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Title: Exploring the Role of Deontic Reasoning and World Knowledge in Wason´s Selection Task

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Author Questionnaire

1. **Microscopy**: Does your protocol require the use of a dissecting or stereomicroscope for performing a complex dissection, microinjection technique, or something similar? **No**

2. **Software:** Does the part of your protocol being filmed include step-by-step descriptions of software usage? **No**

3. **Filming location:** Will the filming need to take place in multiple locations? **No**

Current Protocol Length
Number of Steps: 13
Number of Shots: 35

Introduction

Videographer: Obtain headshots for all authors available at the filming location.

INTRODUCTION

1.1. **Montserrat Martín:** The scope of our research is to analyze the role of semantic and pragmatic factors in subjects´ reasoning. For this purpose, we use Wason´s selection task.

1.1.1. INTERVIEW: Named talent says the statement above in an interview-style shot, looking slightly off-camera. *Suggested B-roll: 2.3.1*

1.2. **Montserrat Martín:** Numerous experimental investigations have revealed better results when participants reason with thematic and deontic versions of the problem including obligations or permissions compared to the indicative ones expressing factual rules.

1.2.1. INTERVIEW: Named talent says the statement above in an interview-style shot, looking slightly off-camera. *Suggested B-roll: 3.5.1*

CONCLUSION

1.3. **Montserrat Martín:** The results obtained have registered the importance of deontic inferences and empirical knowledge in reasoning with the selection task. This seems to indicate the pragmatic and dynamic character of reasoning.

1.3.1. INTERVIEW: Named talent says the statement above in an interview-style shot, looking slightly off-camera. *Suggested B-roll: 3.3.1* "**NOTE**: This might be slated as "trimp clip 2.mp4"

Videographer: Obtain headshots for all authors available at the filming location.

Ethics Title Card

This research has been approved by the Bioethics Committee at the University of Santiago de Compostela and written informed consent was obtained from the participants

Protocol

2. Preparation of the Stimuli for the Three Versions of Wason´s Selection Task

Demonstrator: Montserrat Martín

2.1. To begin, use four cards to prepare the neutral content stimuli **[1]**. Write the name of an animal on one side of each card and the name of a flower on the other side **[3]**. ~~Place the cards on a table so only one side is visible **[4]**~~.

2.1.1. **WIDE**: Talent selecting and laying out four cards on the table, so that only one word is visible on each.

2.1.2. Talent pointing to an animal name on one side of the card. **Authors**: Please keep all printed cards and rule placards ready.

~~2.1.3. Close up of flipping the card and showing a flower name on opposite side of the card. **TXT: The participant should not see this side of the card** *Videographer: Please make sure the participant is NOT in frame for this scene*~~

~~2.1.4. Talent flipping and placing the cards on the table so that only one word is visible on each.~~ **NOTE**: Deleted shots, VO adjusted

2.2. Ensure that the visible faces show the words: cat, lion, rose, and carnation **[1]**. Formulate the rule that "if a card has cat written on one side, then it has rose written on the other side" **[2]**.

2.2.1. Overhead shot showing all cards laid out with visible faces reading: cat, lion, rose, carnation.

2.2.2. Talent points to the rule printed on a placard.

2.3. For the permission content stimuli, take four cards **[1]**. Write the name of a drink, such as "beer" or "coke", on one side and a person's age, such as "22 years of age" or "16 years of age", on the other side **[2]**. ~~Place the cards on a table with only one side of each card visible **[4]**~~. Ensure that the visible faces read: beer, coke, 22 years of age, and 16 years of age **[3-TXT]**. Formulate the rule that if a card has beer written on one side, then it has over 18 years of age written on the other side **[4]**.

