Title.
How necessity is expressed in research articles:
a frame semantics perspective

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Linguistic markers expressing necessity (henceforth necessity marker), such as necessary.a, essential.a, and indisipensible.a, have been recorded as a part of academic vocabulary in many academic vocabulary lists (e.g., Ackermann & Chen, 2013; Gardner & Davies, 2014; Simpson-Vlach & Ellis, 2010). They have also been extensively researched as members of attitude markers in metadiscourse analysis (e.g., Hu & Cao, 2015; Hyland & Jiang, 2016; Mur-Dueñas, 2010). However, studies in these directions analyzed necessity markers based only on decontextualized frequency counting. Consequently, little is known regarding how necessity markers interact with related semantic elements in the textual context. A theoretically and methodologically feasible way to reveal this potentially meaningful pattern is by applying frame semantics to analyzing necessity markers, treating them as lexical units that evoke the Being-necessary frame, and investigating the distribution patterns of the frame elements. Taking this approach, the present study compared the distribution patterns of five frame elements of the Being_necessary frame, which are Requirement/Required_entity, Dependent, Dependent_individual, Degree, and Explanation, between the academic portion and the other portion of COCA and between the soft disciplines and the hard disciplines in the academic portion of COCA. These five frame elements were selected for statistical analyses because they were the most frequently instantiated elements of Being_necessary while its other frame elements seldom appeared. Through a series of chi-square tests of contingence, it was found that the academic genre differs significantly from other genres in COCA in the distribution pattern of the five frame elements, whereas no significant difference was observed between the soft disciplines and the hard disciplines within the academic genre of COCA. These results indicate that academic genres not only employ more necessity markers but also use them with different frame element configurations from other genres. Based on these results, the author calls for more scholarly attention to this type of nuanced pattern of academic vocabulary for a deeper understanding of academic writing.

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