

# Automatic Semantic Priming in Individuals with Alzheimer's Disease: A Meta-Analysis

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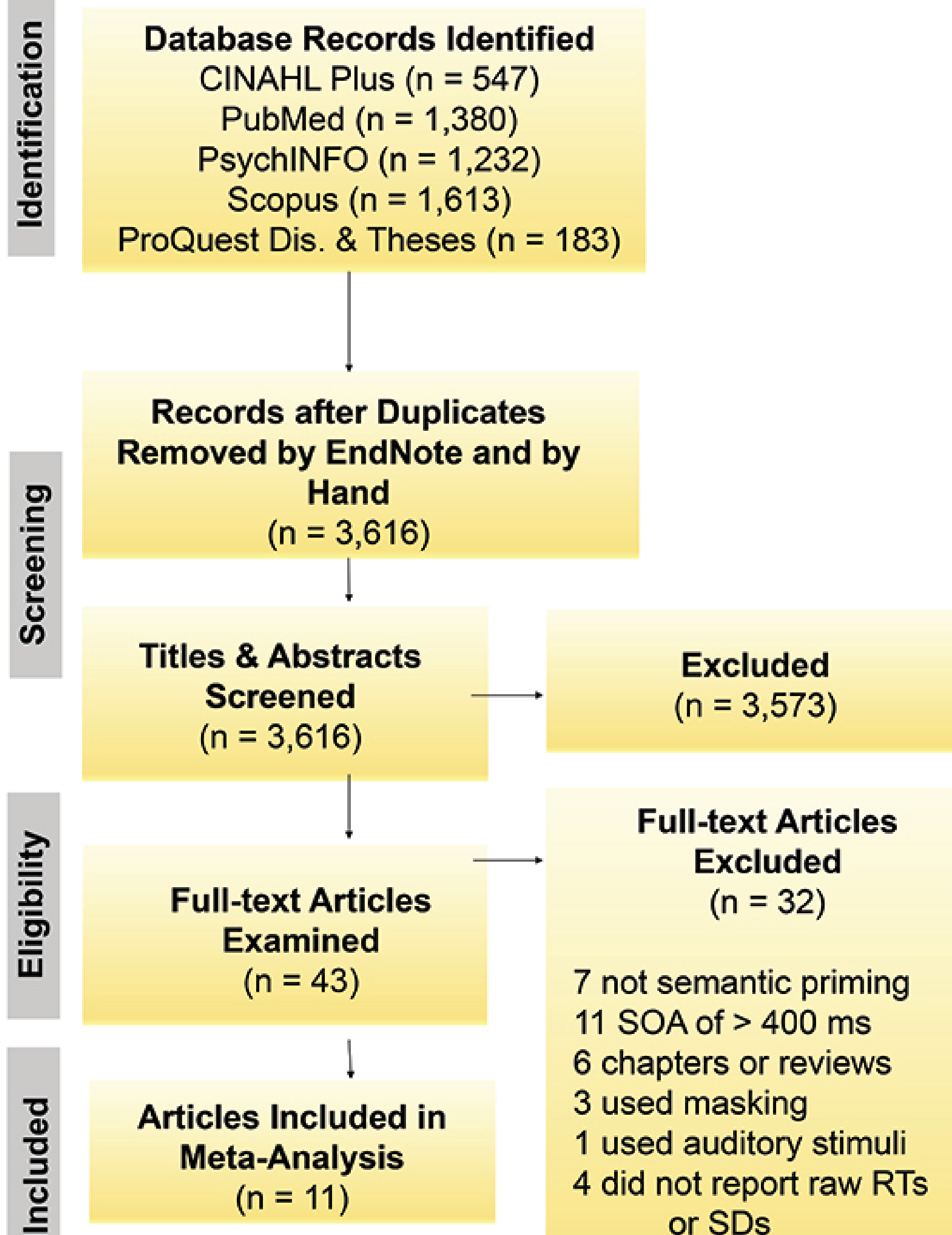
## Introduction

- In automatic semantic priming, people respond faster to semantically related words (cat-dog) than to unrelated words (sky-map)
- People with Alzheimer's disease (AD) show abnormally increased priming effects (hyperpriming)<sup>1</sup>, but not always<sup>2</sup>
- We examined hyperpriming and related word relationships during automatic semantic priming in individuals with AD

