Conceptualizing and measuring short-term changes in L2 writing complexity

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Abstract

This study aims to ascertain the nature and extent of the development of English L2 writing proficiency of 45 adult ESL learners over the time of an intensive short-term academic English language programme by means of quantitative measures targeting different components of the lexical and syntactic complexity of the learners' writing performance, and to compare the scores on these measures with subjective ratings of learners' overall writing quality. Results reveal several linguistic complexity measures that can adequately and validly capture changes in L2 writing in short-term ESL courses, though these do not include ''popular'' measures such as subordination ratios and lexical richness/diversity measures. Results also suggest that different subcomponents of syntactic and lexical complexity in L2 writing develop at a different pace, underlining the importance of calculating a sufficiently wide range of judiciously selected complexity measures in order to get a comprehensive picture of L2 writing development. Interestingly, the set of progress-sensitive complexity measures identified in this study does not coincide with the set of complexity measures that best predict subjective perceptions of writing quality.
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Introduction

We approached the task assigned to us by the editors of this special issue from two perspectives. The first is a language assessment perspective. The development of progress-sensitive tests and measures has always been a major task for language assessors, particularly tests and measures that can chart progress by learners in relatively short-term programmes (Alderson, 2000; Westaway, Alderson, & Clapham, 1990), such as the academic English courses offered by Anglo-Saxon universities that provided the corpus for this special issue. Some authors have doubted the possibility of much progress in L2 skills over periods as short as two to four months, even with intensive study (Lennon, 1995; Politzer & McGroarty, 1985; Rifkin, 2005; Storch, 2009). Although there are empirical findings supporting this pessimism, especially from non-immersion situations and when traditional standardized testing procedures are used, course providers and students expect learners' productive skills to progress during short intensive courses (Cumming, 1995; Leaver & Shekhtman, 2002; Tonkyn, 2012; Wette, 2010; White, 1994). Therefore assessors must take up the challenge of developing appropriate progress-sensitive proficiency and development measures for these contexts.

Since writing proficiency, and progress thereof, is typically measured by subjective ratings by expert evaluators, it is also important to know which features of written performance correlate with, and may influence, overall perceptions of progress by such evaluators. This paper reports on an investigation of the possibility of measuring short-term gains in L2 writing proficiency by instructed upper-intermediate learners of English, and of the validity of a range of quantitative metrics of that progress against the benchmark of experienced judges' perceptions of L2 writing quality. This brings us to the second perspective and principal focus of this paper: we investigate the possibility of measuring short-term gains in L2 writing proficiency in terms of features of linguistic *complexity*, and examine the adequacy of selected quantitative complexity measures as indicators of such proficiency and progress. In recent years complexity has emerged as a major dimension along which L2 writing performance, proficiency, and development can be assessed and investigated.

The next section briefly introduces the complexity perspective from which the data in this contribution have been analyzed and discusses the thorny issue of how the construct of complexity can be, and has been, defined and operationalized in L2 (writing) research, and how it relates to other central notions in L2 (writing) research such as *proficiency*, *performance*, *progress*, and *development*. The third section formulates the specific research questions we sought to answer and the design and methodology of the study. The fourth section presents the results of the quantitative complexity analyses. The fifth section interprets and discusses the results and relates them to the results of both previous studies of complexity in L2 writing and to the results of the analyses of the central corpus conducted in the other contributions to this special issue (esp. Crossley & McNamara, 2014; Polio & Shea, 2014). The final section summarizes the main findings, discusses implications of the present study for L2 writing research and formulates directions for future complexity research on L2 writing and L2 writing development.

L2 complexity

Since the 1990s, there has been a wealth of research on complexity and complex systems in the natural sciences, economics and in the social and psychological sciences (cf. Mitchell, 2009 for an overview). This cross-disciplinary endeavor has recently reached the linguistic sciences (Dahl, 2004; Givon, 2009; McWorther, 2001, 2011; Sampson, Gil, & Trudgill, 2009), including second language acquisition (SLA) research in general (Housen & Kuiken, 2009) and in second language writing research in particular (Byrnes, Maxim, & Norris, 2010; Ortega, 2003; Polio, 2001; Wolfe-Quintero, Inagaki, & Kim, 1998). In L2 research, as in L1 research, complexity has been proposed as a valid and basic descriptor of L2 performance, as an indicator of proficiency and as an index of language development and progress. However, despite the interest it has engendered (e.g., ten articles in Volumes 18–21 of this journal explicitly mentioned ''complexity'' in the abstract), there is no consensus in the L2 literature on the definition of complexity, and no consistency as to how it has been operationalized across (and sometimes even within) studies. This has led to terminological and conceptual confusion and has made it hard to interpret and compare the results of individual studies (Norris & Ortega, 2009; Pallotti, 2009).

Norris and Ortega (2009) and others have convincingly argued that complexity is a highly complex construct, consisting of several sub-constructs, dimensions, levels, and components, each of which can, in principle at least, be independently evaluated. A recent attempt to capture this multidimensionality is Bulté and Housen (2012). They present a taxonomic model of different approaches to, and components of, language complexity as it has been applied and interpreted in L2 research (cf. Fig. 1). A first and basic distinction is between absolute and relative complexity: ''[i]n linguistics, complexity refers to both the [. . .] internal structuring of linguistic units and to the psychological difficulty in using or learning them'' (Crystal, 1997, p. 76). Absolute complexity derives from *objective* inherent properties of linguistic units and/or systems thereof (as dictated by linguistic theories, hence ''objective'') while relative complexity implies cost and difficulty of processing or learning, which could arise from both user/learner-related variables (and hence ''subjective'') (e.g., aptitude, age, motivation, stage of development) but also from more objective factors such as a language feature's input saliency and frequency as well as its objective inherent complexity properties. Often, these factors conspire and it is the cumulative effect that is striking (Rimmer, 2006). In what follows we use the term ''difficulty'' to refer to relative (or: psychological, cognitive) complexity and reserve the term ''complexity'' for absolute complexity as a manifestation of objective properties of linguistic units and (sub-)systems thereof (see also Skehan's (2003) distinction between *cognitive complexity* and *code complexity* respectively).

Bulté and Housen (2012) further distinguish between three components of L2 complexity (in the narrow sense of the term): propositional complexity, discourse-interactional complexity, and linguistic complexity. Of these three, linguistic complexity has received by far the most attention in L2 writing research, and this will also be the focus of the present study. Linguistic complexity can be investigated both at the level of the language system as a whole (or of its