2.3.1. Talent preparing and laying out four cards.

2.3.2. Close-up of talent pointing the four cards.

~~2.3.3. Talent pointing to age 22 on the reverse side of the card. **TXT: The participant should not see this side of the card** *Videographer: Please make sure the participant is NOT in frame for this scene*~~

~~2.3.4. Talent flipping the cards to show only one side.~~ **NOTE**: Deleted shots, VO adjusted

2.3.5. Overhead view of the cards showing beer, coke, 22 years of age, 16 years of age. **TXT: Rule: One side – Beer; Other side - Over 18 years of age**

2.3.6. Talent showing the placard with the rule written.

2.4. To prepare the obligation content stimuli, select four cards **[1]**. Write a job such as "bricklayer" or "chef", on one side **[2]** and an item of headwear, such as "cap" or "hard hat" on the other side **[3]**. Place the cards on a table so that only one side of each card is showing **[4]**. Confirm that the visible faces read: bricklayer, chef, cap, hard hat **[5-TXT]**. Formulate the rule that if a card has bricklayer written on one side, then it has hard hat written on the other side **[6]**.

2.4.1. Talent picking and arranging four cards.

2.4.2. Close-up of talent pointing the four cards.

2.4.3. Talent pointing to the job title on other side of the card. **TXT: The participant should not see this side of the card** *Videographer: Please make sure the participant is NOT in frame for this scene*

2.4.4. Talent flipping cards to show only one side per card.

2.4.5. Overhead view of the four cards with visible words: bricklayer, chef, cap, hard hat. **TXT: Rule: One side – Bricklayer; Other side – Hard hat**

2.4.6. Talent showing the placard with the rule written.

3. Creating the Deontic and Indicative Framing with or without a Task Scenario

3.1. To incorporate deontic framing, rewrite the conditional rule using the modal verb must. If a card has cat written on one side, then it must have rose written on the other side **[1]**. Ask participants the question "Which cards do you need to turn over to discover if the rule has been violated?" **[2]**.

3.1.1. Close-up of talent pointing to the rule card to include "must".

3.1.2. Close-up of showing the placard with the question to the participant**: "Which cards do you need to turn over to discover if the rule has been violated?"**

3.2. For indicative framing, retain the conditional rule as "If a card has cat written on one side, then it has rose written on the other side" **[1]**. Ask participants the question:

"Which cards do you need to turn over to discover if the rule is true or false?" **[2]**.

3.2.1. Close-up of talent showing the rule placard without the word "must".

3.2.2. Talent displaying the printed question: "Which cards do you need to turn over to discover if the rule is true or false?"

3.3. To create a Scenario Condition, begin the task with the sentence: "Imagine that you are a police officer on duty. It is your job to ensure that people conform to certain rules" **[1-TXT]**.

3.3.1. Talent showing the Scenario and No Scenario conditions. **Author's NOTE:** In "Trimp Clip 12" (PROTOCOL 3.3.1), include the footage after the image of Deontic-Indicative (00:35). Please, include an image with Scenario and no-Scenario in the same scene

3.4. Now prepare the booklet including general instructions about the experiment **[1]**.

3.4.1. TEXT ON PLAIN BACKGROUND:

- Task is anonymous: "The experimenter is interested in group responses, not in individual ones."
- Three problems, each with four cards and a conditional rule.
- Cards have writing on both sides; only one side is visible.
- Decide the minimum cards to turn over based on the specific instructions you will receive in the tasks.
- Solve problems one at a time; no skipping ahead.
- No returning to previous tasks once moved on.
- Work at own pace; no time limit.

Author's NOTE: Show step 3.6 here before 3.5

3.5. Include the three thematic tasks—neutral, permission, and obligation—under each experimental condition and randomize the order of tasks within the booklet **[1]**.

3.5.1. Talent inserting printed task pages into the booklet, after the general instructions page. **Author's NOTE**: In PROTOCOL 3.5.1.("trim Clip 14.mp4"): eliminate from the beginning to the 00:34, because the tasks are not fully visible.
Video editor: The shot 3.5.1 may have been slated as 3.6.1 and vice versa. The author's note is not very clear

3.6. The general instructions should be the first page inside each booklet, followed by the

three randomly ordered tasks **[1]**.

