

Ellis, Nick

PATRICK REBUSCHAT

Nick Ellis (1953–) is a British psychologist who is best known for his influential research and publications on the cognitive aspects underlying second language (L2) acquisition and processing. A leading figure in L2 research, his work covers a wide range of topics, including implicit and explicit learning, emergentism, usage-based approaches to language acquisition, construction grammar, frequency effects in language, reading and spelling acquisition, and developmental dyslexia. In terms of methodology, Ellis has addressed these topics by means of behavioral experiments (e.g., Ellis, 1993; Ellis & Schmidt, 1997, 1998; Ellis & Sagarra, 2010), analysis of large-scale corpora (e.g., Ellis & Ferreira-Junior, 2009; Ellis & O'Donnell, in press), and computational modeling (e.g., Ellis & Schmidt, 1997, 1998; Ellis & Larsen-Freeman, 2009a). His research has been funded by a substantial number of grants, including highly competitive awards from the National Science Foundation (United States), the Economic and Social Research Council, and the Medical Research Council (both United Kingdom).

Ellis read psychology, philosophy, and physiology (PPP) at the University of Oxford gaining a BA in 1974. He then moved to the University College of North Wales (now Bangor University), to pursue postgraduate studies in cognitive psychology, receiving his PhD in 1978. After completing his doctorate, Ellis joined the School of Psychology at Bangor as a faculty member, an affiliation that would last for 26 years. In 2004, Ellis moved to the University of Michigan, where he is currently research scientist at the English Language Institute, professor of psychology, professor of linguistics, and associated faculty at the Center for the Study of Complex Systems. In 1992, Ellis was visiting professor at Temple University (Japan campus), in 2003, visiting professor at the University of Auckland, New Zealand, and in 2011, external senior fellow at Freiburg Institute for Advanced Studies. In addition, he is honorary research fellow at the School of Psychology, Bangor University.

Ellis is one of the most prolific contributors to the field of second language acquisition (SLA), with over 150 published journal articles and chapters to his name. His work has appeared in key journals such as *Studies in Second Language Acquisition*, *Language Learning*, *Applied Linguistics*, *Modern Language Journal*, *Language and Cognitive Processes*, *Annual Review of Cognitive Linguistics*, *Annual Review of Applied Linguistics*, *Quarterly Journal of Experimental Psychology*, and *Applied Psycholinguistics*. He also contributed a significant number of invited chapters to important state-of-the-art volumes (e.g., Robinson, 2001) and handbooks (e.g., Doughty & Long, 2003; Kroll & de Groot, 2005). In addition to his article publications, Ellis edited three influential volumes, namely *Handbook of Spelling: Theory, Process and Intervention* (Ellis & Brown, 1994), *Implicit and Explicit Learning of Languages* (Ellis, 1994), and more recently, *Handbook of Cognitive Linguistics and Second Language Acquisition* (Robinson & Ellis, 2008). He is also the coeditor of three special journal issues on “Language Emergence: Implications for Applied Linguistics” (Ellis & Larsen-Freeman, 2006a); “Language as a Complex Adaptive System” (Ellis & Larsen-Freeman, 2009b); “Input and Second Language Construction Learning: Frequency, Form and Function” (Ellis & Collins, 2009); and a special journal section on “Constructing a Second Language” (Ellis & Cadierno, 2009).

Nick Ellis has presented his work widely (over 240 presentations). He has given keynote addresses and invited talks throughout the world, from Japan, New Zealand, Taiwan,

Singapore, and China via Turkey, Switzerland, Germany, France, Italy, Sweden, Finland, Denmark, Belgium, the Netherlands, Spain, the United Kingdom, and Ireland to the United States and Canada. Ellis is also well known for his service to the profession, especially in his role as editor (1998–2002) and general editor (2006–) of *Language Learning*, one of the flagship journals in the field. He is on the advisory board of several journals, adviser to the *Oxford University Press Applied Linguistics* series, and serves as a reviewer for many academic journals, publishers, and funding bodies, including the European Science Foundation, the National Science Foundation, the Wellcome Trust, and the Medical Research Council.

