# WWEP: How Experience Affects Adults' Recognition of Words

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## Introduction

- Word frequency measures how often a word occurs. High frequency words are processed faster than low frequency words (Brysbaert et al., 2018). Familiarity measures one's ease of perception of a word, and it is correlated with word frequency (Tanaka-Ishii & Terada, 2011). Despite the correlation, familiarity and word frequency capture distinct aspects of word recognition (Brown & Watson, 1987)
- Both familiarity and frequency effects are rooted in the brain. Schuster et al. (2016) demonstrated that as word frequency increased, the activation in the left hemispheric regions decreased. Kronbichler et al. (2004) showed that left fusiform gyrus activity increases as word frequency decreases. These findings show that when a high frequency word is read, less activation is required

## Methods

#### **Participants**

Demographic	Participants		
Characteristics	(%)	Mean 🔻	SD 🔻
Overall	832		
Age		18.91	1.17
Gender			
Male	343 (41.2)		
Female	489 (58.8)		
Class Year	-	-	
Freshman	565 (67.9)		
Sophomore	169 (20.3)		
Junior	61 (7.3)		
Senior	34 (4.1)		
Did not say	3 (.36)		
First Language			
English	602 (92 2)		

#### activation is required.

Age of acquisition (AoA) refers to the estimated age at which people learned a certain word. This is usually measured using a rating scale of the age the word was first learned (Gilhooly & Logie, 1980). Words learned earlier in life are processed faster than those learned late in life in different lexical processing tasks (e.g. Cortese & Kahanna, 2007). By studying the AoA effect, one can investigate the relationship between AoA and other word variables to see how these impact word recognition (Juhasz, Lai & Woodcock, 2015).

Many studies have examined AoA and its developmental/neural underpinnings. For example, Yum et al. (2019) studied the neural bases of AoA effects cross-linguistically to determine the findings' relationship with current theoretical accounts. By analyzing ERP data, AoA effect was shown to interact significantly with phonological regularity and was stronger in the case of late acquisition.

### English 692 (83.2) Other 140 (16.8)

#### Stimuli

- There were 499 words on the questionnaire in total.
- Words were selected from the English Lexicon Project (ELP; Balota et al., 2007) and by the researchers.

#### Procedure

- Questionnaires were distributed and completed on Qualtrics.
- Participants were assigned randomly to one of four versions of the questionnaire.
- Participants rated words based on familiarity (Fam) and when they first learned the word (AoA) on a scale from 1 to 7.
- Regression slopes were computed for each word to assess the trajectory of AoA and Fam ratings from Fall 2019 to Spring 2023.

## Results

The Distribution of Regression Slopes for AoA Ratings Between F19 and S23	The Distribution of Regression Slopes for Fam Ratings Between F19 and S23	
0.15	0.2	
	•	
0.1	0.15	
0.05	0.1	
Solo		

We found a strong correlation between F19 and S23 AoA and Fam ratings
The correlation between F19 and S23 AoA

ratings is r=.974, p<.001



- The correlation between F19 and S23 Fam ratings is r=.960,p<.001
- The correlation between F19 and S23 AoA ratings is significantly higher than that of Fam, z=3.45, p<.001

#### Additional findings:

- "tofurkey", "portraiture", and "telethon" show a downward trend in Fam rating
- "blockchain", "glamping", and
   "meteorite" show an upward trend in
   Fam rating
- "emoji", "smartphone", and "minion" show a downward trend in AoA rating
- "camcorder", "skort" and "monopoly" show an upward trend in AoA rating



#### Scatterplot of S23 AoA Ratings vs. F19 AoA Ratings



## **Summary and Conclusions**

- As seen through the data above, there is high interrater reliability, and the two scatterplots demonstrate the notably high correlation between ratings across years, with the AoA ratings being the most stable over time—from Fall 2019 (F19) to Spring 2023 (S23).
- There are several words that are outliers in the distribution of both AoA and FAM regression slopes, signifying some especially strong changes in word ratings for certain words over time.
- Overall, year 4 of the Wesleyan Word Experience Project has uncovered the progression of the rating trends in AoA and Fam.

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