

Pain, Dementia & the Brain

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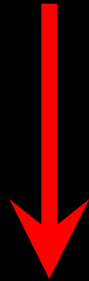


Pain:

An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.

The Clinical Reality

INCREASED COGNITIVE IMPAIRMENT



DECREASED LIKELIHOOD OF ANALGESIA

Pain & Dementia

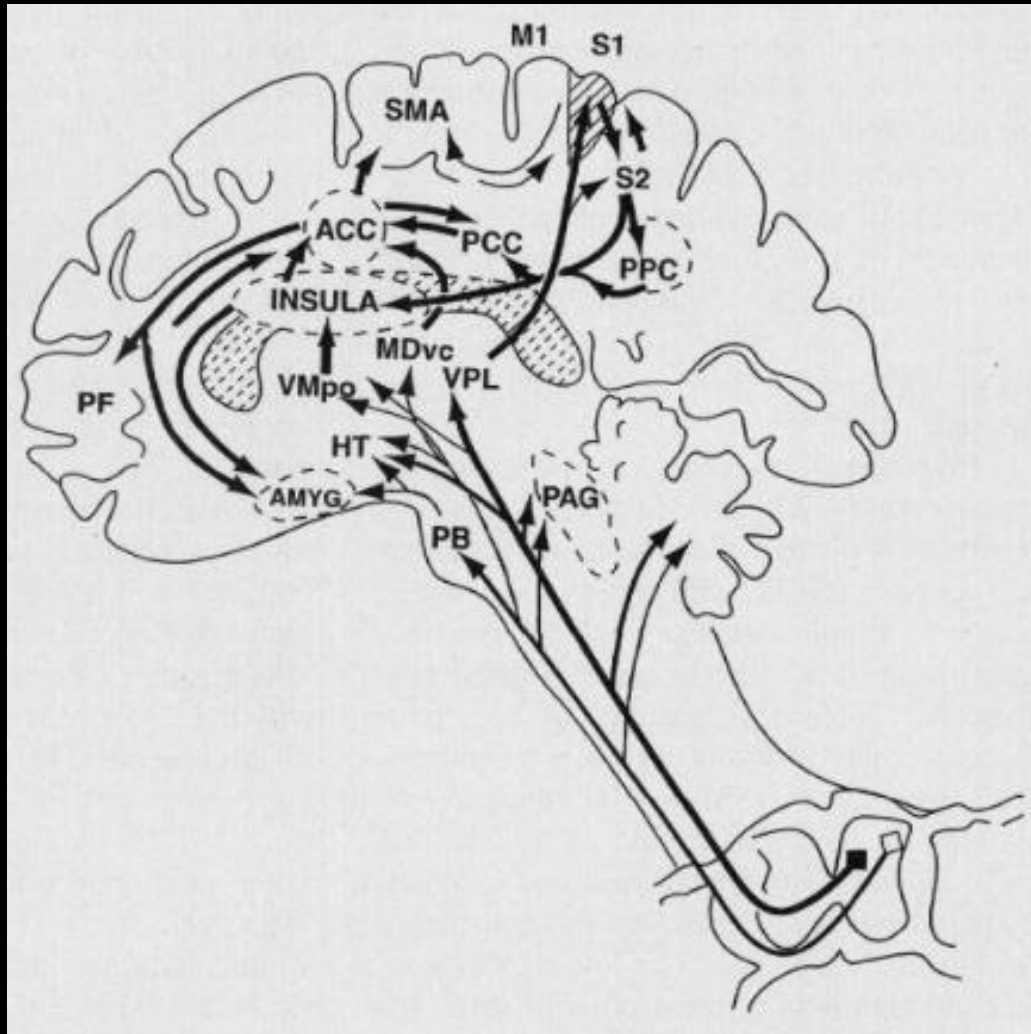
- Impaired communication skills
- Differential rates of comorbidity and altered disease manifestations
- Altered pain processing in the central nervous system

Pain Dimensions:

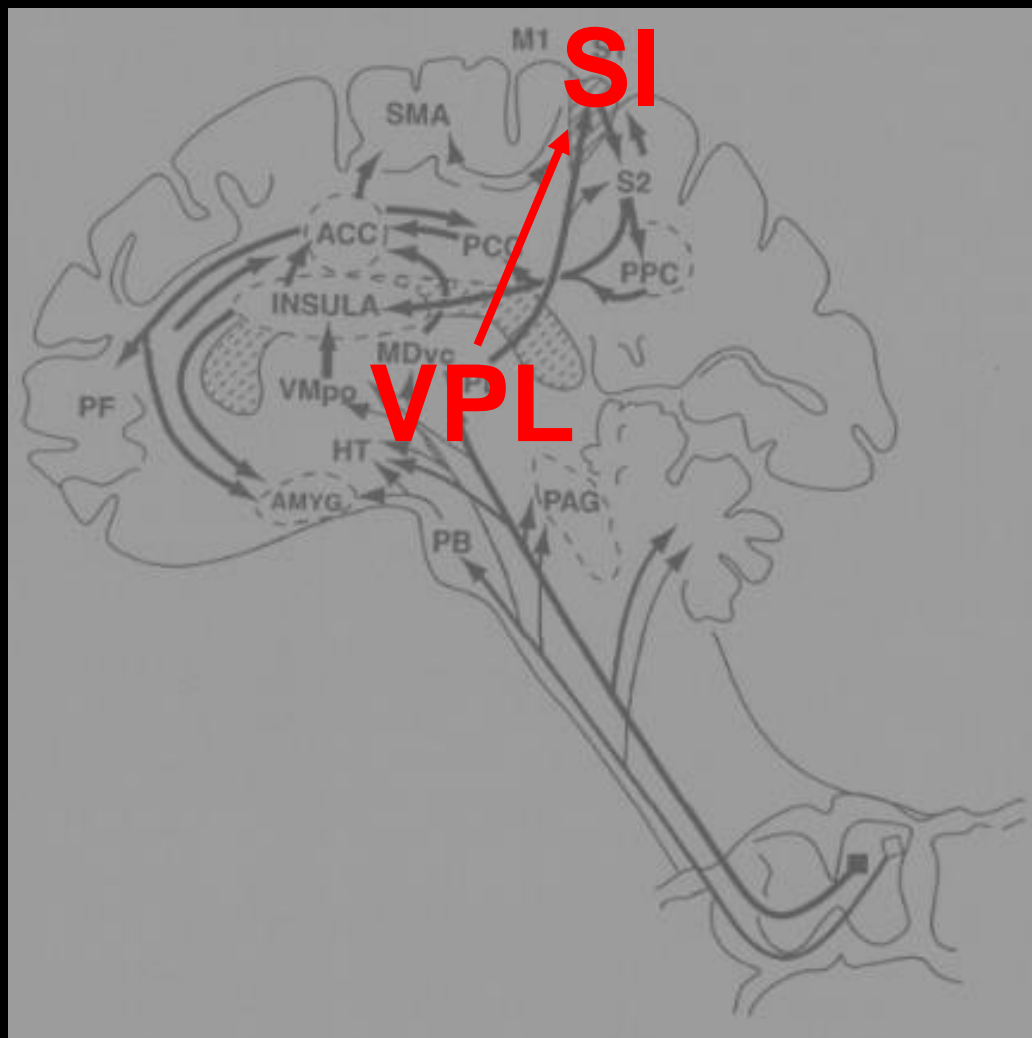
- Sensory/Discriminative
- Affective/Motivational

