The effect of semantic and phonological similarities on repeated and non-repeated person naming confusions

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BACKGROUND

Personal names are amongst the most difficult words to retrieve in memory even though they are very important in everyday life. Among these retrieval difficulties, we focused on the personal name confusions phenomenon (i.e. Calling someone familiar with the name of another one). The main question here is : which variables influence these naming confusions?

Two variables which are known by previous studies to influence naming confusion were studied here (see Brédart and Dardenne, 2016[1] ; Fraas and al., 2002[2]; Griffin and Wangerman, 2013[3]) i.e. the semantic similarity between the bearers of the names which have been confused, and the phonological similarity of the confused names.

To evaluate the role of these two variables we have used a face+name association memory task. The second goal of this study was to compare the repeated confusions (i.e. confound the same names more than once) with the non-repeated ones.

METHOD

PARTICIPANTS:

Middle age participant (N=64)

Age between 44 and 60
(*M*= 51.3 years; *SD* = 4.0, 36 ♀)

MATERIAL AND PROCEDURE:

Face + name association memory task.

<u>Phase 1: Memory phase</u>

Part one : The participants had to memorize the name of 16 faces. These faces were displayed one by one on a computer screen (the 16 face-name couples were presented twice in a different order).

Part two : the 16 face were presented without the name, participant had to give the name of each faces. A feedback was given by the experimenter. Participants had to reach the acquisition criterion to finish this part ➔ to give the right first name for each of the 16 faces in a row

<u>Phase 2: Test phase</u>

The 16 faces (without the names) were displayed in the cases of a double entry table (composed of 40 cases) linked with black lines (see figure one). Participants had to give the name of the face and his coordinates in the table (like in battleship game) and pass to the next face following the black line. Five different tables were presented.

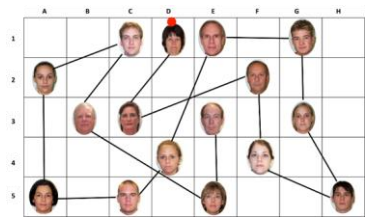


Figure 1 : Exemple of a test table.

Variables and analysis of the data

Semantic factor : the age of the faces (2 modalities)
- **Eight young faces**
- **Eight middle age faces**

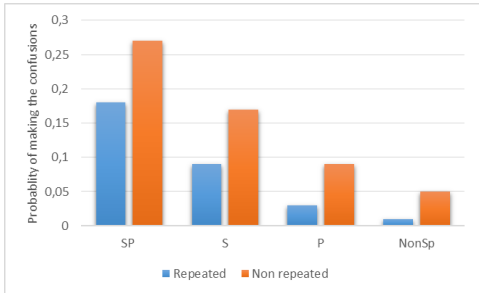
Phonological factor (2 modalities)
- **Eight phonologically similar names *(manɔ̃, maʁgo, maʁjɑ̃n, maʁin, maʁsɛl, maʁtɛ̃, matjø, maksɑ̃s)***
- **Eight phonologically dissimilar names *(ɑ̃ʒelik, bʁiʒit, sindi, nataʃa, didje, flɔʁɑ̃, ʒozɛf, ivɔ)***

Analysis of the confusions

<u>Four types of confusions:</u>
1. "SP" confusions : semantically and phonologically similar confusions
2. "P" confusions : phonologically similar confusions
3. "S" confusions: semantically similar
4. "NonSp" confusions: no similarity in the confusions

<u>The dependent measure :</u>
The Probability of making confusions for each category
➔ Number of possible confusions is different for each category

Results



Repeated Anova with three within-subjects factors (semantic similarity, phonological similarity, type of confusions)

- **Main effect of the phonological similarity:**
  $F(1, 63) = 30.25$, $p < 0.001$, $\eta_p^2 = 0.32$
  ➔ more confusions for phonologically related names than for phonologically unrelated
- **Main effect of the semantic similarity:**
  $F(1, 63) = 81.46$, $p < 0.001$, $\eta_p^2 = 0.56$
  ➔ more confusions for semantically related names than for semantically unrelated
- **Interaction between these two factors:**
  $F(1, 63) = 7.55$, $p = 0.007$, $\eta_p^2 = 0.11$
- **Main effect of the type of confusions:**
  $F(1, 63) = 25.59$, $p<0.001$, $\eta_p^2 = 0.29$
  ➔ more non-repeated confusions than non-repeated ones.

CONCLUSIONS

The phonological similarity between the confused names and the semantic similarity between the bearers of the names impacted the probability of making confusions. When similarities were present, the probability of making a confusion was higher than if there was no similarities between the names.

The studied factors impacted repeated and non-repeated confusions in the same way.

Further research is needed to investigate whether other similarities could also influence the naming confusion phenomenon.

REFERENCES

(1) Brédart, S., & Dardenne, B. (2016). Similarities between the target and the intruder in naturally occurring repeated person naming errors. *Frontiers in psychology*, *6*.

(2) Fraas, M., Lockwood, J., Neils-Strunjas, J., Shidler, M., Krikorian, R., & Weiler, E. (2002). 'What's his name?'A comparison of elderly participants' and undergraduate students' misnamings. *Archives of gerontology and geriatrics*, *34*(2), 155-165.

(3) Griffin, Z. M., & Wangerman, T. (2013). Parents accidentally substitute similar sounding sibling names more often than dissimilar names. *PloS one*, *8*(12), e84444.

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