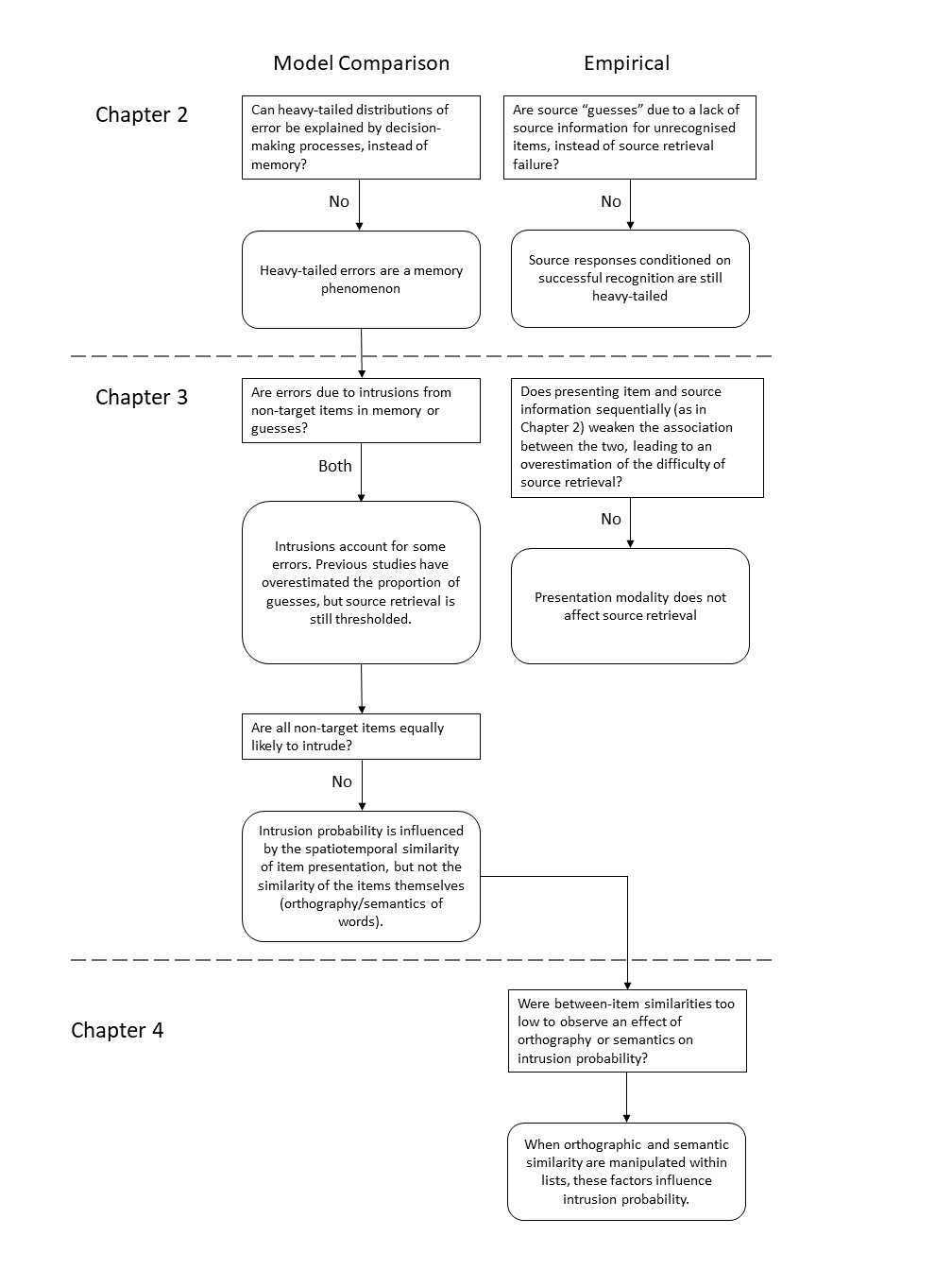
# Overview of the Thesis

When drawing upon our memory, we may sometimes summon some information without being able to say from where or whom we learned it. This characteristic of human nature can result in errors such as retelling a joke to the person you heard it from in the first place. In order to effectively use remembered information to inform our beliefs and behaviours, we need to make judgements about origin or *source* of that information. Judgements of this kind are studied in the laboratory using source memory tasks, which require participants to produce context when cued with item. Source memory can be thought of a special case of associative memory, where instead of retrieving the association between multiple presented items, source memory tasks requires the retrieval of the association between an item and the context in which it was presented.