Topics and Ideas

The Associative-Cognitive CREED

Nick Ellis's views on the nature of language and cognition are expressed in a series of influential review articles and position papers (see especially Ellis, 1998, 2002, 2005, 2006a, 2006b, 2006c, 2007, 2011a, 2011b). Of particular relevance to the applied linguistics community will be the Associative-Cognitive CREED (Ellis, 2006a), a framework that summarizes Ellis's position succinctly. The Associative-Cognitive CREED holds that L2 acquisition is **C**onstruction-based, **R**ational, **E**xemplar-based, **E**mergent, and **D**ialectic. The basic units of language representation are *constructions*, that is, conventionalized form-meaning pairings, entrenched in the learner's mind. Constructions vary in size and complexity, ranging from simpler units such as morphemes (*anti-*, *-ed*) and words (*papaya*, *pineapple*) to more complex constructions such as idioms (*know the ropes*) or the ditransitive (SUBJ-V-OBJ1-OBJ2, *She gave him a mango*, *He baked her a cake*). Constructions are learned by exposure to positive input and by means of general cognitive abilities, that is, we learn language in essentially the same way as we learn anything else. Because of this, L2 acquisition is governed by the general laws of human learning, both associative (Ellis, 2006b, 2006c) and cognitive. Importantly, how a given construction is acquired and processed will depend, to a large degree, on its probability of occurrence in the input. Our tacit linguistic representations reflect the co-occurrence statistics of different constructions in the environment, and we make extensive use of this information when comprehending and producing utterances. Ellis (2002) provides a thorough discussion of the role of frequency in language acquisition and processing.

Constructions are frequently ambiguous—Ellis (2006a) gives the example of utterances such as “Wonderful!,” “One, two, three,” “Once upon a time,” and “Won the battle, lost the war,” which all share the opening sounds [wʌn], though the meaning in each case is different. Despite this ambiguity, language processing proceeds efficiently and we only rarely assign the wrong interpretation. Our language processor is said to be *rational* in the sense that its behavior is as efficient as it could be, given the problem it must solve. The mechanism is “optimally adapted” to its environment and deals with problems like ambiguity in the speech signal by considering several sources of information, including the frequency, recency and context of constructions. While much of our language use is formulaic, any theory of language also needs to account for our ability to generate novel constructions. According to the CREED, our linguistic knowledge corresponds to a “frequency-tuned conspiracy of memorized exemplars of construction usage” (Ellis & Larsen-Freeman, 2006b, p. 562). Some of these exemplars are more abstract and generative than others, e.g., the English plural construction [NOUN+s], the regular past tense construction [VERB+ed], or the covariational conditional construction (The Xer the Yer, as in: *The more, the merrier; The more you eat, the more you want*, etc.) We acquire these types of patterns by means of abstraction from a significant amount of exemplars, that is, they are *exemplar-based*. After

encountering a sufficiently large number of plural words (*dogs, cats, tables, chairs, etc.*) or past tense forms (*walked, jumped, placed, etc.*), we retain not just the specific exemplars, but also construct a representation of the underlying pattern (NOUN+s and VERB+ed, respectively).

Language is seen as a complex, dynamic system that *emerges* from interrelated patterns of experience, cognitive mechanisms, and social interaction (see the contributions in Ellis & Larsen-Freeman, 2009b). The complexity of language is the result of relatively simple developmental processes being exposed to a highly complex environment. The regularities that are captured in linguistic analyses (e.g., parts of speech, syntactic roles, etc.) emerge as the learner's perceptual, cognitive, and social functions derive structure from the environment. However, these regularities are held to be very different from the mental representations that underpin actual performance. That is, the brain does not process information by following a computational "rule," even though we can describe the linguistic behavior as being rule-like. According to the emergentist view, the initial state of language acquisition does not involve innate universal grammar, but builds instead from universals of social interaction, human embodiment, and the physics of our environment. From this starting point, we quickly respond to patterns present in the input and, through associative learning mechanisms, rapidly acquire frequency-tuned representations. Importantly, this learning process quickly becomes optimized to our specific linguistic environment, that is, the system becomes tuned and committed to the first language (L1). The flipside of this optimal adaptation to our environment is that, when we begin learning an L2 later in life, our experience with the new language is affected by prior associations. We perceive the L2 input through mechanisms that were tuned for a different linguistic system, which explains why L2 acquisition suffers from transfer effects. Ellis (2006b, 2006c) provides a convincing account of L1 interference in terms of associative learning theory.