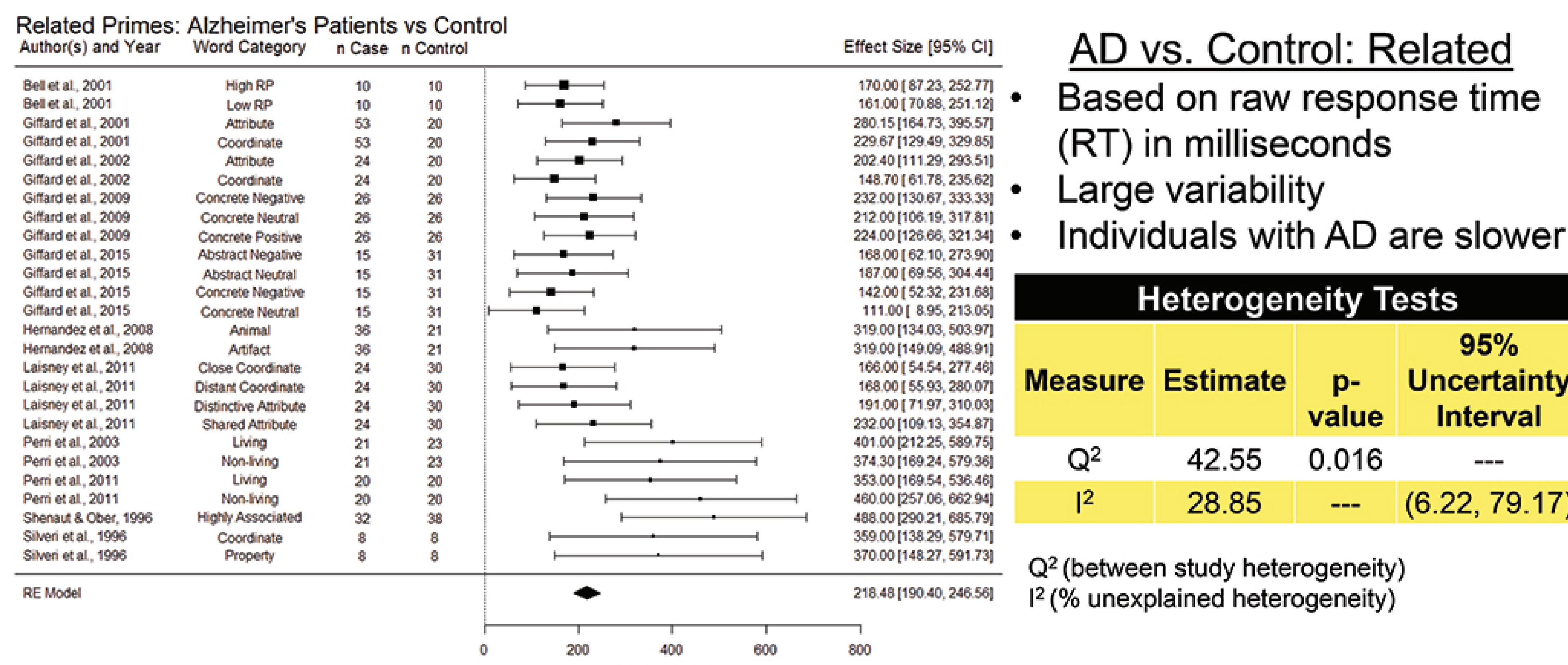
## Methods

- Two reviewers independently searched five databases: CINAHL Plus, PubMed, PsycINFO, Scopus, and ProQuest Dissertations & Theses on January 27, 2018, and again June 18, 2018