Pain Dimensions:

- Sensory/Discriminative
- Affective/Motivational
- Cognitive/Evaluative

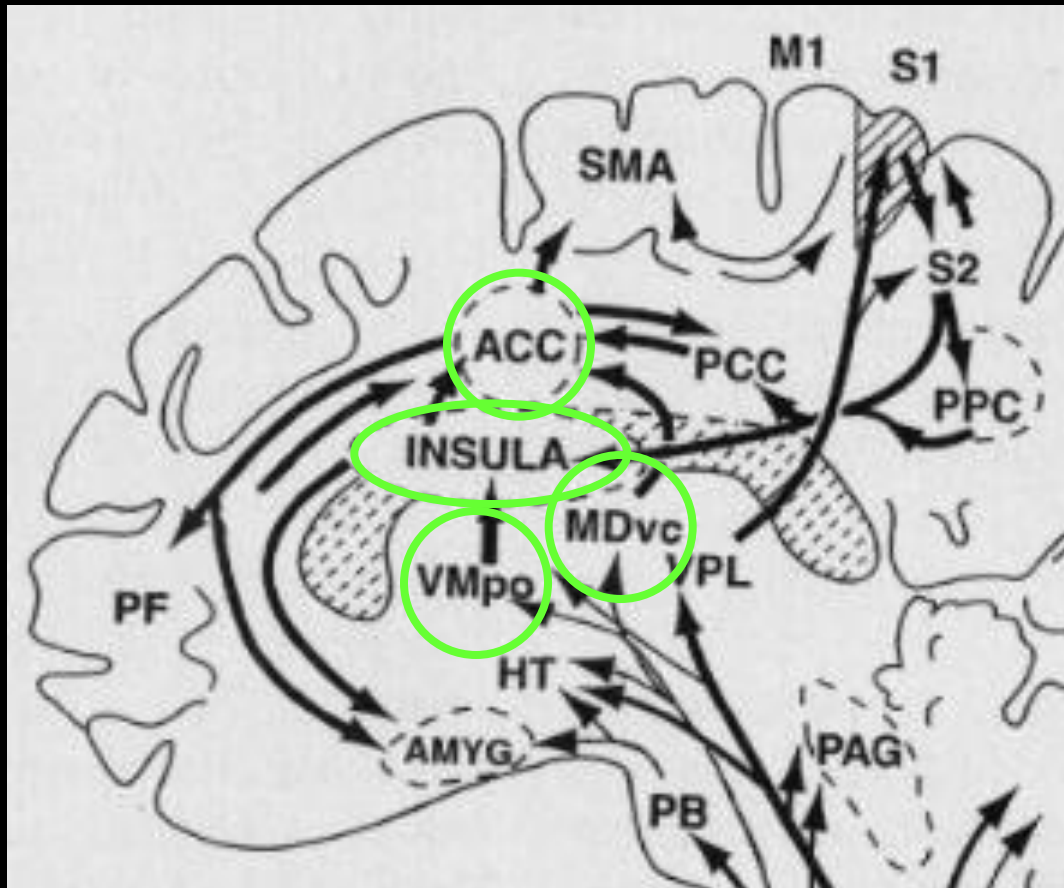


The Wiring Diagram

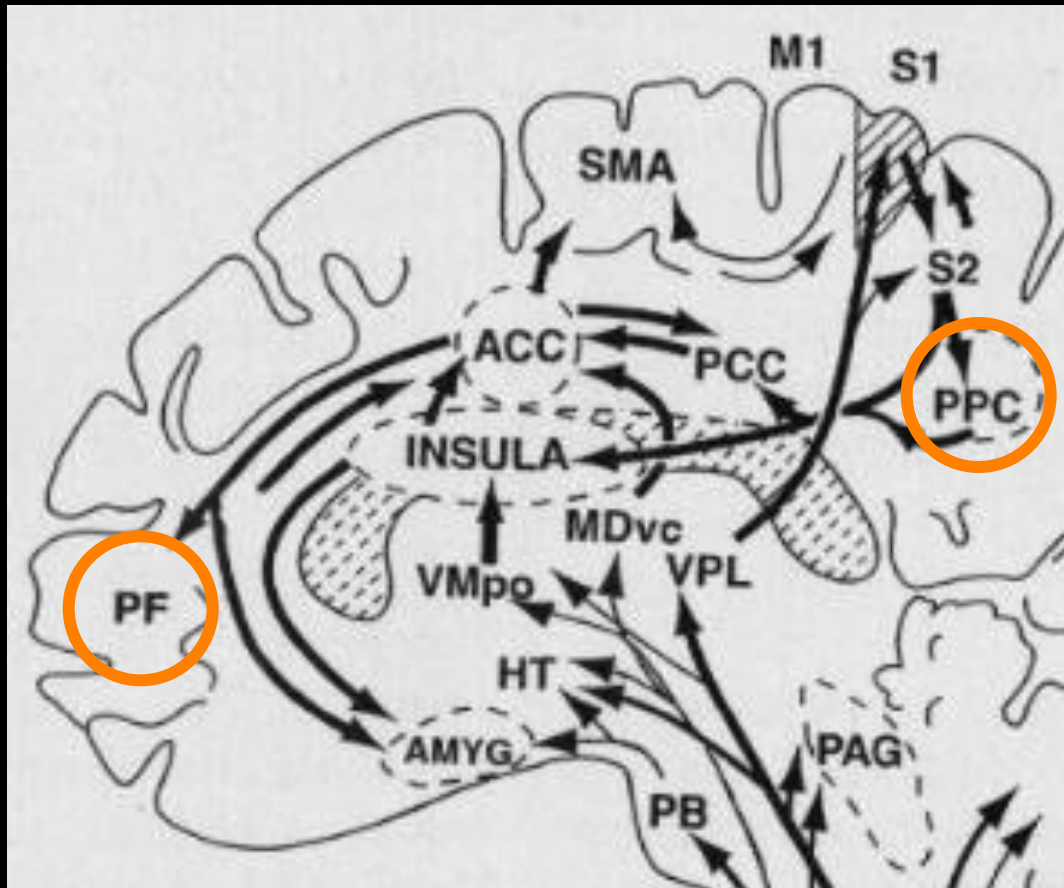


Lateral Pain Pathway

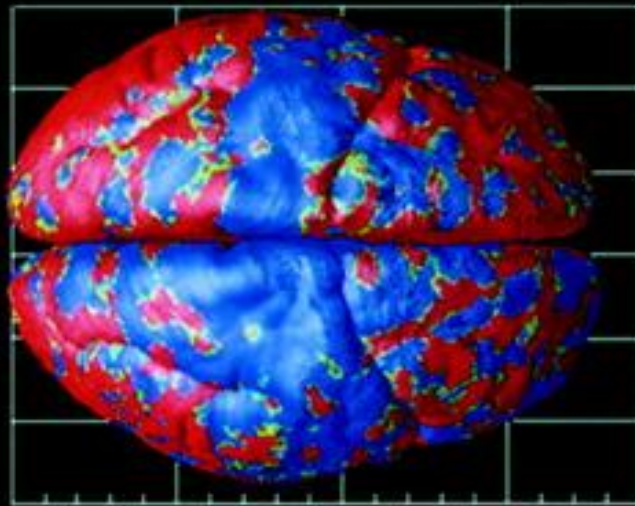
Medial Pain Pathway



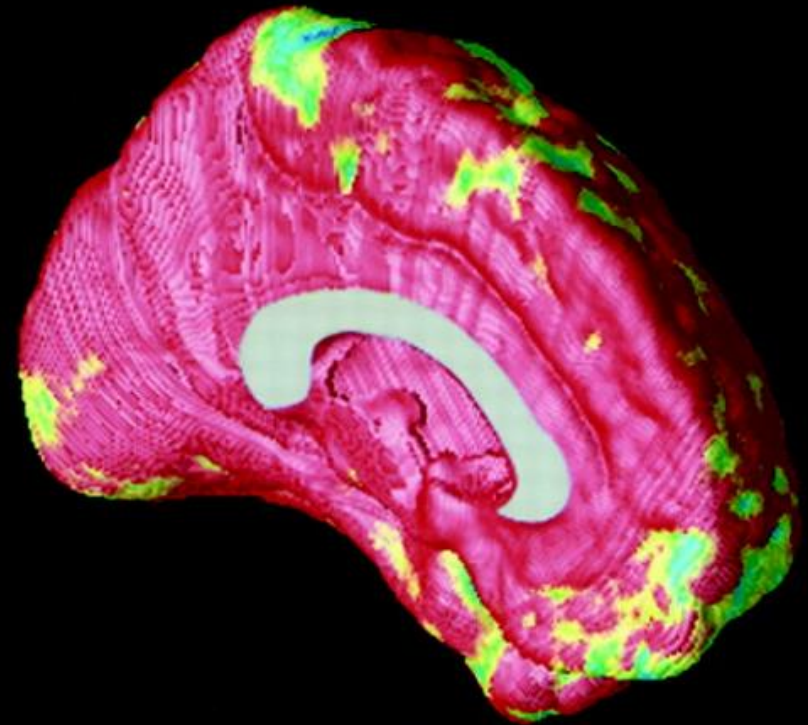
Integrative Centres



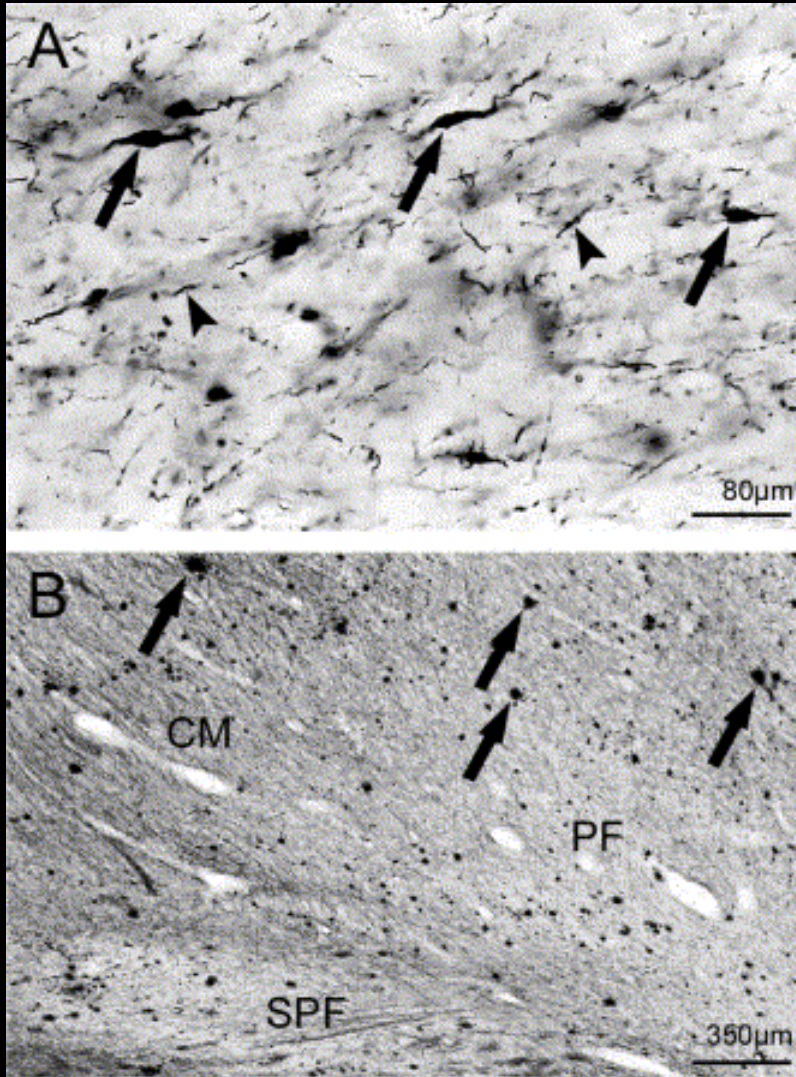
