



Linguistic Intuitions

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Abstract

Linguists often advert to what are sometimes called *linguistic intuitions*. These intuitions and the uses to which they are put give rise to a variety of philosophically interesting questions: What *are* linguistic intuitions – for example, what kind of attitude or mental state is involved? Why do they have evidential force and how might this force be underwritten by their causal etiology? What light might their causal etiology shed on questions of cognitive architecture – for example, as a case study of how consciously inaccessible subpersonal processes give rise to conscious states, or as a candidate example of cognitive penetrability? What methodological issues arise concerning how linguistic intuitions are gathered and interpreted – for example, might some subjects' intuitions be more reliable than others? And what bearing might all this have on philosophers' *own* appeals to intuitions? This paper surveys and critically discusses leading answers to these questions. In particular, we defend a 'mentalist' conception of linguistics and the role of linguistic intuitions therein.

Linguists often advert to what are sometimes called *linguistic intuitions*. For example, suppose native speakers' intuitions agree that

1. Who bought what?

is an acceptable sentence, while

2. What bought who?

is not (you may suppose it understood that 'who' is asking after the buyer). This lends *prima facie* support to a general condition, dubbed 'Superiority' by Chomsky (1973), that *inter alia* constrains the order of question-words to mirror that of the corresponding answer words – here, 'Someone bought something,' not 'Something bought someone'. On the other hand, the intuition that the sentence

3. Which book did which person buy?

is fine arguably provides *prima facie* evidence against it (Pesetsky 2000, p. 40). Though certainly not the only source of evidence available to linguists (linguists advert to corpora of actual usage, developmental data, reaction-time experiments, acquired deficits, fMRI studies, comparisons across languages, etc.), such intuitions have played a crucial role in the advancement of the field.

Linguistic intuitions and the uses to which they are put give rise to a variety of philosophically interesting questions: What *are* linguistic intuitions – for example, what kind of attitude or mental state is involved? Why do they have evidential force and how might this force be underwritten by their causal etiology? What light might their causal etiology shed on questions of cognitive architecture – for example, as a case study of how consciously inaccessible subpersonal processes give rise to conscious states, or as a candidate example of cognitive penetrability? What methodological issues arise concerning how linguistic intuitions are gathered and interpreted –

for example, might some subjects' intuitions be more reliable than others? And what bearing might all this have on philosophers' *own* appeals to intuitions?

In what follows, we survey and critically discuss leading answers to these questions. We defend, in particular, a 'mentalist' conception of linguistics and the role of linguistic intuitions therein.

1. What are Linguistic Intuitions?

Linguistic intuitions are such partly in virtue of their content (what makes them linguistic) and partly in virtue of being a particular kind of attitude or mental state (what makes them intuitions). Let's start with their content. As we shall use the label here, linguistic intuitions are linguistic simply because they predicate properties of specific linguistic, or language-like, items or their use. Examples from the linguistics literature include whether some linguistic, or language-like item, sounds good (sometimes as rated on a numerical scale), could or would be used or understood by you, is preferable to another, feels related to another, could constitute a possible combination of sounds in your language (/spink/ vs. */pink/), is ambiguous, could be used to mean such-and-such, entails another, would be true under such-and-such circumstances, is more frequently used than another, etc.

Note the variety of properties predicated on this list, as well as the variety of sub-fields such intuitions subserve: phonology, syntax, semantics, pragmatics, and sociolinguistics. Discussion of linguistic intuitions, by both philosophers and linguists, often focuses just on intuitions relevant to syntax. This could suggest a greater underlying homogeneity than may in fact exist. Note further that our characterization, since it does not restrict the *kind* of property ascribed, allows as well properties that play *no* role in linguistic inquiry (and in many cases never will) – for example, that such-and-such remark is trite. Admitting intuitions with no empirical use spares one from having to predict the future course of science (cf. Fiengo (2003)).¹

Its liberality also enables our characterization to remain neutral regarding one prominent kind of intuition's disputed content. Linguists mark strings like 'She has green three books' with an asterisk to record their intuitive reaction. But just what does the asterisk indicate? According to *one* view, such asterisks indicate – or should indicate – an intuitive predication of *unacceptability*, where a string is acceptable, according to one well-known gloss, just in case it is 'natural and immediately comprehensible . . . in no way bizarre or outlandish.' (Chomsky 1965, p. 10) Acceptability, on this view, should not be confused with *grammaticality*: being permitted, or generated, by the speaker's grammar. On the *alternative* view, it is indeed an intuitive predication of *ungrammaticality* that the asterisk records. While our liberal characterization allows either as a possible linguistic intuition, it's a further matter, which, in actual *practice*, linguists tend to deploy. Gross and Culbertson (2011) argue that the asterisks tend to concern *unacceptability*; questions concerning *grammaticality* then arise in *explaining* the intuition. The matter is sometimes muddled, however, by the fact that linguists often advert to their own intuitions and thus are simultaneously both experimental subject and theorist, rendering it less clear what belongs to the content of their intuition and what to the explanation inferred by them *from* the intuition (cf. Newmeyer 1983, Schütze 1996, Culbertson and Gross 2009, and Devitt 2010).²

