(Valian 2009, p. 19). Given the diversity of syntactic features and categories in languages discussed by E&L, there would need to be numerous relative universals to accommodate them. However, the child will need to process the input to determine which were relevant to the target language.

Many researchers in the field reject the formal UG approach; they do not assume domain (language)-specific constraints to facilitate language acquisition. Rather domain-specific knowledge emerges as a product of development. Their concern is with the mechanisms, processes, and strategies involved in acquiring a language or languages. The assumption is that language development cannot be isolated from the child’s brain development or social and cognitive development. In the emergentist approaches, language structures are not innate; they emerge from known processes linking “a growing understanding of the brain with new theories of cognition” (MacWhinney 1999, p. xvii). The child uses the cues available in the input to identify the language-specific patterns (Bates & MacWhinney 1987), with some cues more reliable than others. In constructivist usage-based approaches, children are assumed to build up syntactic categories and structures of their language gradually, using cues such as frequency and regularity of specific constructions (e.g., Lieven et al. 2003; Tomasello 2003; 2009). Instead of assuming that the input lacks sufficient cues for the child to acquire the language, the research focuses on which cues it does provide and the cognitive and perceptual tools brought by the child to the task of acquisition.

A large proportion of the research designed to test proposed UG principles has focused on complex syntax. However, by the time children are processing complex structures, they have vast experience with their language and the contexts of use. In developing a language, new knowledge is built on existing knowledge. In the initial stages, perceptual biases, attentional mechanisms, and cognitive abilities are involved in processing the rich information provided in the input language. Rhythmic and distributional information provide cues to segmentation (Jusczyk 1997; Werker & Curtin 2005; Werker & Tees 1984). Research on statistical learning (e.g., Saffran et al. 1996) shows that young infants are sensitive to language-specific transitional probabilities, correlational probabilities, and distributional features of the input (Höhle et al. 2004; Mintz 2006; Thiessen 2009). The developing sensitivities allow for segmentation of syllables, words, and other grammatical units of the input language, segmentation that is an essential precursor to acquiring the system. As shown by Kuhl (2004), as infants become attuned to the sound contrasts of their environmental language, reorganisation of their perceptual abilities takes place; similarly, infants’ developing statistical knowledge influences what they later perceive from the input. Thus, knowledge is advanced as they map sound sequences to meaning and retain these mappings in memory (e.g., Hollich et al. 2000) and as they identify category membership, for example, by linking the language context to properties of referring elements in particular domains (Smith 1999). Similarly, in the later stages of acquisition, knowledge of language structures gained facilitates the acquisition of new knowledge.

Phonological memory is important in forming mental representations of new words (Gathercole & Baddeley 1989), and vocabulary development is a precursor of vocabulary development (Bates & Goodman 1999). By assuming that language acquisition is guided by universal principles specific to the language domain, as in the UG approach, the role of cognitive skills and the influence of individual cognitive abilities on language development are not adequately considered. However, the link is clear from typical language development as well as atypical, an example of which is specific language impairment (SLI). It was first proposed that SLI supports separation of language from other cognitive domains, and explanations for language problems in SLI were related to principles of UG (e.g., Rice & Wexler 1996). Although children identified as having SLI are judged to have nonverbal abilities in the normal range, a significant body of research has revealed memory and information processing deficits (e.g., Archibald & Gathercole 2007; Bavin et al. 2005; Montgomery et al. 2009). In addition, significantly lower scores on standardised cognitive assessments are typically reported for SLI groups compared to age-matched, non-impaired children. Thus, an alternative explanation is that cognitive deficits lead to difficulty in processing information from the input, information required in acquiring the language (Leonard et al. 2007).

Theorists need to understand more about the diversity of languages, such as discussed by E&L, and the impact that such typological features have on the acquisition process; and, in addition, develop a greater understanding of language in atypical situations. Such understanding can only advance discussion about constraints on human language.

Unveiling phonological universals: A linguist who asks “why” is (inter alia) an experimental psychologist

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Abstract: Evans & Levinson (E&L) are right to hold theories of language accountable for language diversity, but typological data alone cannot determine the structure of mental phonological grammars. Grammatical universals are nonetheless testable by formal and experimental methods, and the growing research in experimental phonology demonstrates the viability of a comparative experimental evaluation of the Universal Grammar (UG) hypothesis.

There is little doubt that the twin challenges of language universals and language diversity are critical for understanding the architecture of the language faculty, its domain-specificity and evolutionary origins. Despite their crucial import, these questions remain unaddressed in most existing psycholinguistic research. Evans & Levinson (E&L) should be commended for reminding the cognitive science community of its outstanding intellectual debt in this area. Nonetheless, E&L’s own conclusion – that the hypothesis of universal grammar is false – does not follow from the evidence they present. Here, I specifically consider E&L’s analysis of phonological universals – the role of syntactic and semantic universals falls beyond the scope of this commentary.

In its bare minimum, the hypothesis of Universal Grammar (UG) states that the brains of all speakers represent a shared set of grammatical constraints. Although this hypothesis is often associated with the claims that UG constraints are innate, and domain- and species-specific, these additional claims are not logically linked to the basic hypothesis of grammatical universals. E&L appear to reject all four claims on the grounds that language typology exhibits no absolute, exceptionless regularities. Typological universals, however, are distinct from grammatical universals, and the link between them is complex. Grammatical universals – the object of cognitive inquiry – are mental representations (I-language), whereas typological universals are statistical generalizations concerning external linguistic outputs (E-language). Such outputs are shaped by multiple factors, of which putative grammatical universals are only one force – the restrictions on perception, motor control, conceptual structure and memory, coupled with cultural and social factors, are equally strong determinants.

Consider, for example, the typological prevalence of CV syllables (discussed by E&L). One theory of UG, Optimality Theory...
onsets with large sonority distances (e.g., \textit{bfinf} et al. 2007): the worst-formed onsets of falling sonority (e.g., \textit{shapes} the perception of these syllables (Berent 2008; Berent turn, are preferred to sonority falls (e.g., \textit{English speakers, for example, favor syllables that rise in sonority that they are active in the brains of individual speakers even have been documented in sign languages (Corina 1990; Sandler 1993), is consistent with a domain-specific phonological mechanism.

Nonetheless, the present results cannot determine whether phonology preferences are, in fact, universal or innate.