# Change in naming abilities between the ages of 50 and 90: The importance of analyzing naming latency

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# Introduction

This study tests the controversial hypothesis that word naming difficulties may arise in individuals as young as their 50s. According to Feyereisen (1997), these difficulties begin at the age of 70, but Nicholas, Connor, Obler, and Albert (1998); Connor, Spiro, Obler, and Albert (2004) observed subtle signs of decreased naming performance in participants in their 50s. However, these studies focused on naming accuracy. To our knowledge, no study has analyzed naming latencies in participants in their 50s in comparison with younger participants. We assume that such analyses may highlight more subtle difficulties in naming. In our study, both naming latencies and naming accuracy were analyzed in a picture naming task presented to 4 age groups: 25-35, 50-59, 60-69 and above 70 years old. If people in their 50s experience subtle naming difficulties, these should be reflected in longer picture naming latencies compared to younger participants. In participants above 70 years of age, the decline should be more apparent and may be underlined not only by slower naming latencies but also by lower picture naming scores.

The explanation for naming difficulties in aging is also a matter of debate. According to some authors (e.g., Salthouse, 1996), these difficulties are a consequence of a general slowing in all cognitive tasks, including language, in the elderly. However, other theories suggest that the relevant difficulties are more language-specific and are due to connection weaknesses across the entire language system, leading to more naming errors and longer naming latencies (e.g., Burke, MacKay, Worthley, & Wade, 1991). In order to determine the extent to which the slowing of naming latencies in the elderly is related to a slowing of cognitive processing, participants' cognitive processing speed was assessed with an odd/even judgment task. We were also interested in seeing whether slowing on the odd/even judgment task arises at the same age than slowing on the picture naming task.

# Methods

## *Participants*

Four groups of 30 participants took part in the present study: (1) between 25 and 35 years of age, (2) between 50 and 59 years of age, (3) between 60 and 69 years of age and (4) above 70 years of age (70+). All subjects were native French speakers and reported no history of neurological, cardiac, neuropsychological or psychiatric disorders, and no uncorrected hearing or visual problems. Dementia was excluded with the Mattis Dementia Rating Scale (Schmidt, Freidl, Fasekas, Reinhart, & Grieshofer,

1994). No differences between groups were found for vocabulary level (Mill Hill test; Deltour, 1993) or socio-economic background.

## *Materials*

Participants performed a picture naming task (150 black and white drawings selected from the set of Bonin, Peereman, Maladier, Méot, and Chalard, 2003). Both the number of correct responses and naming latencies were analyzed. We also analyzed response latencies on an odd/even judgment task on 50 digits from 1 to 9, to assess cognitive processing speed.

# Results

For the picture naming task, an analysis of variance (ANOVA) performed on the number of correctly named items revealed an effect of age, $F(3,116)=35.36$, $p<.001$. Tukey post hoc comparisons ($p<.05$) indicated that the 70+ age group named fewer items correctly than the 60-69 age group, which performed worse than the 25-35 and 50-59 age groups, which in turn did not differ from each other. However, the ANOVA performed on correct naming latencies did not show the same pattern of results. This analysis revealed an effect of age, $F(3,116)=35.36$, $p<.001$. Tukey post hoc comparisons ($p<.05$) indicated that the 25-35 age group responded faster than the 50-59 and 60-69 age groups, which did not differ from each other. The 70+ age group responded more slowly than the 3 younger groups.

For the odd/even judgment task, the ANOVA performed on response latencies indicated an effect of age, $F(3,116)= 96.40$, $p<.001$. Tukey post hoc comparisons ($p<.05$) showed that the 25-35 and 50-59 age groups did not differ from each other and responded faster than the 60-69 and 70+ age groups, which in turn did not differ from each other.

An analysis of covariance was also performed on naming latencies, using the latencies on the odd/even judgment task as covariate. There was a significant effect of age, $F(4,115)=54.56$, $p<.001$. Tukey post hoc analysis indicated that the 25-35 age group responded faster than the 50-59 and 60-69 age groups, which did not differ from each other. The 70+ age group performed more slowly than the 3 younger groups. Thus, a slowing of picture naming latencies was found in participants above 50 years of age. This slowing remained significant even when cognitive processing speed was controlled for.

# Discussion

The increase in correct naming latencies on the picture naming task in participants in their 50s suggests the presence of subtle age-related word finding difficulties. In participants in their 60s, naming difficulties were highlighted by both a decrease in correct responses and an increase in naming latencies. Finally, in participants above 70 years of age, these difficulties became more pronounced in both naming accuracy and naming latencies.

Slowing on the picture naming task appears to be greater and to arise earlier in the adult lifespan (in participants in their 50s) than slowing on the odd-even judgment task assessing processing speed (in

participants in their 60s). Moreover, this slowing of picture naming latencies in participants in their 50s remained significant even when processing speed was controlled for with an analysis of covariance.

In conclusion, these results support the importance of naming latency analyses in uncovering subtle naming difficulties. Furthermore, although we do not exclude a possible impact of general slowing on naming latencies in participants above 50 years of age, these findings suggest that the slowing in naming at this age observed here may be explained by a specific age-related slowing within the language system.

# References


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