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# Encoding Specificity: Applied to Communication Patterns in Recall Processes

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*This study investigated the concept of encoding specificity and attempted to apply it to communication patterns and memory. The hypothesis stated that similar forms of communication during encoding and recall would lead to improved recall performance. Forty undergraduate students were recruited to participate in two free recall trials where the modality of communication (visual vs. auditory) was manipulated to test the hypothesis. Participants were presented with two word lists (15 words each) either via visually (visual) or via audio recording (auditory) and asked to recall either via writing (visual) or speaking (auditory).Trials involving similar forms of communication displayed significantly higher scores than dissimilar ones.*

Encoding specificity indicates that consistent and similar factors occurring during encoding (process of how items are placed into memory) and retrieval (process of how items are recovered from memory) should have a positive effect on recall performance. Working memory is the "active maintenance of a limited amount of … information so it is available for use "(Sayala, Sala, Courtney 1). The present study attempts to demonstrate this effect by manipulating the communication patterns during two free recall trials. Ray and Reingold attempted to demonstrate perceptual specificity effects in a study involving natural scenes (Ray, Reingold 2003). Curan, Schacter and Bessenoff manipulated encoding tasks to "gain insight into the determinants of perceptual specificity effects on visual word-stem completion". Similar patterns of communication during encoding and retrieval (visual-visual, auditory-auditory) should therefore be more effective than dissimilar patterns (visual-

auditory, auditory-visual). Participants were asked to memorize two lists of words presented in either visual form (via power point) or in auditory form (via audio recording) and then recall the words either in visual form (via writing) or in auditory form (via speaking). The semantic and phonological complexity of the words used was limited to limit the effects on recall performance. The word length effect is the finding that a list of items that take less time to pronounce is better recalled on an immediate recall test than an otherwise equivalent list of items that take more time to pronounce (Bireta, Neath & Surpenant). Hannon and Craik also investigated the effects of the semantic characteristics of words on memory using (Hannon, Craik 2001).

## Method

*Participants*

Forty (21 male, 19 female) college-age students were recruited from the Human Subject Pool at Lindenwood University. Participants were recruited via a sign up sheet that was posted outside of the HSP office. Compensation was given in the form of extra credit points toward General Education classes in the Social Sciences Department.

*Materials*

The room was furnished with two chairs and a computer desk. A questionnaire was given to participants before the trials and a computer was used to show power-point presentations and play audio recordings.

*Procedure*

Participants were first given a questionnaire requesting demographic and other data relevant to the study. They were then randomly assigned to either the visual group or the auditory group. Participants in the visual group were shown two power-point presentations of

two separate word lists, the words being displayed in one second intervals. They were asked after each trial to recall as many words as possible, either by telling the researcher (auditory method) or by writing (visual method). The order of this was alternated to counterbalance for order effects. Participants in the auditory group were asked to listen to two audio recordings of the same two lists of words. They were asked after each trial to recall as many words as possible either by telling the researcher (auditory method) or by writing it down (visual method). The order of this was counterbalanced as well. The purpose and rationale was then explained to the participants who also received a feedback letter.

## Results

Main effect of test $F(1, 38) = 14.721$, $p < .001$

Main effect of Modality $F(1, 38) = 1.475$, $p > .05$

Interaction $F(1, 38) = .497$, $p > .05$

Similar Communication forms Mean =6.30

Dissimilar Communication forms Mean =5.08

## Discussion

The effect of encoding specificity was demonstrated by the superior performance of participants in matched trials as opposed to mismatched trials. The hypothesis was supported as the difference between the scores involving similar and dissimilar forms of communications was found to be significant. Interestingly, trials involving visual encoding demonstrated a bigger difference between matched and mismatched forms of communication than trials involving auditory encoding. This study could have implications on learning and testing methods in academic and other settings. One concern of the study is the distress felt by participants who scored lowly on the free recall trials. Since none of the participants

recalled more than nine words on any trial, a future replication could use ten words per list instead to reduce subjective participant distress.

## References

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