What of the attitude or state in virtue of which linguistic intuitions are deemed intuitive? Linguistic intuitions are most commonly taken to be a kind of *judgment* about specific linguistic, or language-like, items or their use. In fact, talk of meta-linguistic judgments is more common than talk of intuitions, and some theorists explicitly eschew the latter label altogether (e.g., Ludlow (2011), p. 69, following Williamson (2008, p. 109) on intuitions more

generally). ‘Intuition,’ however, can indicate more specifically the *kind* of judgment at issue. The basic idea is that, in appropriate circumstances and attending to the matter, one simply *finds oneself* with the judgment. But one might develop this idea in various ways. Devitt (2006, p. 95) characterizes linguistic intuitions – indeed, intuitions generally – as *fairly immediate and unreflective* judgments. On one natural reading, this requires relative *temporal* immediacy without a causal role for reflection in the production of the judgment. But, while perhaps *sufficient* for intuitiveness, these restrictions are not generally imposed in linguistic practice. It can take some time and reflection for someone to get into or imaginatively construct conditions that enable a particular intuitive judgment – for example, to notice an ambiguity, to hit upon a scenario in which one would use a certain sentence, or to concoct a counter-example to a would-be entailment claim.³ A better gloss is that such judgments are not based on conscious reasoning, past or present, one’s own or another’s – in particular, not based on conscious reasoning from hypotheses one would like to support! (Devitt 2006, p. 103, Ludlow 2011, Sperber 1997) This still requires supplementation and development: One wants to exclude judgments based on other’s intuitions, for example, and perhaps perceptual judgments (though, as we’re about to see, some do consider at least some linguistic intuitions perceptual, or quasi-perceptual). But we leave the matter there.

An alternative conception of linguistic intuitions identifies them, not with any kind of judgment, but with some non-committal, pre-judgmental representational state – an experience, appearance, or seeming (Pateman 1987, Textor 2009, Fitzgerald 2009). Just as it can visually *seem* to you that the lines in a Müller-Lyer illusion differ in length without you *judging* them to so differ, so can a linguistic illusion such as (4):

4. More people have been to France than I have

persistently *appear* acceptable even after one judges it not to be (Phillips et al., 2011). Subjects might likewise withhold assent in *non-illusory* cases, despite how presented strings strike them, if told, e.g., that they were given a pill that causes linguistic illusions or that people tend to make many errors with these particular stimuli. There is thus some reason to recognize a category of linguistic seemings and distinguish them from judgments, just as many distinguish more generally perception (or perceptual experience) from perception-based judgment.

A development of this suggestion might maintain, further, that at least some such states possess, in addition to their representational content, characteristic phenomenology and motivational consequences. In particular, negatively evaluated stimuli might be not just *represented* as unacceptable, bad sounding, or ‘yucky’ (Pietroski 2008) but also *experienced* in a negatively valenced way, and they might dispose one to aversiveness (when the stimulus is produced by another) or repair (when it is produced by oneself) (Textor 2009, Luka 2005).⁴

The distinction between judgments and appearances is arguably of limited significance, however, to linguistic practice. First, in an overwhelming number of actual cases of interest to linguists, subjects will judge things to be just as they experience them as being. Second, in any event, if we are to make use of seemings in theorizing, they must be reported. Thus, a judgment is required after all, albeit to the effect that things so seem to one. (Glüer (2009) argues that perceptual experiences *just are* judgments about how things perceptually seem.) Indeed, some, though not all, of the intuitions to which linguists typically advert seem already to have such content explicitly – for instance, judgments that particular sentences *sound good* or *feel related*. Insofar as intuitions do concern how strings strike subjects, as opposed to just the strings themselves, this would help explain the tendency among some to characterize linguistic intuitions as *introspective* (e.g., Townsend and Bever (2001), Wasow and Arnold (2005)).

Whether linguistic intuitions are identified with seemings or judgments, the appeal to something like linguistic perception can suggest the possibility that a dedicated linguistic input analyzer is implicated in the causal etiology of at least some linguistic intuitions. This is a suggestion that many linguists embrace and consider validated on both intuitional and other empirical grounds.⁵ A shared underlying causal mechanism might also vindicate the claim that linguistic intuitions constitute, in this sense, a natural kind – perhaps with various natural subkinds corresponding to subparts of the linguistic input analyzer (recall the distinct kinds of intuitions listed above). And this might suggest in turn another way of characterizing what linguistic intuitions *are* – viz., in causal-functional terms. It's of course an empirical matter whether *everything* linguists have labeled an 'intuition' is generated by a common causal mechanism. Consider intuitions concerning frequency of use – for example, concerning whether you are more likely to take leave by saying 'bye-bye' or 'goodbye' (Labov 1996). It's unobvious that mechanisms responsible for intuitions of phonological possibility and of unacceptability also track such frequencies in a way that impacts reported 'intuitions' concerning leave-taking. If they do not, one might still defend a causal-functional conception of linguistic intuitions by declaring leave-taking 'intuitions' *mislabeled* in light of our better understanding of their causal source. Alternatively, one might retain our somewhat pre-theoretic characterization of linguistic intuitions (as meta-linguistic seemings or judgments not based on conscious reasoning) and simply allow that they form something of a motley.

In fact, not much is known about the mechanisms implicated specifically in the formation of linguistic intuitions – at least beyond what has been learned, in part drawing upon intuitional evidence, about the operations of the mind/brain responsible for aspects of linguistic production and comprehension more generally. The mechanisms of linguistic production and comprehension have *some* place in the etiology of linguistic intuitions as well. But the capacity for linguistic intuitions is a further, indeed dissociable, capacity that goes beyond the capacity for language production and comprehension. It is one thing to parse or understand a sentence; it is another to form an intuition that the sentence is acceptable. (See Schütze (1996), Townsend and Bever (2001), and Luka (2005) for proposed models, but also Schütze (2011, p. 210) and Goldrick (2011) lamenting our ignorance.)

We turn now to linguistic intuitions' evidential role, where questions of causal etiology also arise.

2. *What is Their Evidential Role (and Causal etiology and Function)?*

How are such intuitions supposed to provide evidence for linguistic theorizing? One's answer depends on one's conception of the aims and claims of linguistics more generally. (Scholz et al., 2011 survey competing conceptions.)