 Significant longitudinal decrease



Percent Deficit



Medial Thalamic Nuclei in AD



“Anatomical” Hypotheses

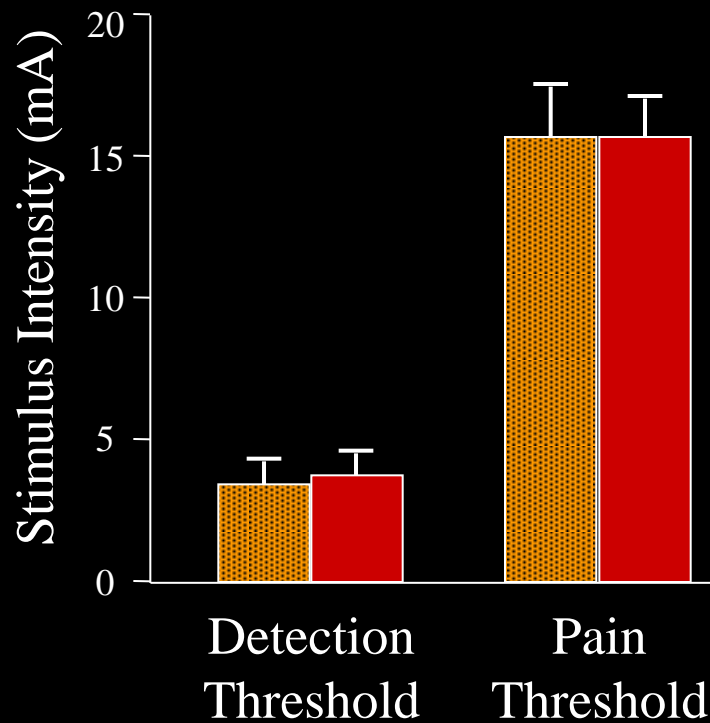
- Sensory/discriminative processes of pain are preserved in people with Alzheimer’s disease
- Affective/motivational processes of pain are altered in people with Alzheimer’s disease

“Cognitive” Hypothesis

