Does Triple Word Form Theory provide a useful framework from which to assess proficiency in spelling?

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Contribution

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Research has offered various perspectives on how students learn to spell in English; however, evidence has not been substantive enough to provide consensus on whether spelling is acquired in progressive and distinct stages (Gentry, 2000; Invernizzi & Hayes, 2004), or in more complex, non-linear ways (Garcia, Abbott, & Berninger, 2010; Sharp, Sinatra, & Reynolds, 2008). Assumptions about the nature of spelling development have important implications for the way spelling is assessed and taught; however, assessment systems currently being applied by educators have failed to consider non-linear perspectives of spelling development.

Triple Word Form Theory (TWFT) offers a non-linear stance, contending that students are capable of concurrently drawing on phonological, orthographic, and morphological skills from the early years of learning to write (Berninger, Abbott, Nagy, & Carlisle, 2010; Richards, Aylward, Field, et al., 2006). As TWFT has been validated in a series of brain imaging studies (see for example, Berninger et al., 2010) and behavioral studies (Garcia et al., 2010; Nagy, Berninger, & Abbott, 2006), it offers an innovative and well-grounded framework from which to assess proficiency in spelling. Advocates of TWFT assert that efficiency and autonomy in the coordination of phonological, orthographic and morphological processing increases over time, and that developing proficiency is influenced by instructional priorities.

Although converging evidence offers unequivocal support for TWFT, stage theories are still widely accepted, and have been
since their conception in the latter part of last century (see for example, Ehri, 1985). By analysing spelling errors that students make, stage theorists in the 1970s and 80s produced a linguistic index that subsequently led to the categorisation of spelling development into distinct and sequential stages (see for example, Bear & Templeton, 1998). It has been argued that existing measures of spelling achievement are “not sufficiently structured or standardised to provide the reliable, sensitive data that teachers need to plan instruction” (Al Otaiba & Hosp, 2010, p. 4). In most cases they merely provide a summary of words that are correct and those that are not. And yet, systematic analysis has the potential to identify breakdowns in phonological, orthographic and morphological processes, indicating that multiple linguistic components contribute to spelling (Silliman, Bahr, & Peters, 2006). Moreover, it is possible that different linguistic processes might be operative in different parts of the same word (Perfetti & Hart, 2002). It is critical that spelling assessment systems encapsulate the linguistic complexities associated with the particular language convention under investigation. TWFT provides impetus for an innovative spelling assessment tool to be developed and tested.

The purpose of the study discussed in this paper was to develop and test an assessment tool informed by TWFT: Components of Spelling Test (CoST). This paper presents the CoST as a new approach to spelling assessment, informed by TWFT but developed through a method of analysis suggested by stage theorists. Data used to develop and test the CoST were drawn from students in Year 3 and Year 5 across four schools in the Australian Capital Territory (ACT) (n=198). The results of the testing clearly demonstrated that TWFT offers a useful framework for the assessment of students’ knowledge in three overarching components of spelling. Indeed, the CoST provides teachers and educational researchers with a means to validly and reliably identify individual differences in specific phonological, orthographic and morphological skills associated with spelling.

Method

The first stage of the study involved designing a tool that was informed by current literature on spelling development and assessment. The intention was to compile a preliminary list of words characterized by diverse lexical complexity. This compilation exercise resulted in 90 words being identified as having potential utility. Linguistic features present in each word were then identified and defined by considering the linguistic index associated with stage theory. In total, 111 linguistic features (items) were identified in the original version of the CoST. Specific linguistic features within each word were then aligned to the three overarching components that underpin TWFT (that is, phonological, orthographic and morphological).

The second and final stage of the study involved (i) testing the draft version of the CoST in school contexts, and (ii) an empirical analysis and refinement of the CoST. This stage of the study focussed on students in Year 3 (n= 94) and Year 5 (n=97) from four schools in the ACT, Australia. Convenience sampling was used; however, representation from all three school sectors (that is, public, catholic and independent schools) was included to ensure the sample was broadly representative of ACT primary schools (Johanson & Brooks, 2010). The study was performed with approval from the University’s Human Research Ethics Committee and relevant school systems. All teachers and parents were informed of the study's purpose and design and gave their consent to participate in writing. Students were also informed of the study’s intent and those who provided written assent then completed the CoST during class time. The principal researcher arranged a suitable time with the class teachers to visit the participating students and administer the test.

Students’ CoST responses were collected and assessed by the principal researcher before being cross-checked by another member of the research team. Data were entered into SPSS, Version 20 and inspected prior to analysis. The reliability of each of the three subscales or components (namely, Phonological Component, Orthographic Component, and Morphological Component) was tested by standardizing the raw scores and analysing those using estimates of item difficulty and internal consistency. The results were calculated using the Reliability Analysis command in SPSS. Data from the Year 3 and Year 5 cohorts were analysed separately.

Expected Outcomes

Results of the analyses of the CoST yielded a small number of items that contained either negative or low correlations or had an inadequate spread of scores. Consequently, ten items, and their related words, were deleted from the instrument. With a revised total of 101 items, the internal consistency results of the finalised CoST were strong. The coefficient alpha in the Phonological Component was 0.78 in Grade 3, but stronger in Grade 5 at 0.84. In both grades, the alpha for the Orthographic Component was 0.93. In the Morphological Component the alphas for Grades 3 and 5 were 0.89 and 0.94 respectively.

The research findings align with TWFT and are relevant to understanding the ways in which automatic and accurate spelling involves integration of phonological, orthographic, and morphological mappings (Richards, Aylward, Berninger, et al., 2006). Integration of multiple linguistic skills are involved in learning to spell new words from the beginning but even more so during middle childhood and early adolescence, when students are expected to learn and use more complex words (Garcia et al., 2010). TWFT provides a robust framework from which to assess proficiency in spelling.

The CoST’s innovation is in its capacity to validly and reliably interrogate student knowledge of the spelling system without
confining an individual’s spelling achievement into one particular stage of development. This tool also presents a new methodological foundation for further investigation into students’ linguistic transitions toward autonomous and accurate spelling. Additionally, the CoST offers a means from which to uncover the complexities of students’ knowledge of the English spelling system in ways that inform pedagogy and curriculum development. Replicating the study through further testing of the CoST in other contexts has the potential to enhance the tool and broaden generalizability to other student populations.

References


This proposal is part of a master or doctoral thesis.

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