

## Structuring Paraphrases: The Impact Sentence Complexity Has on Key Leader Engagements

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**Abstract :** Soldiers are taught about the importance of effective communication with repetition of the phrase, "Communication is key." They receive training in preparing for, and carrying out, interactions between foreign and domestic leaders to gain crucial information about a mission. These interactions are known as Key Leader Engagements (KLEs). For the training of KLEs, doctrine mandates the skills needed to conduct these "engagements" such as how to: behave appropriately, identify key leaders, and employ effective strategies. Army officers in training learn how to confront leaders, what information to gain, and how to ask questions respectfully. Unfortunately, soldiers rarely learn how to formulate questions optimally. Since less complex questions are easier to understand, we hypothesize that semantic complexity affects content understanding, and that age and education levels may have an effect on one's ability to form paraphrases and judge their quality. In this study, we looked at paraphrases of queries as well as judgments of both the paraphrases' naturalness and their semantic similarity to the query. Queries were divided into three complexity categories based on the number of relations (the first number) and the number of knowledge graph edges (the second number). Two crowd-sourced tasks were completed by Amazon volunteer participants, also known as turkers, to answer the research questions: (i) Are more complex queries harder to paraphrase and judge and (ii) Do age and education level affect the ability to understand complex queries. We ran statistical tests as follows: MANOVA for query understanding and two-way ANOVA to understand the relationship between query complexity and education and age. A probe of the number of given-level queries selected for paraphrasing by crowd-sourced workers in seven age ranges yielded promising results. We found significant evidence that age plays a role and marginally significant evidence that education level plays a role. These preliminary tests, with output p-values of 0.0002 and 0.068, respectively, suggest the importance of content understanding in a communication skill set. This basic ability to communicate, which may differ by age and education, permits reproduction and quality assessment and is crucial in training soldiers for effective participation in KLEs.

**Keywords :** engagement, key leader, paraphrasing, query complexity, understanding

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