- Impairments of memory and cognition decrease the capacity of people with Alzheimer’s disease to appraise the meaning and consequences of pain

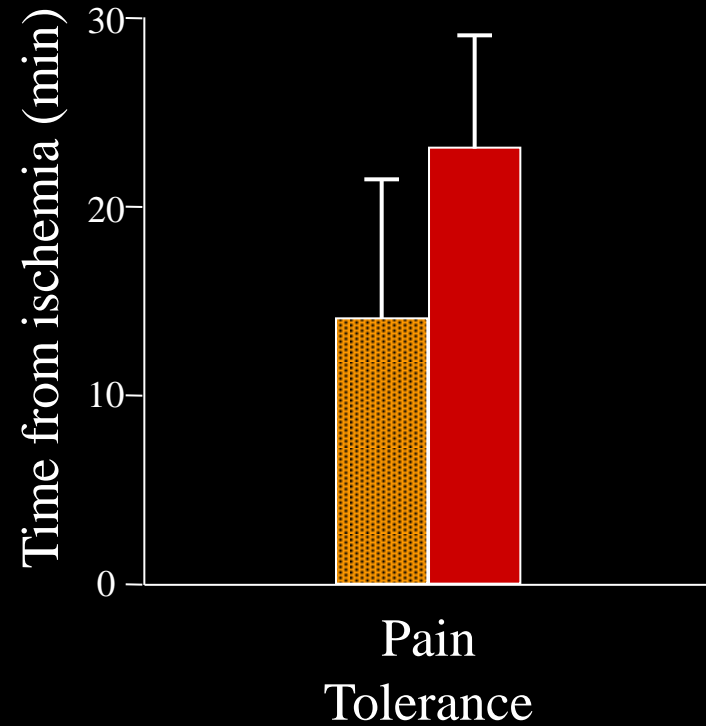
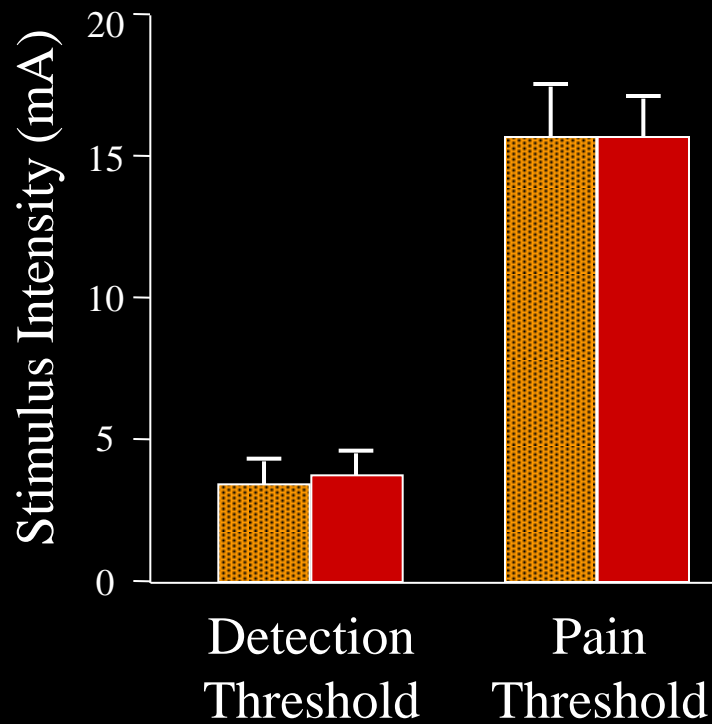
Psychophysical Responses

 Control Participants  Alzheimer's Disease Participants

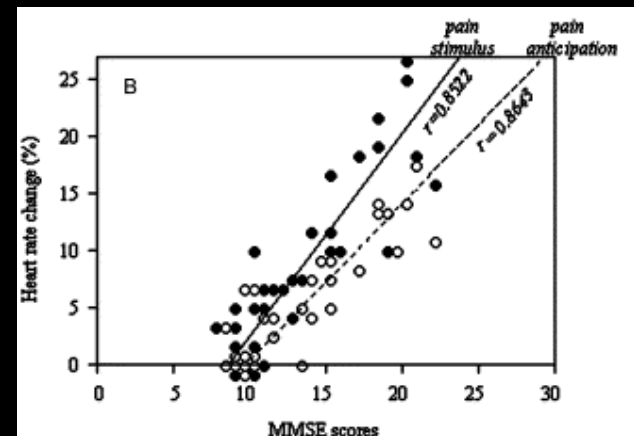
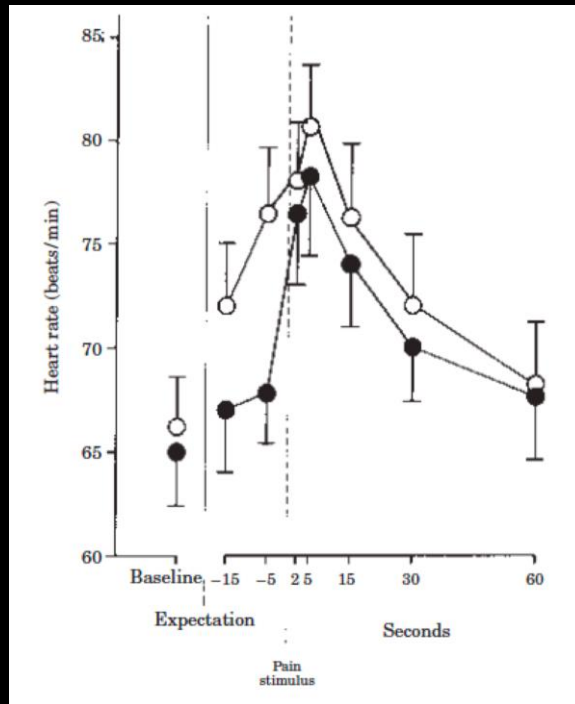