According to the dominant *mentalist* approach, linguistics is a branch of psychology. Its objects are aspects of the mind/brain crucial to linguistic production and comprehension – for example, the postulated linguistic input analyzer mentioned above. Linguistic intuitions, on this view, provide one important source of evidence concerning these mechanisms – in particular, for constraints governing their computational operations. Linguistic intuitions can play this evidential role because their causal etiology involves these mechanisms, the same mechanisms involved more generally in linguistic behavior – even if these mechanisms do not *exhaust* the intuitions' causal etiology.

The inferences from intuition to mechanism, and the evaluation of these inferences, are not simple. They are inferences to the best explanation conditioned by the rest of one's evidence and theoretical commitments. One common commitment is that intuitions, or

their expression, are performances that result from the interaction of a large number of mechanisms, of which our linguistic competence is only a part. Thus, one might maintain that intuitions such as (1) and (2) above provide *prima facie* evidence for a computational mechanism that embodies a certain constraint on word order, but hypothesize that (5)

5. A man that a woman that a child that a bird saw knows loves

is judged unacceptable, *not* because the mechanism's computational operations similarly embody a constraint on multiply-center-embedded clauses, but because of a memory limitation. Again, though subjects might agree that in (6)

6. She reasoned that Mary got the promotion

'she' can't co-refer with 'Mary,' linguists can debate whether the explanation involves an embodied syntactic constraint or rather pragmatic constraints that may or may not, depending on one's further views, be considered part of a mechanism specific to language or communication (Chomsky 1981, Reinhart 1983).

This conception of linguistic theorizing and of intuitions' place therein is not put forward *a priori*. That it constitutes a good research strategy is itself an empirical claim vindicated by its success in generating fruitful hypotheses, some of which are themselves vindicated by intuitional and other evidence.

Not everyone accepts this conception. Katz (1981, 1984), for example, develops an alternative, 'Platonistic' view, according to which the proper objects of linguistic theorizing are not psychological states but languages considered as abstract objects (non-spatial-temporal, non-causal objects like those studied in mathematics). But psychological states are not irrelevant to linguistic methodology, on his view. Our tacit knowledge of grammatical principles enables us to construct internal representations – indeed, *a priori* intuitions – of linguistic *abstracta* that otherwise would remain epistemically inaccessible.

Devitt (2006), while rejecting both Katz's Platonism and the possibility of *a priori* knowledge, also maintains that the object of linguistic theorizing is language considered as an entity distinct from the psychology of our competence with it.⁶ How aspects of the mind–brain enable us to acquire our linguistic competence and are implicated in our linguistic performance, though worthy subjects in their own right, are simply not what's at issue in *linguistics*. In any event, so he claims, we lack good reason to believe that the constraints linguists have shown govern languages are in addition represented or embodied in our mind–brains.

Why, on his view, should linguistic intuitions provide evidence for the properties of language? Devitt argues that linguistic intuitions can serve as a source of evidence because, owing to our extensive experience with language, we have come to have some relatively reliable intuitions about it. People who spend a lot of time with rocks might find themselves with the ability to intuitively identify aspects of them, which in turn might provide a useful basis for beginning a more reflective investigation into the nature of rocks – similarly with language. But, again, the mind–brain's role in the causal etiology of these intuitions is not the *subject matter* of the inquiry these intuitions subserve: the inquiry's subject matter is the rocks, or the language, that the intuitions are about.⁷

As one plank in his larger argument against the dominant mentalist conception of linguistics' aims, Devitt argues that his account of linguistic intuitions' evidential role *better* explains why they constitute evidence. The larger argument is beyond our scope, but a look at the more specific claim will get on the table a variety of considerations relevant to our topic and will help clarify the mentalist's commitments.

According to Devitt, the differing accounts of linguistic intuitions' evidential role rest on different conceptions of their causal etiology. This difference seems stark on Devitt's initial

characterizations. According to the mentalist conception, linguistic intuitions are the product of a modularized language faculty that alone delivers the relevant information to mechanisms responsible for judgment.⁸ According to his alternative, linguistic intuitions are the product rather of the mechanisms responsible for judgment more generally and ‘result . . . from ordinary empirical investigation, theory-laden in the way all such opinions are’ (2006, p. 98). But this starkness softens as he develops the competing explanations.

First, Devitt acknowledges that mentalists do not maintain that linguistic intuitions are the product of linguistic competence *alone*; other ‘cognitive systems’ (2010, p. 846) not specific to the language faculty also play a causal role. Examples include various sources of ‘noise’ or ‘performance error’ (recall that it’s non-trivial, on the dominant view, to determine an intuition’s relevant causal source) as well as the mechanisms underlying judgment itself, necessary for the *endorsement* of what linguistic competence yields and perhaps also to render its perceptual content conceptual. Moreover, Devitt’s alternative maintains not that linguistic competence is *by-passed* in the generation of linguistic intuitions but rather that it plays a crucial role: the stimulus must be processed in order for us to issue a judgment on it. On both views, then, linguistic competence is crucially implicated in the etiology of linguistic intuitions without being its sole source.

Second, Devitt has – and plausibility requires – a broad conception of ‘empirical investigation’ and theory-ladenness. It’s not his view that linguistic intuitions always derive from or are causally influenced by previously formed *beliefs* or *theories* about language, whether consciously or unconsciously. It suffices if intuitions are in part the products of dispositions to judge that result from immersion in linguistic environments (Devitt, 2012a, p. 19). But consider the grammatical constraints that mentalists maintain are embodied in the mechanisms crucial to linguistic production and comprehension. On their view, such constraints result in part from immersion in linguistic environments, and they affect one’s dispositions to form linguistic intuitions. Language acquisition thus constitutes a form of empirical investigation sufficient to render linguistic intuitions theory-laden, in this liberal sense, even on the mentalist’s view.⁹

Another difference turns on an attribution that mentalists can reject – viz., that, on their account, unlike Devitt’s, the language module itself supplies the *content* of linguistic intuitions (Devitt 2006, pp. 110–1). Indeed, there are some linguists who deny that the structures on which the language module performs operations have representational content at all (Chomsky 2000, Jackendoff 2002). But even those who view the module’s outputs as representational need not take them to include representations that attribute the properties attributed in linguistic intuitions. Consider, for example, the following crude picture of how at least some acceptability intuitions might be produced (cf. Rey, forthcoming). A language-like stimulus sets the syntactic parser to work. If it fails to generate a string satisfying its embodied grammatical constraints, this causes a judgment of unacceptability in someone attending to the matter; if it does succeed, then *ceteris paribus* this causes a judgment of acceptability. The output of the module, on this picture, is not an attribution of (un)acceptability, but rather a parse (a structural description), or the absence thereof, that *ceteris paribus* causes such a judgment. The content of the intuition need not itself be the content of the module’s output.

