Preamble:
What does it mean to know a word? According to John Rupert Firth, “you shall know a word by the company it keeps” (1954). This is the main idea behind distributional semantics, where the distributional properties of word usage reflect the meaning of words. Vigliocco (2009) presented a unified theory, based on distributional semantics, which posits that our semantic representations are develop from a “statistical combination of information from experience (sensory-motor & affective) and linguistic information.” The main implication of these theories of semantic representation is that word usage, which is governed by syntax, will play a major role in informing our own semantic representations.

Argument: Semantic representation of verbs are impacted by their syntax.

Premise 1: If similarity judgments of verbs vary based on the subcategorization bias and number of senses, then our semantic representations of verbs are impacted by subcategorization bias and number of senses.
Premise 2: Similarity judgments of verbs vary based on the subcategorization bias and number of senses.
Premise 3: Semantic representations of verbs are impacted by subcategorization bias and number of senses.
Conclusion: Semantic representations of verbs are impacted by their syntax.

Regarding the first premise, similarity judgments can and often have been used to quantify some aspect of semantic representation. For example, representational similarity analysis (Kriegeskorte, 2008) uses pairwise similarity between stimuli to generate representational similarity matrices, which second-order isomorphisms that abstract away from the format of the source material. Likewise, in computational linguistics, most gold standards (Hill et al., 2015; Gerz et al., 2016) for evaluating computational models of semantics, like distributional semantics models, often will directly use (averaged) similarity ratings between word pairs.

The second premise, at the moment, represents a gap in the literature. I am hoping to run an experiment which would address this gap, where the subcategorization bias and number of senses from the verb pairs in SimVerb-3500 (Gerz et al., 2016) would be quantified using VerbNet and WordNet and then compared to the inter-annotater agreement of each pair. A related previous study looked at the impact of verb (subcategorization) biases, which their results suggested that the syntactic structures embedded in linguistic experience impact our semantic representation (Ryskin et al., 2017).

Given the conditional statement in premise one, and that premise two is supported by future experimental research, premise three would follow by modus ponens. Finally, based on a study by Levin (1993), the syntax of verbs can be formalized as their subcategorization bias, which is also related to the number of senses.

One main potential objection would be to the first premise, regarding the idea that similarity judgments can be used to quantify semantic representation. While similarity judgments potentially reflect different aspects of word representations, they can also be potentially affected by the order of presentation or other factors. They also may not capture other word-word relationships, such as entailment environments.