Psychophysical Responses

 Control Participants  Alzheimer's Disease Participants



Acute Pain - Autonomic Responses



Pain, Meaning and Cognitive Impairment

Persistent Pain:

Do thoughts about pain mediate emotional responses to ongoing pain in people with cognitive impairment?

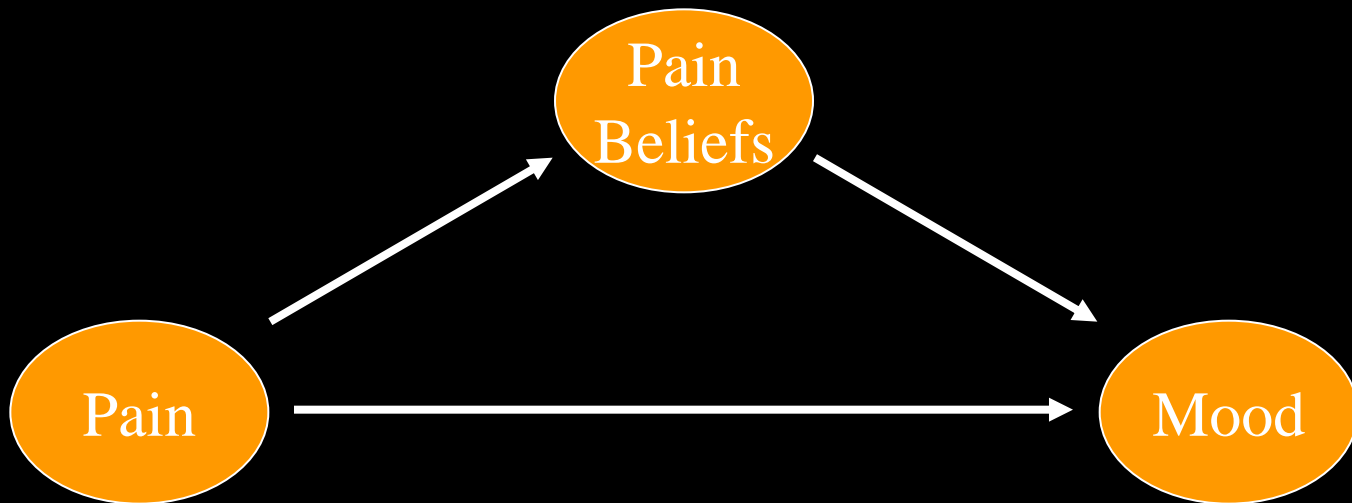
Pain, Meaning and Cognitive Impairment

Persistent Pain:



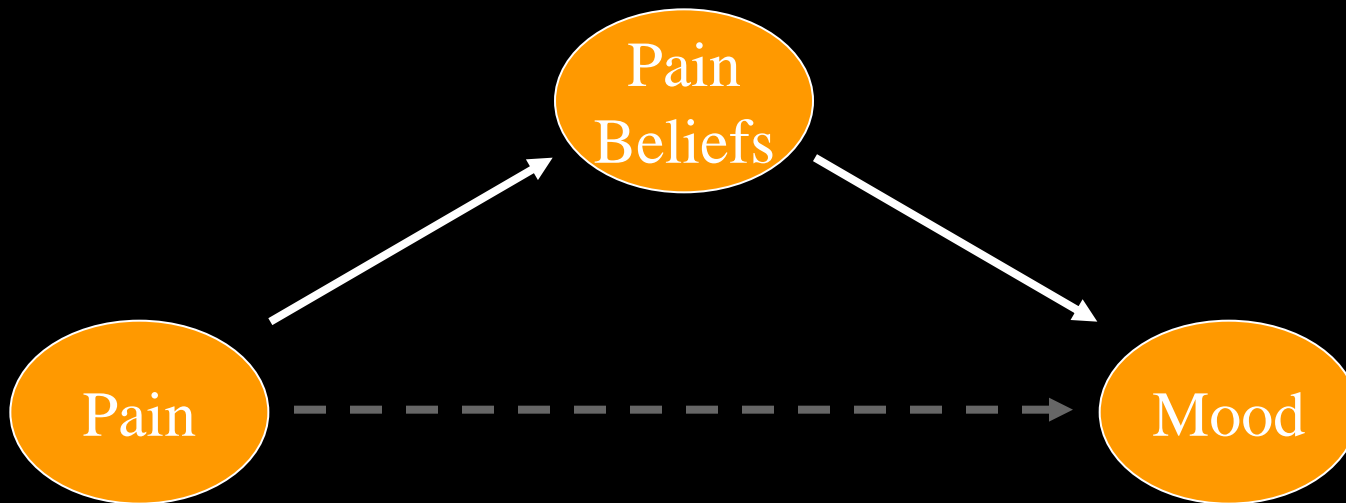
Pain, Meaning and Cognitive Impairment

Persistent Pain:



Pain, Meaning and Cognitive Impairment

Persistent Pain:



