
**ASSESSMENTS THROUGH COMPUTER ANALYSIS OF LANGUAGE,
DISCOURSE, AND CONVERSATION****Arthur C. Graesser***Department of Psychology and Institute for Intelligent Systems, University of Memphis
Department of Education and Oxford University Center of Educational Assessment,
University of Oxford*

Recent advances in computational linguistics and discourse processing have made it possible to analyze naturalistic texts and conversation on multiple levels of language and discourse. These advances are influencing the world of assessments of reading, writing, mathematics, science, reasoning, problem solving, and other competencies. This presentation reports examples of these assessments that analyze natural language. Coh-Metrix (<http://cohmetrix.com> and tea.cohmetrix.com) analyzes texts on multiple measures of language and discourse that are aligned with multilevel theoretical frameworks of discourse comprehension and production. Several dozen measures funnel into five major factors that systematically vary as a function of types of texts (e.g., narrative versus informational) and grade level: narrativity, syntactic simplicity, word concreteness, referential cohesion, and deep (causal) cohesion. A composite measure called formality increases with low narrativity, syntactic complexity, word abstractness, and high cohesion. Coh-Metrix has also been used to analyze student writing and conversation, even though its central focus is on scaling printed text. Another direction consists of conversational agents that interact with the human in natural language. Trialogs are conversations between the human students and two computer agents that play different roles (e.g., student, tutor). Trialogs are being developed for the Internet in serious games with Pearson Education (Operation ARA), in assessments with Educational Testing Service, and in a new Center for the Study of Adult Literacy for struggling adult readers. Data mining analyses help us identify the features of conversation and text that are aligned with valid measures of assessment.