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Discipline Variation in High-Frequency Nouns in Research Articles across Eight Disciplines

This paper describes a corpus-based analysis of the form, function, and distribution of high-frequency nouns in academic discourse across eight disciplines: Chemistry, Computer Science, Materials Science, Neuroscience, Economics, Language and Linguistics, Management, and Psychology. It is proposed that high-frequency nouns are an important part of academic discourse including research articles, and worth investigating further, yet little previous research seems to have investigated these areas.

The aims of this research were, within our corpus of 320 research articles, to find and list the most common nouns, investigate frequency and disciplinary variation, and investigate noun function using Francis et al's. functional categories (1998). However, careful and extensive examination of the 16 highest-frequency nouns found that they did not fit these categories, perhaps because they were created for the 'noun + that' pattern rather than nouns. We then devised three new provisional data-driven semantic categories to help clarify our results: 1. Reference to Research, reference to the whole study, or to other research. 2. Affecting Entity, abstract entities which affect something in a study. 3. Research Device, abstract devices used by researchers as part of their research design. We preserved one of Francis et al's. categories, 4. Evidence, signs or evidence that something is the case. This categorization, along with all results, was checked by two evaluators who independently measured inter- and intra-rater agreement. Results for individual nouns are also presented.

Considerable disciplinary variation was found, with many statistically significant differences. For example, 'Reference to Research' was significantly higher in Computer Science and Management, 'Affecting Entity' in Economics and Management, 'Research Device' in Computer Science and Psychology, and 'Evidence' in Computer Science and Economics. Further analysis revealed that Chemistry and Materials Science authors tend to minimize their personal involvement in their findings and present their research in a distinctly narrative and descriptive style. Authors in the other disciplines adopted a different style, relying more on personal presentation and persuasion than on presenting hard facts and letting those facts and data speak for themselves: for example, it appears to be particularly important for Computer Science and Economics authors to explicitly discuss evidence which supports, and explains the meaning of, their results, claims, and arguments.

Conclusions are that abstract noun usage in RAs is discipline specific and that the patterns revealed are disciplinary norms, accepted within disciplines as recognized ways for writers to present their research. This research adds to understanding of discipline variations in the form, function and frequency of high-frequency nouns and also tells us more about academic discourse, how knowledge is constructed, what knowledge is, and research practices across a range of disciplines.

Reference

Francis, G., S. Hunston and E. Manning. 1998. Collins COBUILD Grammar Patterns 2: Nouns and Adjectives. London: HarperCollins.