A significant debate in psycholinguistics is whether filler-gap dependencies exist. Pickering and Barry (1991) present primarily theoretical rationales for why filler-gap dependencies do not exit; however, they do not present experimental behavioral data to support this hypothesis. MacDonald (1989) presents two experiments to support the hypothesis of the existence of filler-gap dependencies while McKoon, Ratcliff, and Allbritton (1996) present two experiments with evidence that do not support the existence of filler-gaps.

MacDonald hypothesizes that gaps will prime their antecedents. She compared two sentence passages under three conditions: adjective, adjectival passive, and verbal passive.

       The Irish terrorists wanted to disrupt the ceremonies.

       The new mayor at the center podium was furious/surprised/shot.

          Agent probe: terrorists; Antecedent probe: mayor

According to syntactic theory, only the verbal passives are predicted to produce a gap; therefore, MacDonald predicts probing the antecedent in the verbal passive will produce a faster reaction time than either adjective condition. Two different probe types were presented. The first was the subject of the first sentence (agent probe) while the second was the subject of the second sentence (antecedent probe). MacDonald states that the binding hypothesis predicts only the probe of the antecedent to be faster in the verbal passive and the other five conditions will not differ from each other. Her results, however, do not match these predictions. They are presented in the table below for ease of discussion.

Response	Adjective	Adjectival Passive	Verbal Passive
Agent probe RT	1041	1020	1015
Antecedent probe RT	1006	975 (*990)	931
2nd sentence RT	2951	3005	2941
Comprehension RT	1717	1748	1666

First, there was a trend for antecedent probes to be faster than agent probes. Although the binding hypothesis does not predict this, MacDonald's explanation makes intuitive sense. As the antecedent probe has been processed more recently, its reactivation is faster. MacDonald therefore *restates* the binding hypothesis' predictions such that no effects of passage are predicted for the agent probe, but for the antecedent probe the verbal passive condition is predicted to be faster.

MacDonald finds no main effect for agent probes but does find the expected main effect for antecedent probes. Closer analysis of the main effect for antecedent probes reveals that the verbal passives were faster than the adjective sentences but not faster than the adjectival passives (although a trend in the correct direction is noted). Quite frankly,

not only is MacDonald's first hypothesis unsupported, but her revised hypothesis is also unsupported.

Based on the second sentence reading time and comprehension question, the trend is that the adjectival passives are the hardest of the three conditions while the verbal passive is the easiest. Although MacDonald reports these trends as nonsignificant, there is a 64 msec advantage of the verbal passive second sentence RT over the adjectival passive. There is also an 82 msec advantage of the verbal passives over the adjectival passives in the comprehension accuracy. In fact, the trend of all four RT measurements in the table above demonstrates that the verbal passives have the fastest reaction times.

MacDonald tries to explain these results with a third hypothesis that adjectival passives are somehow intermediate between adjective and verbal passive conditions such that sometimes they are interpreted as "states" and other times interpreted as "events". In other words, they sometimes have gaps and sometimes don't. It is possible that the confusability of states and events in these sentences may have produced intermediate antecedent probe RTs and may have increased the RT for the second sentence and comprehension question.

Experiment 2 asked subjects to rate these passages with state/event questionnaires and found that adjectival passages were rated as more "event-like" than adjective passages. MacDonald's third hypothesis was supported. Removing "event-like" items in adjectival passives resulted in the antecedent probe RT of 990 msec (reported with an asterisk in the table). Reanalysis of the antecedent probes using this new RT for adjectival passive antecedent probes still only led to a significant effect in the subject statistics but not the item statistics.

MacDonald claims that the state/event ratings predict the RT of the antecedent probes. She states, "adjectival passive stimuli are inherently ambiguous, and some items were occasionally given their verbal passive interpretation". It seems that a good syntactic theory would state definitely whether a gap was absent or present in a given sentence. The fact that MacDonald is claiming that gaps are sometimes present but other times absent in adjectival passives discredits her theory for the existence of gap-fillers.

McKoon, Allbritton, and Ratcliff (1996) present more evidence to discredit theories of filler-gaps using a cross-modal lexical decision task. The background experiment necessary to interpret their results was by Nicol and Swinney (1989). Nicol and Swinney (1989) auditorily presented sentences with anaphors and asked subjects to make a lexical decision response to a word related or unrelated to the antecedent. They found that related words produced a faster lexical decision than unrelated words which was interpreted as evidence that an antecedent is reinstated at the syntactic gap leading to facilitation of lexical decision.

McKoon et al. hypothesized that the stimuli used by Nichol and Swinney were not well-controlled so that their effects may have occurred for reasons unrelated to the gap filler (e.g., plausibility). To test their hypothesis, McKoon et al. modified Nichol and

Swinney's stimuli so that sentences no longer contained the predicted gap. Thus, the gap-containing sentence *The old man picked up the apple that the baby in the carriage threw in the gutter* was changed to *The baby in the carriage threw the expensive apple.* The same related/unrelated probes used by Nicol and Swinney were used by McKoon et al. (*fruit/bench* respectively). The probe was presented in a pre-verb and post-verb position.

McKoon et al. found that even with no anaphor in the sentences presented, an interaction of probe position and relatedness exists such that the related postverb probe was faster than the related preverb probe with no such speedup for unrelated probes. Thus, previous evidence from Nichol and Swinney used to support the existence of filler gaps is extremely questionable given the same effects can be replicated without sentences with filler gaps. As it is pragmatically anomalous for babies to throw benches but perfectly plausible for them to throw fruit, McKoon's findings offer another explanation for Nichol and Swinney's findings.

Although McKoon et al's findings in themselves are extremely convincing, an additional measure that should have been presented in their study is plausibility ratings. McKoon et al. hypothesize that the plausibility of the related and unrelated probe as the direct object of the verb will differ such that the related probe is more plausible. This additional measure would provide evidence for or against their interpretation of these findings.