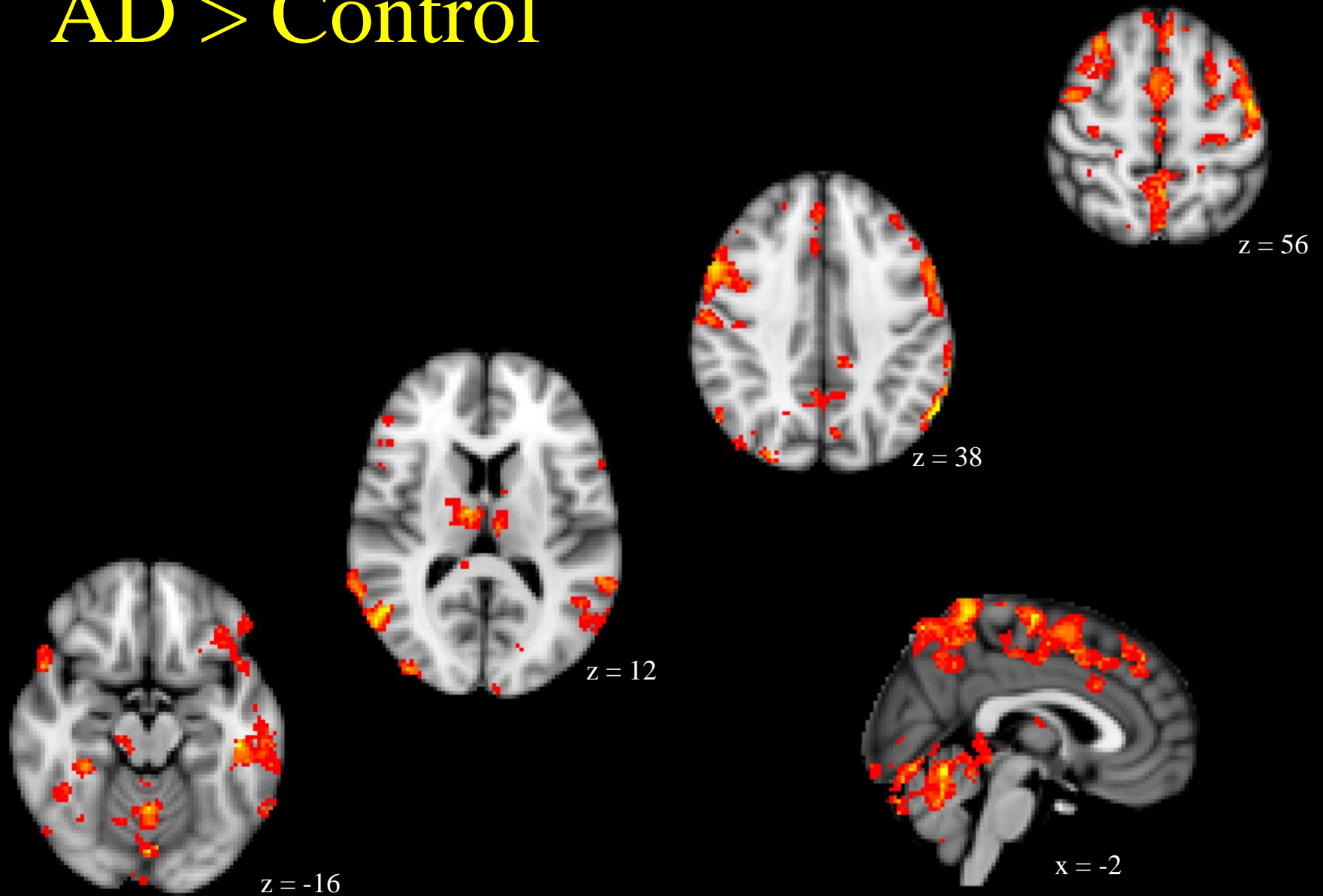
Pain, Meaning and Cognitive Impairment

Cognitive Status	Independent Variable	R ²	F change	Beta
Impaired	PPI	0.080	*6.4	*0.26
	PBQ Control	0.074	*6.3	**0.30
	MMSE	0.051	*4.5	*-0.23
	Total	0.207		
Intact	PPI	0.000	0.0	-0.01
	PBQ Control	0.099	*6.3	*0.32
	Total	0.099		

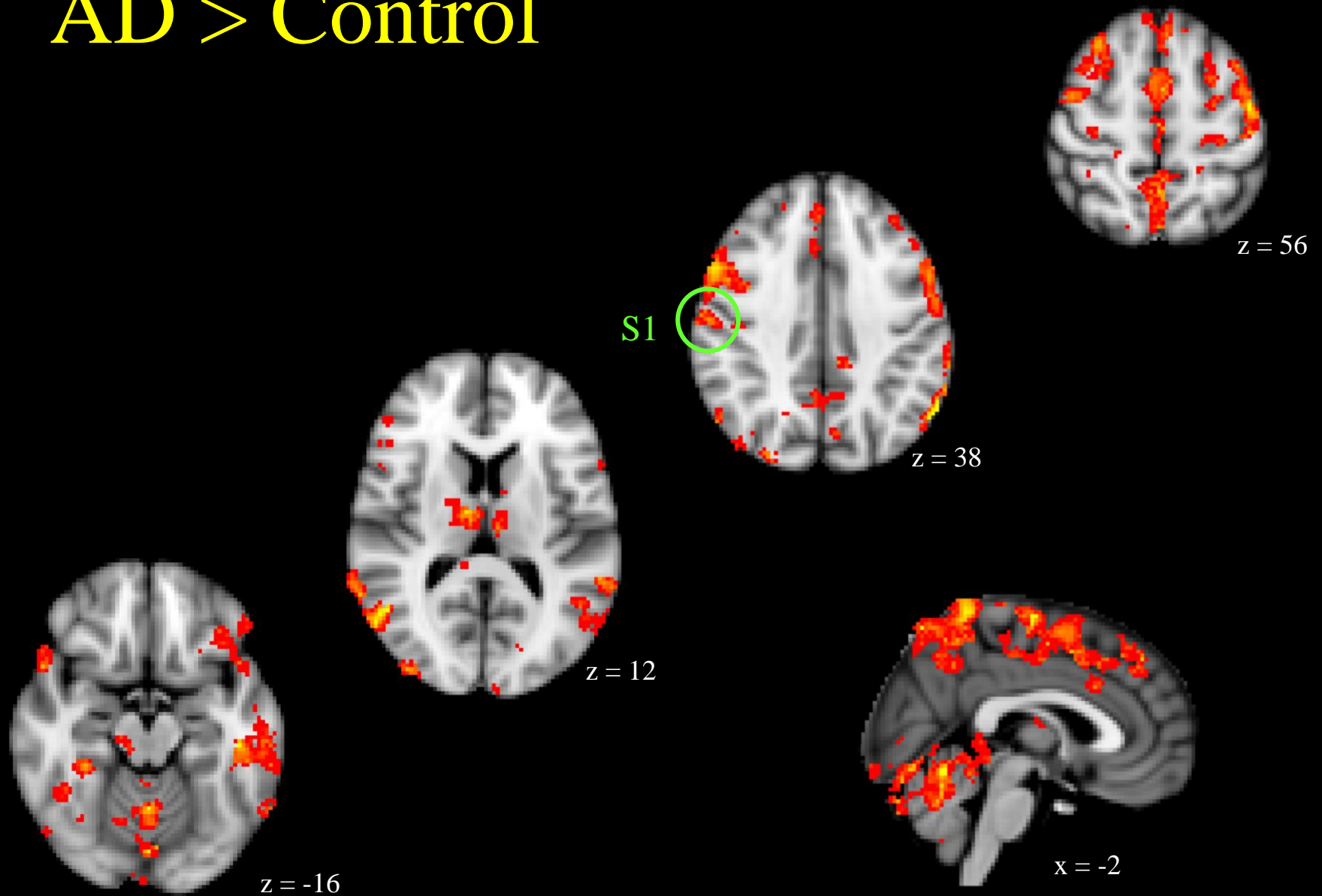
Pain in the Brain in People with Alzheimer's Disease