Devitt (2010, pp. 850–1) acknowledges that mentalist accounts of linguistic intuitions need not be *incompatible* with his alternative. (Indeed, in the case of *visually based* perceptual judgments, he suggests that their etiology may well satisfy analogous characterizations of both types.) Nonetheless, mentalist accounts do *go beyond* his alternative in at least two ways. First, Devitt’s alternative does not require that the language module represent or embody the constraints uncovered by linguistic theorizing. This is how his alternative connects to his larger argument against mentalism: if his account of linguistic intuition’s evidential role is *better*,

then adverting to intuitions' evidential role won't provide the basis of a compelling argument in support of mentalism. Second, his alternative does not assume that the contents of linguistic intuitions are *largely* determined by the language faculty – i.e., that they are not to a *significant degree* cognitively penetrated by, or laden with 'theory' from, elements *external* to the language module. Devitt presumably would maintain that the mentalist must assume this if linguistic intuitions are to provide evidence concerning *the language module* – at least this had better be so for most of the intuitions to which linguists in fact advert.

The relative cognitive penetrability of linguistic intuitions is an empirical claim, one currently lacking empirical support – see our methodological section below. How else could one argue that Devitt's account of linguistic intuitions' evidential role is better? Against mentalists who hold that the language module's operations merely in some sense *embody* grammatical constraints (cf. fn. 8 above), Devitt (2006, 2010) offers three main arguments. First, he suggests that we simply have no idea how embodied constraints might yield such judgments. Second, he notes that our mind-brains no doubt in some sense embody rules for swimming, typing, and other skills, but these embodied constraints do not directly yield intuitions concerning their subject matter; so, he asks, why should the linguistic case be different? Third, he cites evidence for the dissociability of linguistic competence and competence concerning meta-linguistic judgment, for example among young children (Hakes 1980).

There are replies to each of these points. First, we gestured towards a model for at least one kind of linguistic intuition above, according to which generated grammatical structural descriptions, or the absence thereof, simply cause judgments with certain contents. So, although, as we have remarked, little is currently known about the causal etiology of linguistic intuitions past the operation of the language module, it's too strong to say that we simply have no idea.¹⁰ In any event, insofar as the mentalist research strategy is successful and fruitful, and meshes with neighboring developments, it – including its conception of intuitions' evidential role – receives vindication, even absent a fuller understanding of the intuitions' causal etiology. (Cf. Bogen and Woodward (1988) for examples from the physical sciences of good data *sans* a good understanding of their causal etiology – also Gross and Culbertson (2011), and Maynes (2012b) on the 'calibration' of linguistic intuitions.)

Second, the reason that embodied grammatical constraints can yield empirically valuable intuitions, whereas embodied constraints concerning swimming and typing do not, may lie in the intuitions' function. (Alternatively, it might just be a happy accident, and that might suffice to answer Devitt's worry.) It is a common hypothesis, backed by some empirical support, that the capacity for meta-linguistic judgment plays a role in, or results from, the ability to monitor and correct one's own linguistic production. Moreover, it is staple of sociolinguistics that monitoring the production of others plays a crucial role in establishing in-group and out-group boundaries and thus, for example, determining levels of trust. (Recall as well the normative, phenomenological, and motivational aspects of valenced linguistic intuitions suggested above.) There is nothing incoherent in having a capacity to swim or type that similarly yields meta-judgments that play such roles (or other roles). But it's not implausible that we lack intuitions in these other cases because there hasn't been pressure to develop the capacity for such intuitions, unlike with language.¹¹

Third, the dissociability of linguistic competence and a capacity for intuitive meta-linguistic judgment is problematic only if one is committed to their identity. But the mentalist is not committed to this. By Devitt's own lights, judgment is required to endorse the intuition's content even if the language module is the source of that content. If that link is blocked or not fully formed, the capacity for intuitive meta-linguistic judgment could be disabled without affecting linguistic competence. Moreover, there is nothing incoherent in allowing different aspects of the language module to mature at different rates.

We conclude that Devitt has not made his case. But we repeat that much is not known about the causal etiology (or function, if any) of linguistic intuitions, beyond of course what is known about the causal etiology of linguistic production and comprehension more generally. Moreover, if linguistic intuitions form a motley, it's possible that Devitt's conception of their evidential role is right for some even if it isn't right for all.

3. *Linguistic Intuitions as Evidence: Methodological Issues*

For as long as linguists have adverted to intuitions, critics have raised methodological concerns that require a reply no matter which model of intuitions' evidential role one defends. We have space here just to sample them; see Schütze (1996) for a thorough survey and discussion of the literature up till then and Schütze and Sprouse (forthcoming) for a more recent overview.