Adult learners generally fall short of achieving native-like competence in the L2, and social-interactional or pedagogical intervention, for example, in the form of feedback, might be necessary to further promote acquisition. One of the reasons why feedback and other instructional techniques work is that they help the learner notice relevant cues in the input that they would not register otherwise. Adult learners can therefore overcome the limits imposed by a learning mechanism that is optimized for the L1 when provided with additional evidence from other discourse participants. In this sense, L2 acquisition is also a *dialectic* process, involving the language learner in a "tension between the conflicting forces of their current interlanguage productions and the evidence of feedback . . . that allows socially scaffolded development" (Ellis, 2006a, p. 111).

Implicit and Explicit Learning and Memory

One of the most widely debated questions in SLA research concerns the role of implicit and explicit learning and memory, and Nick Ellis has been an active contributor to this debate for the past two decades (see e.g., Ellis, 1993, 1994, 1995, 2005, 2007, 2011a). According to Ellis (2005, p. 306), the "bulk of language acquisition is implicit learning from usage," and most linguistic knowledge is unconscious. However, while most of L1 acquisition involves implicit learning, these mechanisms are insufficient for L2 acquisition because the learner's system is already tuned to the native language. L2 learners must therefore overcome the processing habits of the L1 by recruiting additional resources of explicit learning and knowledge. While there is no direct interface—explicit and implicit knowledge are quite distinct, involving different types of representation and different neural substrates, and one form of knowledge cannot be converted into the other—there is nonetheless a "weak interface." Explicit knowledge can affect implicit learning in a variety of ways (see Ellis, 2006a, 2007, for discussion). For example, it can help us overcome our L1-based,

default processing strategies by facilitating the noticing of linguistic features that we would fail to perceive otherwise. It can also promote the process of “noticing the gap,” that is, when learners notice that the target language form is different from their own usage. Finally, explicit knowledge also plays an important role in the proceduralization and automatization of the L2, with conscious knowledge often guiding output practice, particularly in the initial stages of development.

Nick Ellis’s work has had great impact on the field of SLA. Through his research and publications, Ellis played a major role in establishing SLA as a cognitive science and in connecting SLA researchers with other cognitive scientists (see e.g., the contributions in the seminal collections: Ellis, 1994; Ellis & Larsen-Freeman, 2006a, 2009b; Robinson & Ellis, 2008). Many applied linguists will have first encountered key topics in cognitive science and neuroscience by reading Ellis’s review articles. Important examples include his publications on emergentism (e.g., Ellis, 1998, 2011a, 2011b), frequency effects (e.g., Ellis, 2002), and associative learning (e.g., Ellis, 2006b, 2006c). In addition, Ellis’s research has also had important implications for our understanding of L2 acquisition. His studies support emergentist accounts of language and demonstrate how constructions emerge from usage (e.g., Ellis & Ferreira-Junior, 2009; Ellis & Larsen-Freeman, 2009a). His work highlights the importance of frequency in language (Ellis & Schmidt, 1997, 1998; Ellis, 2002) and of explicit knowledge in promoting L2 development (Ellis, 2005). Finally, Ellis’s research also illustrates the central role played by learnt selective attention (e.g., Ellis & Sagarra, 2010) and associative learning processes in L2 acquisition (Ellis & Schmidt, 1997; Ellis, 2006b, 2006c).

SEE ALSO: Cognitive Linguistics of Second Language Acquisition; Connectionism; Corpus Study: Cognitive Implications; Emergentism; Explicit Learning in Second Language Acquisition; Implicit Learning in Second Language Acquisition

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Suggested Readings

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