### Systematic Record of Article Selection<sup>3</sup>



## Results

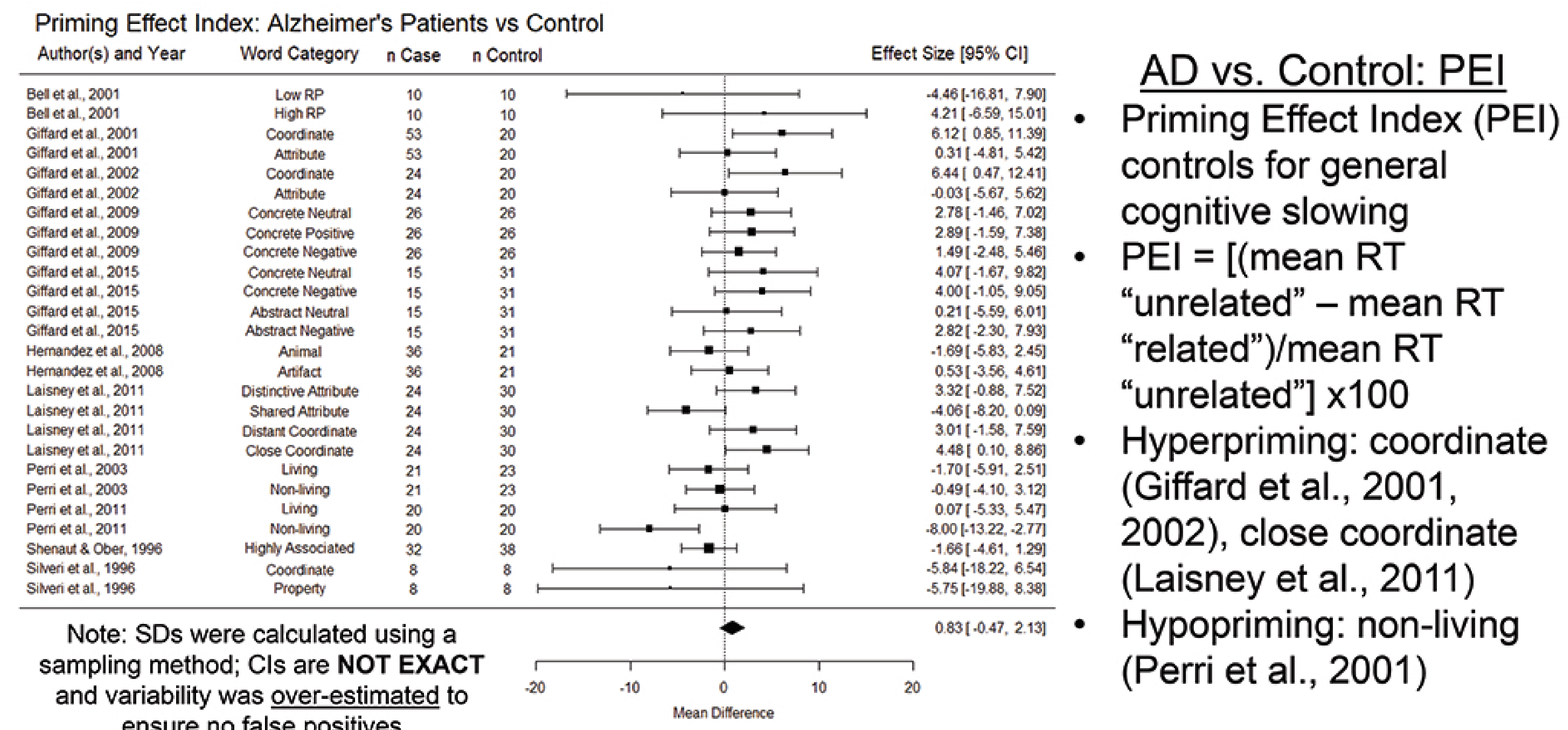
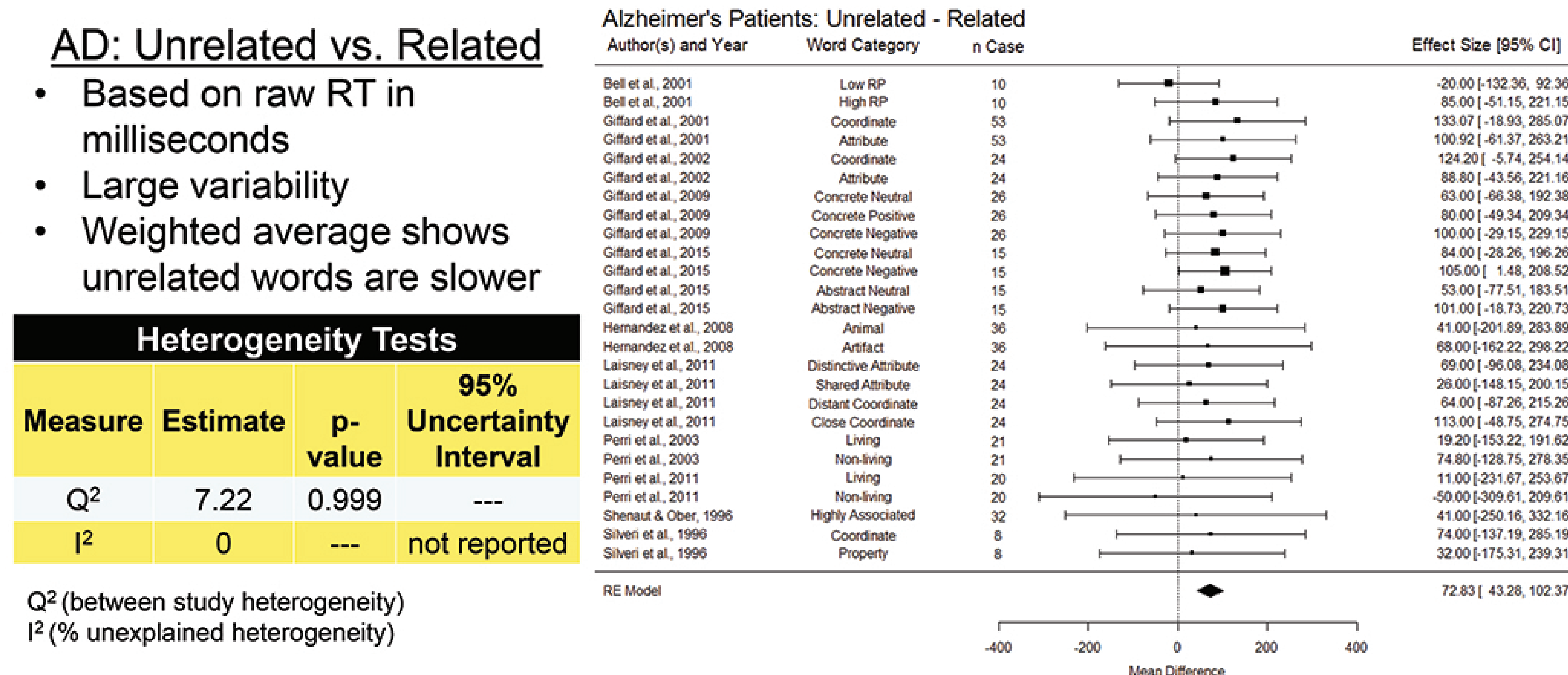