A first set of worries suggests that intuitions' *introspective* aspect (insofar as some *are* introspective) precludes their being acceptable evidence at all.¹² Behaviorists in particular cite, or cited, introspections' lack of publicity and difficulties with reproducibility. But such worries tend to get less traction today. Introspective *reports* are public and reproducible. Moreover, they are a staple of well-established psychological science in other domains – for instance, in vision science, where subjects are regularly asked to report how things look. Whether in vision science or linguistics, it's hard to argue with success. This applies as well to the further worry that introspections are unreliable because particularly susceptible to contextual effects. (Whether intuitions should be gathered in a more controlled way than they typically are, regardless of whether they are introspective, is a distinct question, discussed below.) It also neutralizes worries generalized from *other* kinds of introspection known to be unreliable, such as those concerning the *causes* of mental states (Nisbett and Wilson 1977).¹³ In any event, at least on the *mentalist* approach, inaccurate intuitions can still provide the basis for legitimate inferences to an explanation of causal etiology: *something* must explain our susceptibility, for example, to grammatical illusions such as (4) above. (Ludlow (2011 pp. 71–4) critically discusses introspection-based worries concerning linguistic intuition. See Jack and Roepstorff (2003, 2004), Robbins (2006), and Schwitzgebel (2010) on introspection in psychology more generally.)

Another set of worries concerns the status of linguistic intuitions vis-à-vis *other* sorts of evidence. While practically everyone agrees that evidence relevant to linguistics can in principle come from anywhere (cf. Antony (2003), replying to Soames (1984)) and in practice *does* come from various sources (recall our examples above), many complain of an *over-reliance* on intuitions (Wasow and Arnold 2005, Ferreira 2005). There are various reasons – intellectual, practical, and sociological – that intuitions remain the preponderant source of evidence in many streams of linguistics. For one, intuitions are a crucial source of evidence concerning such 'negative' facts as what strings a grammar does *not* generate and what interpretations grammatical strings *cannot* have; a well-controlled set of intuitions that some strings are unacceptable, or don't allow certain readings, admits of a narrower range of explanations than does the strings' mere absence, or the inferred absence of some construals, from a corpus, for example. For another, at least some other sorts of evidence, however important, have yet to yield as theoretically fruitful results (cf., e.g., Poeppel and Embick (2005) on the explanatory limitations of much neurolinguistics). Given how relatively easy and inexpensive it is to collect large numbers of intuitions tailored to address specific theoretical questions, it is thus very likely that intuitions will remain at least a central source of evidence in linguistics. That said, it's also very likely that the ever-increasing use of alternative sources of evidence will continue. Not only are there existing questions for which other methodologies are better suited (corpus studies provide better

information concerning, for example, frequency of usage, crucial *inter alia* for understanding aspects of acquisition) but also new methodologies tend to lead to new questions. What's more, a wider evidentiary base, to the extent it vindicates existing conclusions, sures up confidence in previous methods and holds out the possibility of greater explanatory scope and unification with other lines of inquiry. Its importance is even greater to the extent that it doesn't. Since some of these alternative sources of evidence have only become feasible or even possible owing to recent technological advances, some training in psycholinguistic, computational, and neuroscientific methods has likewise only recently become a common feature of graduate education in linguistics. The exact place of intuitions vis-à-vis other sorts of evidence will be settled by where the action is in future developments.

But by far the most common worries concern, not whether intuitions *qua* introspections should count as evidence at all or how intuitions are used in relation to other potential evidence, but rather how intuitions are *gathered* (Featherston 2007; Gibson and Fedorenko 2010, forthcoming). The image of a lone linguist mulling over a sentence she has mumbled to herself is not so far off the mark. Complaints include the uncontrolled presentation of stimuli and the small, idiosyncratic pool of subjects. Regarding the presentation of stimuli, one wants to rule out, for example, that the linguist's judgment was affected by what sentences she was previously considering (ordering effects) or by properties of the string irrelevant to the question she meant to be addressing (a sentence might be deemed ungrammatical because unacceptable, when in fact the unacceptability was due to a lexical or pragmatic feature idiosyncratic to the stimulus). Regarding the subjects, worries include that the number is too small to warrant the kinds of conclusions linguists draw, let alone to admit of statistical analysis, and that linguists' use of themselves as subjects threatens confirmation bias. (Schütze (1996) supplies a fuller catalogue of complaints.)

In practice, things often aren't so bad. Linguists' claims are typically critically examined in seminar, at conferences, or by journal referees (Phillips 2009). Sprouse and Almeida (forthcoming-b) suggest that the number of subjects is thus typically more like five to ten – and these other subjects might lack the linguist's particular biases (indeed, they may be hostile to her claims). Moreover, the gold standard in linguistic practice is to consider not strings taken individually but 'minimal pairs' intended to differ only in respects relevant to the question at hand so as to control for the effect of irrelevant and idiosyncratic features.

Nonetheless, much linguistics falls short of what's considered best, or even minimally acceptable, practice in other parts of the social sciences. In reaction, there has been a movement among some linguists to collect intuitions in a more controlled manner from a larger number of subjects. (See, e.g., Cowart (1997) and Myers (2009) on 'experimental syntax' and Kawahara (2011) on formally gathered phonological intuitions.) This is but one part of a larger trend in recent decades towards a greater use of more formal experimental methods by linguists themselves, as the cultural distance that has sometimes separated, for example, generative linguists and psycholinguists decreases.¹⁴

Ironically, one striking result of this experimental work so far has been to largely dispel the worry that gave rise to it. Having gathered intuitions through more formal experimental methods, one can compare the results with the informally gathered intuitions on which linguistics have relied. One can also compare more formally gathered intuitions of linguists with those of non-linguists. More generally, experimental methods allow us to test whether much linguistics in fact rests on shaky evidential foundations. The results have been mainly reassuring. Sprouse and Almeida (forthcoming-a), for example, gathered acceptability judgments from 440 non-linguists on all 469 sentences used as evidence in a minimalist syntax textbook. They found a maximum discrepancy of 2%. Sprouse and Almeida (manuscript) found further that, for a variety of linguistic phenomena, very high statistical power (that is,

a very low false negative rate) was achieved by selecting randomly any ten judgments from their total set. The low number of judgments needed for very high statistical power compares favorably to the five to ten subjects they elsewhere suggest is typical in informal practice (see above), especially if each subject renders more than one judgment. (See Johnson (forthcoming), however, for difficulties calculating the size of linguistic data sets.) In another study, Culbertson and Gross (2009) – see also Devitt (2010) and Gross and Culbertson (2011) – found high inter- and intra-group consistency on an acceptability judgment task among linguists, non-linguist subjects who had had one syntax course, and non-linguist subjects who had one cognitive science course but no syntax. See also Featherston (2009), Phillips (2009), and Sprouse et al. (Manuscript).