- What happens when we compare brain responses to noxious stimulation in people with Alzheimer's disease (AD) and age-matched controls?
 - Does the lateral pathway activate equally in both groups?
 - Does the medial pathway show decreased activation in people with AD?
 - Are integration centres less activated in people with AD?

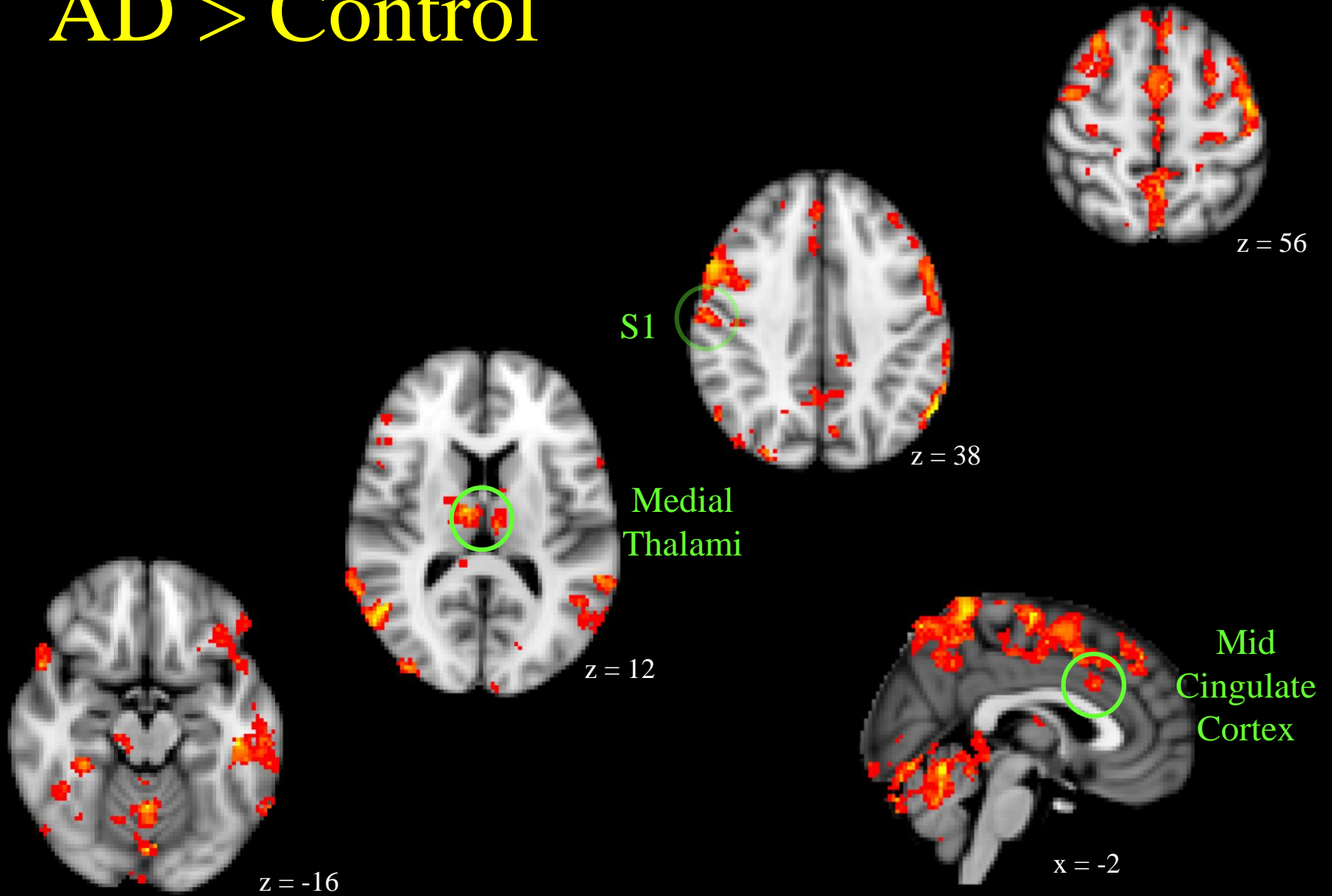
AD > Control



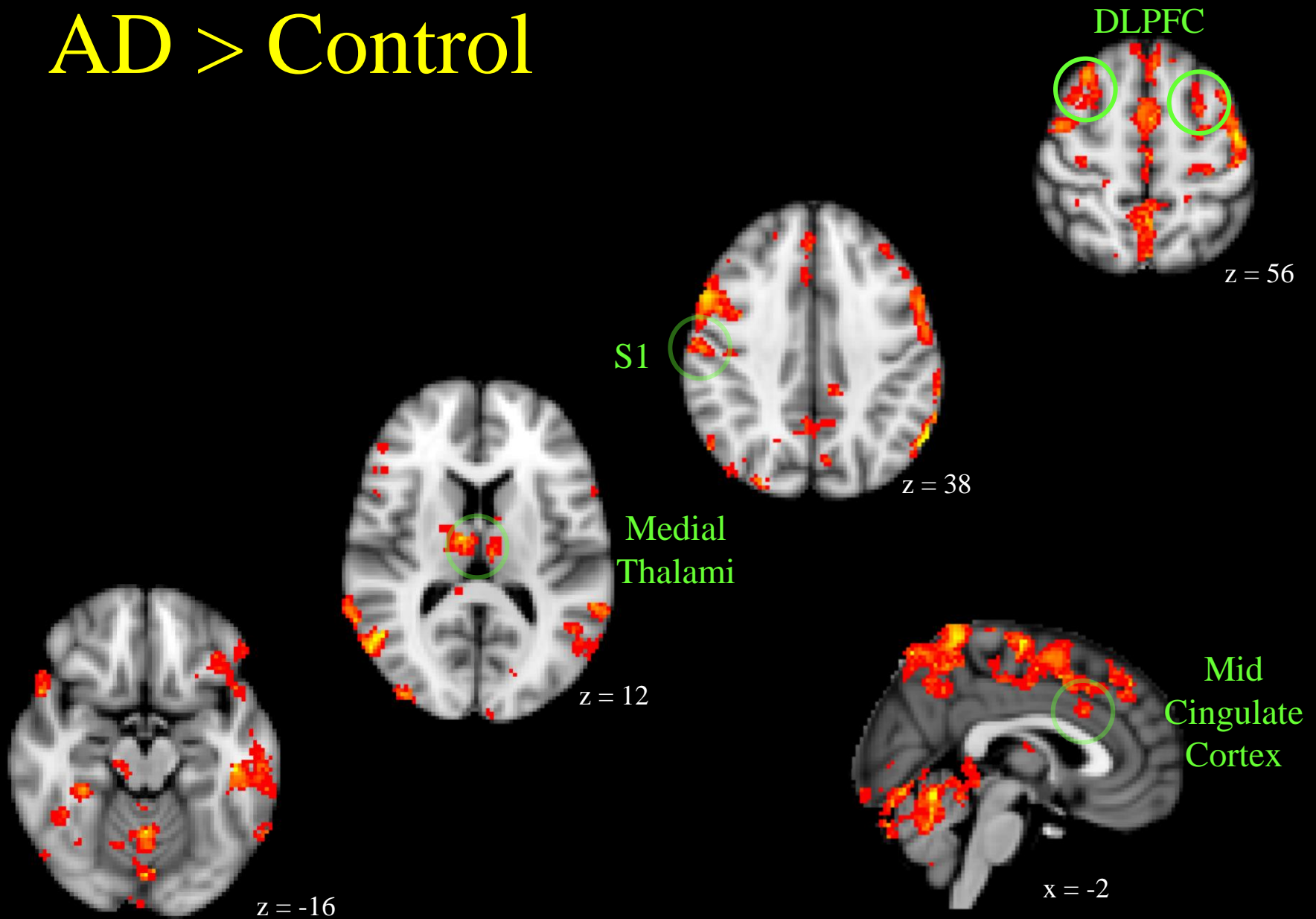
