Abstract: Structural priming is poorly understood and cannot inform accounts of grammar for two reasons. First, those who view performance as grammar + processing will always be able to attribute psycholinguistic data to processing rather than grammar. Second, structural priming may be simply an example of hysteresis effects in general action planning. If so, then priming offers no special insight into grammar.

Braniagan & Pickering (B&P) argue that structural priming methods have “reached maturity” (target article, para. 2) to the point that they can inform not only language production and comprehension processes, but also the nature of grammar, as typically studied by linguists using different analytical tools and methods. This view appears overly optimistic; structural priming remains widely used but poorly understood, with little consensus about why the effect is observed or exactly what production and comprehension processes are promoted from prior exposure to a sentence. Moreover, the larger class of priming methods, to which B&P link structural priming, has been the target of extensive criticism and reassessment of what can be gleaned from the tasks (Cesario 2014). Here, we consider two perspectives on the nature of structural priming and their consequences for B&P’s claims for grammar.

One perspective is that structural persistence is a strongly syntactic phenomenon: Encountering/producing a sentence somehow biases the language processing system to expect or produce a similar syntactic structure. B&P’s logic is that, because the processing system draws on the grammar, patterns of priming must reveal the nature of the grammar. This thinking raises the classic issues of the competence-performance distinction. If language use is grammar + processing, there is a credit assignment problem for psycholinguistic data: Any linguistic behavior might reflect the grammar; processing mechanisms, or some combination. B&P make exactly this criticism of other psycholinguistic methods—for example, that Franck et al.’s (2010) studies of subject-verb agreement production might illuminate the nature of the grammar, or alternatively they might reflect production or comprehension processes and be uninformative about grammar. Crucially, this assignment problem applies equally to priming. Haskell et al. (2010) used priming to study agreement production and found that subject-verb agreement is sensitive to the statistical patterns in prior usage (the primes). These results could support a graded grammar in which statistical patterns shape grammatical representations (Bybee 2006). Researchers rejecting this approach, however, could instead attribute these priming data to processing, leaving the grammar untouched by the statistics of usage. Thus, given B&P’s assumption of usage=grammar + processing, structural priming is just as much subject to interpretive uncertainty as any other measure.

Even more interpretive uncertainty arises from an alternative view of structural priming—that it is not strictly syntactic but rather a language example of a more general tendency to repeat prior actions. Cognitive models of motor planning suggest these reuse effects (termed hysteresis effects) arise because it is easier to recall a previously executed motor sequence than to generate alternative plans de novo (Rosenbaum et al. 2006). Our own research investigates the link between structural priming and domain-general plan reuse, and we have developed parallel tasks that yield reliable structural priming for dative sentence structures and priming of nonlinguistic manual actions in the same participants (Koranda et al. 2016). We also observed a parallel effect of priming strength in both domains: Preferred sentences and movements are more easily primed than preferred ones, a phenomenon previously observed in structural priming (Bock 1986). These findings raise the possibility that plan reuse may be a domain-general property of action planning. MacDonald (2013) suggested that a general plan reuse bias would ground patterns of language use in basic planning mechanisms, and the existence of a general plan reuse bias may also explain why some nonlinguistic motor sequences such as stacking blocks appear to prime sentence structure choices in language.
Structural priming is most useful when the conclusions are statistically robust

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Abstract: Branigan & Pickering (B&P) claim that the success of structural priming as a method should "end the current reliance on acceptability judgments." The basis of such a claim rests on the premise that, not only is structural priming a robust psychological phenomenon, but also can be used to adjudicate between finer points of syntactic theory. While we agree that structural priming is an interesting and useful phenomenon, we have reservations as to whether there is sufficient statistical evidence to support all of the detailed claims made about specific points of syntactic theory.

For example, as a case study of what they call the "clearest example," B&P discuss what priming studies tell us about passive constructions and, specifically, how priming studies push back against the standard generative grammar accounts of passives. The details of this argument rely on priming studies that go beyond asking whether Structure X in a prime sentence leads to an increased likelihood of a participant producing Structure X in a target sentence. Rather, it relies on evidence that locatives prime passives (Bock & Lobell 1990), that unergatives prime inaccusatives (Flett 2006), and that POs and DOs prime light verbs (Wittenberg 2014). Often, there is only one paper that investigates a particular research question, and B&P typically accept the results of that paper as delivering a statistically valid conclusion about the phenomenon in question.

In a meta-analysis in Mahowald et al. (2016b), we give evidence that structural priming is a robust and well-replicated phenomenon, but caution that studies of the type that B&P rely on for some of their conclusions (specifically, studies that ask whether some priming effects are greater than others or whether certain factors, such as age or L2 status, moderate priming effects) are statistically underpowered (with an average power of 53%, as determined by a p-curve analysis) and often do not use enough participants to warrant the conclusions drawn. Indeed, studies of this sort, we recommend using several hundred participants—which almost no existing priming studies do.

While this is not evidence that the conclusions drawn in any one study that B&P referenced are misleading, we should be cautious not to assume that every individual study can be used as a building block in a larger syntactic theory. Rather, we should expect some studies to reach statistically significant conclusions (or fail to reach statistically significant conclusions) based on chance alone—and not just because of the experimental manipulation. This is of particular concern when there is only one unreplicated study on a particular phenomenon.

Of course, none of this is to say that structural priming should not be used alongside and sometimes instead of acceptability judgments (which have their own host of pitfalls). In the often messy world of empirical science, the availability of diverse, orthogonal methods that explore the same research question using different techniques is a feature, not a bug. So, insofar as B&P argue against the hegemony of one particular technique (acceptability judgments) in linguistics research, we agree. Insofar as they argue for the hegemony of a different technique (priming), we urge a healthy skepticism.

Priming methods in semantics and pragmatics

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