Among other things, such studies suggest that, at least for a wide range of stimuli, linguists' and non-linguists' intuitions tend not to differ and thus, in particular, do not differ as a result of linguists' greater expertise and knowledge of language. The intuitions, that is, do not seem to be significantly 'cognitively penetrated' by, or theory-laden with, this linguistic expertise and knowledge. This lessens the worry about confirmation bias (though of course here vigilance is always called for). It also raises doubts about Devitt's claim to better explain why intuitions are evidence in linguistics, which we saw in part rests on the claim that linguistic intuitions are significantly penetrated by 'theory' external to linguistic competence. It raises doubts as well about Devitt's further, related claim that, far from worrying about confirmation bias, we should prefer the intuitions of linguists over non-linguists, precisely because linguists' expertise and knowledge will yield more reliable intuitions.¹⁵

This is not to say that such studies have not turned up any individual differences at all. Culbertson and Gross (2009), for example, found that a fourth group of subjects who lacked any significant exposure to linguistics and cognitive science did *not* display inter- or intra-group consistency. Since subjects who had no exposure to syntax but some to cognitive science *did* display inter- and intra-group consistency, Culbertson and Gross suggest that subjects in the outlier group lack task-specific knowledge, not expertise in linguistics. It's an empirical question what – perhaps minimal – training might bring their performance into line.

Dabrowska (2010) also found individual differences. For example, in her study, there was a statistically significant difference between generative and functional linguists concerning strings containing complex noun phrase 'islands' ('What did John make the claim that Mary brought?'). Sprouse and Almeida (forthcoming-b) suggest that this result is particularly interesting because generative and functional linguistic *theories* tend to disagree about such strings: island constraints are a central part of generative grammars, while functionalists have argued that they are an epiphenomenon of language use. However, rather than exhibiting confirmation bias, the difference in acceptability judgments ran *counter* to the linguists' respective theories! While both groups on average rated such strings towards the unacceptable end of a five-point Likert scale, functionalists on average judged them to be *more* unacceptable than did generativists. Whether this result really tests for confirmation bias is questionable, however. Arguably, the predictions of generative and functionalist theories do not differ concerning such strings' *acceptability*; the theories differ only in the explanations they offer of this – that is, they differ only in their claims concerning *grammaticality*. In any event, one possible explanation Dabrowska offers of the divergence in judgment is that the linguists' varying theoretical interests had led to a difference in the frequency with which they had been previously *exposed* to such strings, which in turn *altered* their embodied grammars. (Cf. Luka (2005) on the normalizing effects of frequent exposure, also Bader and Häussler (2010).) On this hypothesis, their differing linguistic research led to a linguistic difference that was *accurately* reflected in their differing intuitions. Cf. also Dikken et al. (2007), Musolino (in preparation),

and, for a semantic example of possible intuitional variation due to underlying linguistic variation, Achimova et al. (forthcoming).

These results and others show that, just because formal experimental work has largely validated informally gathered intuitions, it hardly follows that, beyond supplying such validation, it adds no value that offsets the greater time and effort it requires. The interesting question is just where and how it might prove most fruitful. We have already mentioned the study of bias and cognitive penetration and investigation into subtle language variation. Another natural application is to hard cases where linguists' (and others') informally gathered intuitions disagree, perhaps not owing to subtle differences in their languages. Experimental work also promises new techniques for selecting between performance and competence explanations of judgment patterns (Sprouse and Almeida, forthcoming-b). Finally, some suggest it can shed light on Chomsky's (1965, p. 11) suggestion that *grammaticality* is graded (e.g., Sorace and Keller (2005)) – though to be sure, there is no direct inference from graded acceptability judgments to graded grammaticality.

Methodological matters are of course of interest generally to philosophers – or at least philosophers of science and epistemologists. But the particular methodological matters we have discussed concern philosophers for another reason as well. This is the subject of our final section.

4. Linguistic Intuitions in the Philosophy of Language

Linguistic intuitions are not just fodder for philosophical reflection. Philosophers themselves also advert to linguistic intuitions in supporting and assessing claims. Questions concerning linguistic intuitions thus belong as well to meta-philosophy, the study of philosophy's own aims and methods. (Cf. the exchange between Mates (1958) and Cavell (1958) on the methods of 'ordinary language' philosophy – also Fodor and Katz (1963) and Bates and Cohen (1972).)

In part, philosophers are users, and not just commentators, on linguistic intuitions because the projects of philosophers of language and linguists sometimes overlap, particularly concerning the semantics and pragmatics of philosophically salient terms and constructions – e.g., knowledge ascriptions, conditionals, quantifiers, etc. But philosophers of language also advert to linguistic intuitions in pursuing the more characteristically philosophical project of articulating *in virtue of what* linguistic items have the semantic properties they do – what Stalnaker (1997) labels 'foundational' semantics, as opposed to the 'descriptive' project of articulating what those properties are.¹⁶

Recently, experimental philosophers have criticized appeals to intuition in foundational semantics – in particular, in the theory of reference. Because this journal already contains a survey of the emerging debate (Genone 2012), we will be brief. (See also Machery and Stich (2012) and Devitt (2012b).)