AD > Control



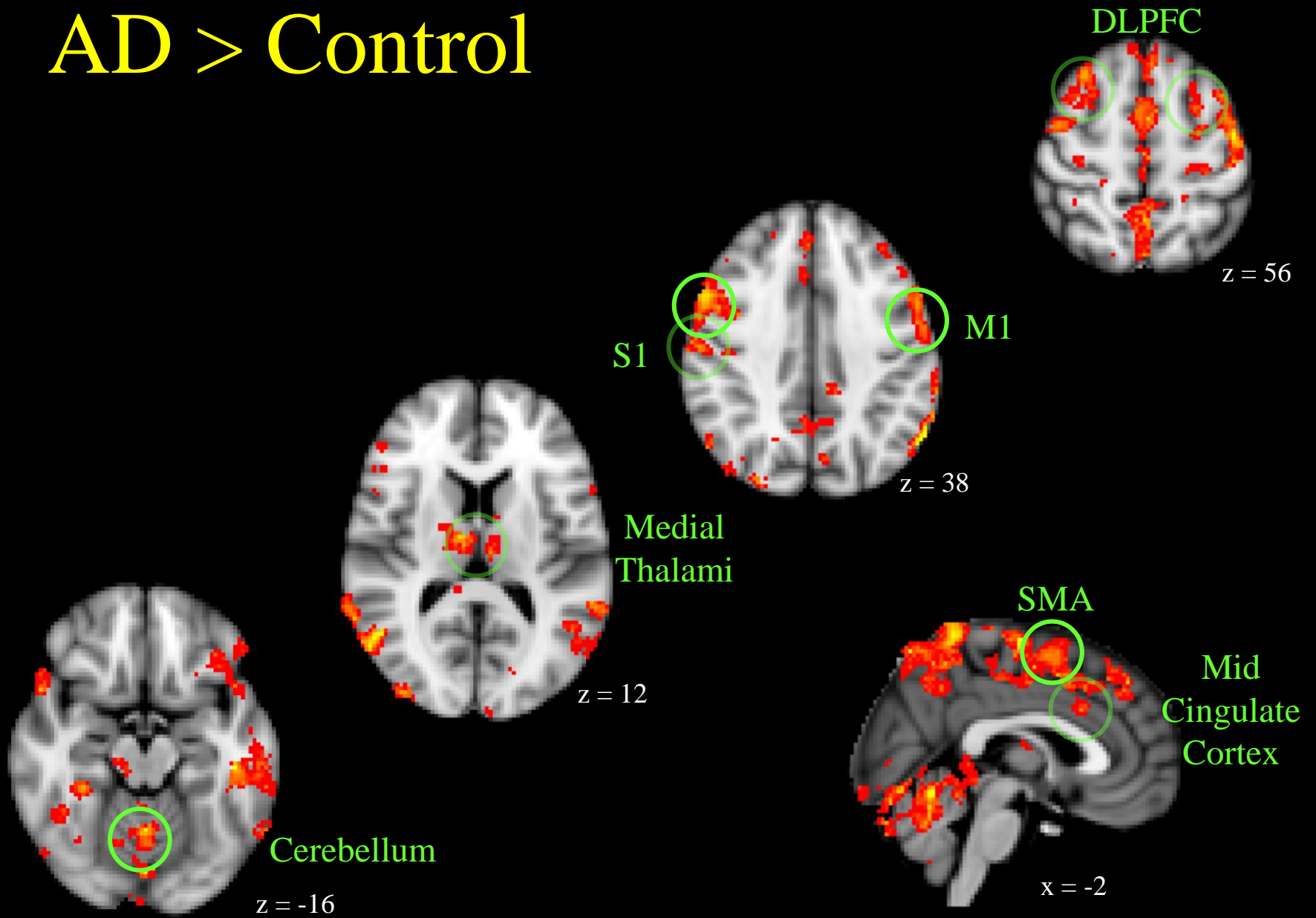
AD > Control



AD > Control



AD > Control



Conclusion

- Primary pain processing is preserved in people with mild dementia
- Integrating experiences of pain into meaningful contexts may be more challenging for people with dementia
- Predicting interactions between pain and cognitive impairment in individual cases is unlikely to be informed by anatomically inspired theories