3.6.1. Shot of instruction page at the beginning of the booklet.

4. Experimental Procedure with the Participants

4.1. For setting up the experiment, assign participants randomly to one of four experimental groups of Scenario with Deontic Framing, Scenario with Indicative Framing, No Scenario with Deontic Framing and No Scenario with Indicative Framing **[1].**

4.1.1. Talent shows the booklets corresponding to the four experimental groups and shows 4 scenarios.

4.2. Distribute the appropriate booklet to each participant based on their assigned group **[1]**. Before starting the task, read aloud the general instructions that are printed on the first page of the booklet **[2]**. Allow time for participants to ask any clarifying questions **[3]**.

4.2.1. Talent handing out specific booklets to seated participants based on random assignment.

4.2.2. Talent standing at the front of the room showing and explaining the instruction page.

4.2.3. Participants raising hands and asking a question.

4.3. Once all questions are answered, signal for participants to begin the experiment **[1]**. At the conclusion of the experimental session, thank all participants for their time and contribution **[2]**.

4.3.1. Talent nodding and announcing the start of the experiment.

4.3.2. Talent collecting the booklets and expressing thanks to participants.

4.4. Compute a logical index as proposed by Pollard and Evans in 1987. Score plus 1 for each formal correct card selected and score minus 1 for each incorrect card selected **[1]**.

4.4.1. Talent bringing a sheet of paper to the session that will contain how each card selected should be scored.

Results

5. Results

5.1. The logical index was significantly higher for permission-based rules compared to neutral **[1].** Across all content types, the presence of a scenario significantly increased the logical index **[2]** compared to its absence **[3]**.

5.1.1. LAB MEDIA: Figure 5

5.1.2. LAB MEDIA: Figure 5. *Video editor: Highlight the "scenario" line*.

5.1.3. LAB MEDIA: Figure 5. *Video editor: Highlight the "no scenario" line*.

5.2. A significant interaction was found between scenario and framing. When deontic framing was used, performance was notably better with a scenario present **[1]** than absent **[2]**, while indicative framing showed little difference between the two scenario conditions **[3]**.

5.2.1. LAB MEDIA: Figure 5. *Video editor: Emphasize the left part of the line "scenario" corresponding to the "deontic" region*.

5.2.2. LAB MEDIA: Figure 5. *Video editor: Emphasize the left part of the line "no scenario" corresponding to the "deontic" region (part above 'deontic')*.

5.2.3. LAB MEDIA: Figure 5. *Video editor: Emphasize the right part of both the lines for "scenario" and "no scenario" corresponding to the "indicative" region (part above 'indicative')*.

NOTE: Please add the conclusion statement 1.3.1 here

- **Deontic**

Pronunciation link: https://www.merriam-webster.com/dictionary/deontic Merriam-Webster+1
IPA: /diˈɑːn.tɪk/
Phonetic Spelling: dee-AHN-tik

- **Indicative**

Pronunciation link: https://dictionary.cambridge.org/dictionary/english/indicative Cambridge

Dictionary+1
IPA: /ɪnˈdɪk.ə.ʈɪv/
Phonetic Spelling: in-DIK-uh-tiv

- **Scenario**

Pronunciation link: https://www.merriam-webster.com/dictionary/scenario Merriam-Webster+2Oxford Learner's Dictionaries+2
IPA: /səˈnɛər.i.oʊ/ (American)
Phonetic Spelling: suh-NAIR-ee-oh

- **Framing**

Pronunciation link: https://www.merriam-webster.com/dictionary/framing Merriam-Webster+2Cambridge Dictionary+2
IPA: /ˈfreɪ.mɪŋ/
Phonetic Spelling: FRAY-ming

- **Violation**

Pronunciation link: https://www.merriam-webster.com/dictionary/violation Merriam-Webster+2Cambridge Dictionary+2
IPA: /ˌvaɪ.əˈleɪ.ʃən/
Phonetic Spelling: vy-uh-LAY-shuhn