Machery et al. (2004) cross-culturally examine intuitions concerning the 'Gödel-Schmidt' case that Kripke (1980) deploys against descriptive theories of reference. Kripke argues that, even if what one believed about Gödel (e.g., that he proved the incompleteness of arithmetic) turned out to be true rather of Schmidt, from whom the proof was stolen, the name 'Gödel' would still refer to Gödel, not to Schmidt – *contra* the view that a name refers to whatever satisfies the descriptions the speaker associates with the name. But Machery et al. find significant cross-cultural variation regarding this case, suggesting that philosophers should not assume that their intuitions are universally shared and thus constitute an appropriate basis for theorizing about these matters. Replies have questioned both the alleged findings and their purported significance. Regarding the findings, for example, Ludwig (2007) and

Deutsch (2009) complain that the probe of Machery et al. concerns *speaker's* reference, from which one cannot directly infer the reference of the *name*.¹⁷ Regarding the significance, Devitt (2011) argues that Machery et al. focus on the wrong subjects: what matters, again, are the intuitions of experts. (For replies, see Machery et al. (forthcoming) and Machery (2012), respectively.)

Even this quick sampling indicates how the issues that arise here parallel those debated by linguists: informal vs. formal data collection, individual variation, comparative reliability of different subject groups. But there are also differences. First, whereas linguists expect individual variation in *grammaticality*, variation in what fixes reference would be far more surprising. Second, because factors external to the speaker arguably in part fix reference (at least if descriptive theories are wrong!), it is possible that Devitt's non-mentalist conception is more apt in this case. Correspondingly, it is possible that in this case, his conception of the evidential role of linguistic intuitions is more apt as well, along with perhaps his giving pride of place to expert intuitions. Third, it is unclear in any event that linguistic intuitions have the same central role in the theory of reference that they have in linguistics. Maynes (2012a, ch. 4) argues that Kripke, for example, does not rely on linguistic intuitions as a crucial source of evidence; rather, when he appeals to 'intuition,' he is just expressing an empirical judgment sufficiently obvious for its basis to be left implicit.

Debates concerning the nature of reference have broad ramifications for many areas of philosophy. This is enough to imbue questions concerning the role of linguistic intuitions in these debates with philosophical significance. But the experimental philosophers' critique is part of a larger examination of philosophical methodology, especially of the role of intuitions more generally in philosophy. The investigation of philosophical uses of *linguistic* intuitions in particular thus also has interest as a case study and as a source of comparisons and contrasts with philosophical uses of *other* intuitions. That's in addition to their interest as a source of comparisons and contrasts to *non-philosophical* uses of *linguistic* intuitions, especially in linguistics – itself of independent philosophical interest, as outlined above.

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Notes

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¹ We mention below an alternative functional-causal conception of linguistic intuitions that, given the right kind of homogeneity, would indeed restrict the properties predicable in ways only future empirical inquiry could reveal.

² Below, we note how the two construals of the asterisk can be associated with two different conceptions of linguistic intuitions' evidential role.

³ Sometimes, there is interest in speeded judgments. That a subject's likely initial attempt to parse

(*) The complex houses married and single soldiers and their families

would lead her to judge it unacceptable provides evidence of her parsing strategies. But again, a little time and reflection can enable subjects to 'intuitively' get the reading concerning who is housed in the complex. It is likewise common for linguists' own judgments on subtle cases to follow upon careful consideration of related sentences and of varying background conditions. (Ludlow (2011, pp. 77–9) provides an example involving scope ambiguities.) Having carried out such reflections, it's often possible to articulate explicitly conditions that enable an intuitive judgment: suppose (*) were preceded by 'The complex does not house just anyone.' So, it might be thought that linguistic intuitions are meta-linguistic judgments that, in appropriate conditions, *would* be made immediately and unreflectively. But sometimes, the background conditions needed to reach a judgment are sufficiently complex that some reflection might be required to hold them in view. Indeed, the complexity of the sentence itself may sometimes require it.

⁴ Perhaps well-turned phrases, inventive metaphors, and the like are associated with a positive *aesthetic* valence; but, in general, linguistic items, like Heidegger's hammer, tend to become particularly phenomenologically salient when they are broken – thus the reference only to *negative* valence in the main text. Note, however, that some of the sample kinds of intuitions we listed above do not seem associated with any valence at all. (The normative content, valenced phenomenology, and motivational consequences of some linguistic intuitions is arguably connected to the monitoring functions – mentioned below – that some intuitions have been hypothesized to have).

⁵ For classic discussion, see Fodor (1983). Rey (2006) develops the analogy with visual perceptual modules in the course of defending a conception of linguistics and the evidential role of intuitions that is similar to the mentalist conception we discuss below. (Cf. Fitzgerald (2009)). Devitt (2006, 2010) replies. These discussions, however, arguably do not cover the full panoply of linguistic intuitions.

⁶ Soames (1984) too distinguishes the study of language and the study of linguistic competence. But he does not specifically take up linguistic intuitions as a topic.

⁷ It's worth noting that among Devitt's prime examples of linguistic intuitions are judgments concerning *grammaticality*. These intuitions attribute properties also ascribed by syntactic theories. Thus, one can ask after the reliability of speakers' intuitions *vis-à-vis* the very properties the theory is about. Arguably, such intuitions more naturally fit Devitt's conception of intuitions' evidential role than do the acceptability intuitions that we suggested above play the larger role in linguistic practice. On our depiction of the dominant mentalist conception, the *target* of the linguist's theorizing isn't acceptability; acceptability intuitions rather provide one basis for a potential inference to grammaticality, understood in terms of constraints embodied in the mind–brain. The more natural epistemic question from this point of view is then how good an inference this is in some particular case, not how reliable acceptability intuitions are about grammaticality. Issues *can* arise concerning the accuracy of acceptability intuitions *vis-à-vis* acceptability. Labov (1996) notes that some documented users of positive 'anymore,' as in 'Cars are sure expensive anymore' (allowed in some Philadelphia dialects), deny any familiarity with it! But he maintains that such cases are uncommon and so don't threaten general reliability. (Cavell 1958 argues that we *couldn't* be generally unreliable when it comes to related 'what we would say when' intuitions.) Labov's interest is in what theorists should do once such cases are uncovered – similarly for some other kinds of intuition he discusses.