- AD vs. Control: Related
- Based on raw response time (RT) in milliseconds
- Large variability
- Individuals with AD are slower

### Heterogeneity Tests

Measure	Estimate	p-value	95% Uncertainty Interval
Q <sup>2</sup>	42.55	0.016	---
I <sup>2</sup>	28.85	---	(6.22, 79.17)

Q<sup>2</sup> (between study heterogeneity)  
I<sup>2</sup> (% unexplained heterogeneity)



- AD vs. Control: PEI
- Priming Effect Index (PEI) controls for general cognitive slowing
- PEI = [(mean RT "unrelated" - mean RT "related")/mean RT "unrelated"] x 100
- Hyperpriming: coordinate (Giffard et al., 2001, 2002), close coordinate (Laisney et al., 2011)
- Hypopriming: non-living (Perri et al., 2001)

## Conclusions

- When compared to controls, individuals with AD have slower raw RTs
- A significant Q<sup>2</sup> and moderate I<sup>2</sup> between studies of individuals with AD and controls suggests differences due to word categories
- Individuals with AD respond more slowly to unrelated than related words
- A significance of heterogeneity was not seen between studies of individuals with AD on related and unrelated words which suggests variability of AD severity alone is not the cause of the significant heterogeneity found between individuals with AD and controls
- Using a conservative PEI, 3 studies show hyperpriming and 1 study shows hypopriming
- Word-level analyses should be performed to determine why all studies using coordinates (Silveri et al., 1996) did not show hyperpriming

## Selected Literature Cited

- Giffard, B., Laisney, M., Desgranges, B., & Eustache, F. (2015). An exploration of the semantic network in Alzheimer's disease: Influence of emotion and concreteness of concepts. *Cortex: A Journal Devoted to the Study of the Nervous System & Behavior*, 69, 201-211.
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