Title of Project:
Investigating the Cognitive Validity of a L2 Reading Test:
An Eye-tracking Study

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Abstract:

Tests must be cognitively valid; they must elicit from test takers the same type of cognitive processing that similar, real-world tasks do (Bax & Weir, 2012; Field, 2011). Test validation normally concerns test results, not test-taking processes (Borsboom, 2009). However, statistical data based on test scores can be limited, because numbers do not carry conceptual information and scores do not explain how test takers derived their answers (Weir, 2005). The purpose of this study is therefore to investigate whether language learners actually adopt construct-relevant processes in a high-stakes, academic ESL reading test. The specific research questions are: (a) To what extent does a standardized, academic ESL reading test elicit the cognitive processes that readers use in real academic settings? (b) What cognitive processes do native speakers and non-native speakers use? (c) To what extent do test takers' test-taking strategies/skills (which are construct-irrelevant) affect their test scores?

Forty eight English-as-second-language (ESL) learners (24 currently registered international students and 24 EAP students) and 24 native-English-speaking college students will be asked to read three reading passages on a computer screen where the Tobii TX300 eye tracker is attached. The reading passages will be selected from the iBT TOEFL practice reading tests: one passage with multiple-choice (MC) questions, another with open-ended (OE) questions, and the other with no questions. The three reading texts and three task conditions (MC items; OE items; non-test/recall) will be counterbalanced. On completing the reading tasks, participants will have stimulated-recall interviews as the video clips of their eye movements are presented. The test of vocabulary size, grammar knowledge, and working memory will be administered as well. Lastly, several questionnaires (on test-taking strategies and reading strategies) will be filled out. Both qualitative (gaze plots, heatmaps, interviews) and quantitative (fixation counts, fixation durations, questionnaires) data will be analyzed and compared between conditions (test vs. non-test condition), between groups (native speakers vs. regular international students vs. EAP students), and between test-format types (MC vs. OE items). To estimate the effect of test-taking strategies, the scores collected from the questionnaires will be submitted to hierarchical

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regression analysis with construct-relevant variables (e.g., vocabulary/grammar knowledge, working memory) controlled.

Identifying test takers' cognitive processes will help item writers understand how test takers solve problems, inform teachers as to how to prepare their students for a language test, and contribute to the advancement of psychometric analyses. There is also a call for further investigations on test takers' strategies in relation to test validation and development (Cohen, 2007). Unanswered is how learners' use of test-taking strategies impacts test validity. Taken together, I believe this study is timely and important in the field of language assessment.