⁸ Devitt's characterization of the mentalist's view sometimes builds in the further claim that grammatical constraints are *represented* in the language module:

... linguistic competence alone provides information about linguistic facts ... [via] a causal-rational route from an unconscious representation of rules in the language faculty to a conscious judgment about linguistic facts in the central processor. (2006, p. 96)

Mentalism does not require this further claim, and many explicitly reject it; so, Devitt takes care to separate his arguments against this version of mentalism from those against one that maintains merely that the language module in some sense embodies such constraints. Our discussion concerns only this more common, and less committed, form of mentalism.

⁹ Cf. Fodor (1984) on theory-ladenness and the objectivity of observation: the (in this case arguably innate) 'natural constraints' embodied in early visual processing – e.g., the 'assumption' that light tends to come from above – can be thought of as a consciously inaccessible 'theory' that we all share. (Fodor holds that these constraints are themselves represented. But one can reject this further claim and hold rather that they are embodied in the laws that govern transitions among the states involved in early visual processing – similarly for the linguistic case.)

¹⁰ We arguably have grounds to posit similar direct causal links between the outputs of perceptual modules and judgments more-or-less directly based on perceptions. Even if some perceptions share content with the perceptually based beliefs that they cause (a visual experience as of red, and the perceptual belief that there is red there), many perceptions arguably cause perceptually based judgments whose content goes beyond the 'lower-level' content represented in perception (a visual experience as of something black with such-and-such shape, and the perceptual belief that there's a phone). Cf. Burge (2003).

¹¹ On linguistic self-monitoring, see Levelt (1983, 1993). Monitoring also occurs subpersonally: One stage of production involves running the planned utterance through comprehension mechanisms to check the result against what was intended. On language and 'identity,' see Tabouret-Keller (1997) and Mendoza-Denton (2001) – also Nettle (1999) for a cultural evolutionary angle. It seems subpersonal monitoring of others' linguistic production also plays a crucial role in social cognition, even from a very early age (Kinzler et al., 2007, Kinzler forthcoming).

¹² An introspective judgment, as we use the term, is a non-inferential judgment concerning one's own mental states. (If one can non-inferentially learn of one own's mental states through outward perception – e.g., by perceiving one's emotional state in one's reflection – or through another's testimony, then we exclude such cases as well.) Recall that it is because the content of some linguistic intuitions seems to be about properties of independently existing linguistic items that we say that it's not clear that all linguistic intuitions are introspective. (A judgment that A entails B does not seem to be about oneself.) The term 'introspection' is sometimes used in other ways. For example, Haider (2007, p. 388) writes: 'Introspection is not considered a reliable source of evidence in cognitive science. Its role is in heuristics, but not in data assessment. Once relevant data are established in the field, you must not ignore them.' But he is referring simply to a theorist using her *own* intuitions. We turn to the issue of linguists serving as their own subjects presently.

¹³ Though this might indeed give one pause concerning *grammaticality* intuitions (as opposed to *acceptability* intuitions), at least on the mentalist conception according to which grammaticality concerns the constraints specific to the language faculty, which in part causes linguistic intuitions.

¹⁴ Of course, the formal gathering and analysis of intuitions, like any methodology, poses its own challenges: how to ensure that non-expert subjects understand the task without having to in effect train them in linguistics (Schütze 2005), what rating scale to use (Bard et al. 1996, Sprouse 2011, Bader and Häussler 2010), what kind of statistical analysis, etc. Moreover, the mere fact of experimental formality does not eliminate the possibility of bias or inadequate controls (Culicover and Jackendoff 2010).

¹⁵ Culbertson and Gross (2009), Devitt (2010), and Gross and Culbertson (2011) discuss further whether linguists are 'better' subjects. One of the reasons linguists have been said to have an expert advantage is because they know what they are looking for and so what irrelevant factors to ignore (Newmeyer 1983, Devitt 2006). However, even if this is so for some cases, the advantage can be neutralized by good experimental design. For discussion of cognitive penetrability more generally, see Stokes (forthcoming). For discussion of whether the cognitive penetrability of perceptual experience might be epistemically pernicious in some cases (as when pre-formationists' antecedent beliefs led them to see homunculi when first viewing sperm through a microscope) but not in others (wouldn't you prefer that your x-rays be assessed by a radiologist with more knowledge and experience than others?), see Lyons (2011) and Siegel (forthcoming).

¹⁶ Some deploy the label 'linguistic intuition' more broadly to encompass any appeal to intuition in assessing a proposed 'analysis.' But one may distinguish *linguistic* intuitions concerning expressions and their use, *conceptual* intuitions concerning the application of concepts, and intuitions concerning *phenomena* (that which terms and concepts are about) – for example, intuitions about the word 'know', the concept KNOW, and the phenomenon of knowing. Only the former satisfy our characterization of linguistic intuitions. (For context-insensitive terms, however, linguistic intuitions concerning their semantics might coincide with intuitions concerning the concept they express.) See Pust (2012) for a survey on intuitions more generally in philosophy.

¹⁷ This provides another example of how inferring linguistic properties from linguistic intuitions is a complex matter. Cf. Bach (2002) on the role of intuitions more generally in demarcating a semantics-pragmatics border.

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