Chapter 21
Computationally Assessing Expert Judgments of Freewriting Quality

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ABSTRACT

This study examines the relationship between the linguistic features of freewrites and human assessments of freewrite quality. Freewriting is a prewriting strategy that has received little experimental attention, particularly in terms of linguistic differences between high and low quality freewrites. This study builds upon the authors' previous study, in which linguistic features of freewrites written by 9th and 11th grade students were included in a model of the freewrites' quality (Weston, Crossley, & McNamara; 2010). The current study reexamines this model using a larger data set of freewrites. The results show that similar linguistic features reported in the Weston et al. model positively correlate with expert ratings in the new data set. Significant predictors in the current model of freewrite quality were total number of words and stem overlap. In addition, analyses suggest that 11th graders, as compared to 9th graders, wrote higher quality and longer freewrites. Overall, the results of this study support the conclusion that better freewrites are longer and more cohesive than poor freewrites.

INTRODUCTION

Arguably the most important skill a student learns is how to write effectively. This notion is supported by a 2001 survey by Light wherein over 90% of professionals responded that writing was essential to their job. Nonetheless, there are many students who leave high school without the necessary proficiency in writing needed to procure a job or to be successful in higher education. One means of increasing writing proficiency is through the instruction and use of writing strategies. The use of strategies can help to activate prior knowledge

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and lessen the demands on working memory. In addition, the use of writing strategies helps to focus the writer on the steps needed to produce a successful written product. The present study focuses specifically on one common writing strategy: freewriting. Freewriting is a timed writing exercise during which the writer produces as many ideas as possible as quickly as possible with little regard to the rules of structure, grammar, and punctuation (Elbow, 1979). It can take different forms including *focused* freewriting where a person writes with a topic or prompt in mind (Hinkle & Hinkle, 1990). Freewriting is generally a prewriting task and is often part of planning (Renyolds, 1984). Planning is the first step in many writing tasks and can take many forms, including freewriting, outlining, concept maps, and lists (Loader, 1989; Brondey et al., 1999; Reese & Cumming, 1996; Vinson, 1980).

Our goal in this study is to better understand which linguistic features of a freewrite are related to freewrite quality. Identifying these features is necessary in order to build automated NLP assessments of freewrite quality. Automated freewrite assessment will allow educators and intelligent tutoring systems to provide targeted feedback to writers engaging in freewriting. Better understanding the nature and features of freewrites will also afford future investigations of the relationship between freewrite quality and essay quality. Assuming there is a link between freewrite quality and essay quality, feedback can be designed to help students produce higher quality essays. As such, this study serves as one step toward the overarching goal of providing effective tools that use artificial intelligence to help students learn how to improve their writing and help researchers and educators understand the nature of writing.

Although much has been written on the topic of freewriting, most published research has been anecdotal (Belanoff, 1991; Fontaine, 1991; Haswell, 1991; Sweedler-Brown, 1984). That is to say, the claims made in many freewriting studies are based on little to no experimental data. In addition what little research has been conducted on freewriting has been limited to qualitative research on samples of convenience. In addition, the few experimental studies conducted on freewriting were not investigating the product of freewriting (Hinkle & Hinkle, 1990; Knudson, 1989). Rather, these studies examined freewriting as a comprehension strategy to be used immediately following classroom lectures and thus focused on the effects of freewriting on comprehension scores, not the written products. Thus, these researchers never examined the freewrites that students wrote.

Most studies that have been concerned with the product of freewriting have lacked the necessary experimental conditions for generalizable inferences to be made. For instance, Belanoff (1991) examined differences in freewrites as a function of skill level. Based on a semester's worth of written assignments, Belanoff sorted his students into five skill categories. Only the freewrites from the students in the highest (n=5) and lowest writing skill groups (n=4) were analyzed in this study. Belanoff's qualitative analysis identified five qualities of skilled writers' freewrites, and one principal difference between their freewriting and the freewriting of less skilled writers. He deduced that skilled writers tended not to use logical connections and did not come to closure within the freewrite. Belanoff characterized skilled writers' freewrites as more chaotic and less focused than those of the less skilled writers. However, the skilled writers were also more likely to include discernable passages with well-formed, eloquent language, as well as meta-comments and questions alluding to their knowledge of the task and why they were performing it. He also found that the style of skilled writers' freewrites and essays differed in terms of structure and use of language. By contrast, Belanoff noted that unskilled writers' freewrites bore a great resemblance to the finished pieces of writing they had turned in throughout the semester. Less skilled writers also tended to write about what they knew with few deviations into the unknown or speculation. In sum, Belanoff's