A signature result from continuous-outcome tasks is a peaked, heavy-tailed distribution of response errors, which have been commonly interpreted as arising from a mixture

The body of this thesis is framed as a series of challenges to the thresholded view of source memory from a number of angles. In Chapter 2, I ask firstly whether the heavy-tailed distribution of errors are a result of properties of the decision-making process rather than memory, and find that the heavy-tailed phenomenon is indeed a result of the latter. Secondly, I ask if uniform source errors are simply responses for items that are not recognised. In Chapter 3, I firstly distinguish between errors due to guesses, made in the absence of any information, from intrusion responses, which are driven by information from an incorrect item, and I secondly investigate whether the heavy-tailed error pattern is robust to changes in the mode of stimuli presentation. Chapter 4 follows directly on from our finding in Chapter 3 that contextual (spatiotemporal) similarity between items affects intrusion probability, but not item (orthography and semantics)

by directly manipulating the inter-item similarity within lists of studied words. Through these empirical chapters, I ultimately find that the threshold account of source memory retrieval holds under scrutiny. In the final chapter, I discuss the implications of this finding and the conclusions we can draw about our broader understanding of episodic memory.



## General Background

### Source Memory

Lindsay, Jones, source monitoring?

### Dual-Process Models

Failures of memory, sometimes they feel like the tip of the tongue, as if you are on the verge of remembering something but the signal is just a little too weak. We also sometimes have no sense at all, like forgetting the keys and not even knowing where to start looking. In the first case, memory feels like a continuous quantity which varies in strength, while in the latter case memory feels like a discrete state: either the memory is retrieved or there is absolute failure.

The idea that there are different states of awareness goes back to Tulving remember/know. There are some things that we can *remember* in detail, while others that we simply *know*.

Describing differences how people classify their memories, but not differences in the architecture of memory itself.

Do different memory tasks actually reflect different memory processes?

To claim that memory exists in different types, it is insufficient to observe a behavioural dissociation. Instead, you need to characterise different memory processes that are fundamentally different. One example is recollection and familiarity (Yonelinas). These are differentiated by each other in terms of process: familiarity is a continuous signal, recollection is a discrete state.

In continuous models of source memory, which are based on Signal Detection Theory, memory strength is assumed to vary continuously, and so predict that performance in a source memory task declines gradually as memory strength decreases (Banks, 2000; Glanzer, Hilford, & Kim, 2004; Mickes et al., 2009). In contrast, threshold or discrete-state models assume that memory strength for an item must reach a certain threshold in order for that item to be retrieved, and so predict that source responses are either made with high precision when driven by memory, or are guesses made in the absence of information. Many of the multinomial models really just posit a retrieval probability. (Batchelder & Riefer, 1990; Klauer & Kellen, 2010).

Another alternative is the dual-process framework, which combines the continuous strength and discrete processes. Dual process models propose that different retrieval mechanisms are used in different kinds of memory tasks (Mandler, 1980). In the influential Yonelinas (1999) dual-process model the two processes are 1) familiarity, which yields a continuous measure of strength for an item in memory and 2) recollection, which yields rich information about the study event itself when memory strength exceeds a threshold, but fails absolutely below that threshold. When performing a recognition task, one can respond by directly retrieve an item from memory through recollection, or by simply making a judgement about whether the item is memory or not without retrieving it, based on a feeling of familiarity. In this way, both recollection and familiarity can contribute to successful recognition. On the other hand, in a source memory task, familiarity cannot distinguish between two studied items from different sources, as both items are present in memory and should therefore be equally familiar. Thus, the Yonelinas (1999) dual-process model predicts that source judgements should rely purely on a high threshold recollection process.

In a recognition task, responses can be made either by directly retrieving an item from memory via recollection or by making a judgment about whether it is in memory without retrieval based on a feeling of familiarity. In this way, both recollection and familiarity can contribute to successful recognition.

Yonelinas 1994- familiarity is the same thing as unequal variance SDT

Yonelinas 1997- Straight ROC for associative memory

‘99- linear ROC for source

Last two are the big ones

But

Kelley and Wixted for assoc

Slotnick & Dodson for source

Not so clear, need continiuous report

### Continuous-Outcome Tasks

Continuous-outcome tasks, in which responses are made on a continuous scale, have been widely used in the visual working memory literature (Wilken & Ma, 2004). [Strictly speaking, not developed there. Blake et al. (1997) and Prinzmetal al. (1998) predated them.]

### Summary of General Background

## Models of Decision-Making

### Modelling Decision-Making in Memory Tasks

Response not a direct readout of memory. Properties of the decision-making process can affect responding. Ratcliff & Starns RTCON

### The Circular Diffusion Model of Continuous-Outcome Decisions

Slow errors

### Preview of Chapter 2

## Intrusions from Non-target Items

### Models of Non-target Responding

Bays swap errors

Interference Model Oberauer & Lin

Temporal Contiguity Healey Kahana

Rerko

### Similarity Effects in Memory

### Preview of Chapter 3

### Preview of Chapter 4

## Summary