{slide 2}

In our discussion of STM, recall that the modal model posits that memory is affected by the interaction of memory structures and control processes. While there are potentially an unlimited number of control processes, Atkinson and Shiffrin extensively investigated rehearsal. Rehearsal is the process by which an item is maintained in STM in order to be further processed, analyzed, or used to perform a more complex task.

{slide 3}

You will also recall from the last lecture that the Brown-Peterson task has been used to measure the duration of STM, and you will recall that the retention interval was filled with a distractor task. The distractor task is designed to disrupt rehearsal. When rehearsal is disrupted by a distractor task, Brown and Peterson were able to measure the duration of STM by plotting percent recall of the trigrams as a function of time.

You will also recall that performance on the Brown-Peterson task decreased to an asymptote. Why wasn’t the item completely forgotten? According to the modal model this is because after about 15-20 s., a subject still might be able to retrieve the trigram from long-term memory.

{slide 4}

The relationship between rehearsal, STM and LTM is an important one. This diagram illustrates that while the focus of the current conversation is short-term memory, other thoughts associated with more distant events are being retrieved from long-term memory.

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One might suppose that the more time that is spent discussing an issue, the more likely this couple will be able to remember the conversation in the future. Indeed, a critical assumption of the modal model is that greater the amount of time an item is rehearsed or spends in STM the more likely that information will be transmitted to LTM and thus the more likely it will be remembered in the distant future.

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These assumptions of the modal model allowed it to account for a commonly observed interaction that occurs when the ability to recall an item from a list is plotted against the serial position in which it was studied. This is called a serial position curve, and in the absence of a distractor task, it is U-shaped with items from the beginning of the list and the end of the list recalled the best. These are referred to as primacy and recency effects, respectively.

According to the modal model, the recency effect is due to very accurate retrieval from the contents of STM. You will remember that there may about 7 items in STM, and this serial position curve shows recency effects for about that many items.

The primacy effect is due to enhanced recall from LTM attributable to fact that items at the beginning of the list are given more rehearsal than items at the middle or the end of the list. Items at the beginning of the list get more rehearsal because initially the capacity of STM has not been reached. Thus, the first few items may be rehearsed with little competition from other items. Once the capacity of STM is reach then items from the beginning of this are dropped in favor of rehearsing newer items. Nevertheless, items at from the beginning of the list get more rehearsal and spend more time in STM than later items.

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The relationship between rehearsal and the serial position curve is shown here. While subjects studied a list of words, Rundus asked subjects to rehearse out loud. He recorded the rehearsals and counted them. On the right you can easily see that items from the beginning of the list received more rehearsal than other items. On the left you can see that the rehearsal advantage is related to the primacy effect but not due to the recency effect.

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You will recall that the recency effect is due to accurate retrieval of the items in STM when remembering is initiated. The bottom panel shows what happens when a distractor task is inserted in the retention interval. Remember the distractor task is design to prevent rehearsal and after about 15-20 s. the context of STM has decayed according to the modal model. This is explains why the recency effect is only observed when there is no distractor task.

The top figure shows what happens when you vary the amount of time that items are studied. This should increase the number of rehearsals each gets, and according to the modal model then we would expect the primacy but not the recency portion of the serial position curve to improve. This is exactly what is commonly observed.