model) sets up a single scene (in randomized order across sessions), in front of the Director. The Matcher's job is to match the completed scene, using his set of objects, on the basis of the Director's description. Players can have as much discussion as they like as they play. It should be noted that this is a harder task than the photo description game version of it.

After the Matcher has achieved a match (by his own standard), the two arrays should be compared and discussed by the participants. The game may be played in various ways:

- i. with the Director able to see and correct the Matcher's array as he goes along (but not vice versa),

ii. with the Director unable to see the Matcher's, and correction only allowed (by interactional negotiation) after the Matcher achieves what he thinks is an adequate match. Of course, this makes the task much more difficult and potentially frustrating - don't try this with everyone! After the Director sees what the Matcher has done, allow the Director to give further corrections until satisfied with the work.

iii. Another variant of this game involves setting all the stimuli arrays out in front of the Director at once, for example by using a 3 x 3 grid drawn on the ground, and setting objects in specific configurations within each square of the grid. While little of interest may result from the matrix layout itself, this format has the advantage of minimizing the investigator's presence (once the initial setup has been made, s/he can vanish), and allows the Director's entire set of arrays to be photographed as a whole, freeing the video camera to focus on the Matcher's array. Care should be taken that audio monitoring is adequate for both players however - two mikes plugged into the camera, one for each player, is best.

The game may be varied in all three versions by giving the Matcher only the objects which s/he needs to match the Director's scene, or by providing extra objects as well, which must then be eliminated through discussion with the Director. The first option is easier for the players. Care should be taken in general to vary absolute orientation of the players across game-playing sessions, to ascertain whether or not absolute reference points are being used in spatial descriptions.

Again, sociolinguistic factors (sex, age, schooling, etc.) can be varied if deemed relevant, and a total of three sets of games for each type of player-pair would be the ideal (three adult female pairs, three adult male pairs, three cross-sex adults pairs, etc. etc.).

B. Object-object arrays using local objects.

In this variant real objects taken from the local milieu (leaves, sticks, stones, corncobs, feathers, pots, beans, sand, water, etc.) are used instead of photographs. The investigator collects two identical sets of such objects, one for each of the players, who again sit side by side but visually screened off from each other. Some of the objects in one set (the Director's) are set out in a particular constructed pattern by the investigator in front of the Director, whose job is to describe it so that the Matcher can create the same array with his own objects (preselected by the investigator to be equivalent to those of the Director for each array). Here again, videotaping is very much the ideal.