

A roadmap for heritage language research

Response to the commentaries

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Our keynote, “Understanding heritage languages” (Polinsky & Scontras), and the commentaries to it make the following main points.

In terms of defining the phenomenon, heritage speakers are viewed as a subset of bilinguals, namely, unbalanced bilinguals for whom the stronger language is often the dominant language of their society and whose home language, the one that is referred to as heritage language (HL below), corresponds to the minority language of their society. The phenomenon of unbalanced bilingualism is far from new, but recent years have brought much-needed visibility to the population of speakers, making them attractive to researchers in theoretical, experimental, and applied linguistics. While different subfields of linguistics can all gain from HL study, the subfields benefit from talking to each other.

HLs are characterized by a coherent grammar, which means that their grammatical systems should be described and modeled in a systematic manner. As we discuss below, a large body of existing work on HLs has concentrated on the ways in which heritage and baseline grammars differ.¹ Some of the defining properties of HL systems include high regularity of grammatical paradigms, commitment to fully-compositional expressions, low tolerance of ambiguities at various levels of linguistic representation, preference for perceptually-salient forms over the ones that are perceptually weak, and related difficulty with silent (missing) material in linguistic forms.

Major obstacles to the modeling of HL grammars include tremendous variance among HL speakers (from those who at first glance appear similar to the baseline to those who can understand the home language but do not speak it), insufficient data concerning various aspects of HL structure and use (which in turn calls for more research, something we will touch on below), lack of consensus on the precise definition of heritage speakers and their language, and, often, the lack of an appropriate baseline for comparison.

Some of these observations may come across as self-evident truths, but the mere fact that we hold the idea that HLs have coherent grammars to be self-evident today is a testament to the rapid growth of HL research. A mere decade ago, not every researcher would agree to that claim, and many arguments were terminological in nature: who should and who should not qualify as a heritage speaker, or should heritage speakers be considered native speakers (see Kupisch & Rothman, 2018, for the latter issue)?

The rapid growth of the field has brought about a large number of new observations and important comparisons that allow us to evaluate HL systems on their own turf. In what follows, we discuss new directions for HL research, many of which have been highlighted by the insightful commentaries to our keynote. In these commentaries, the following main themes have emerged: variance in heritage populations; pressures that shape HLs, in particular, (i) the quality and quantity of input, and (ii) processing considerations; the grammatical architecture of HLs and its implications for linguistic theory. The field of HL studies is rich in empirical observations; in discussing the main themes outlined here, we have tried to indicate where more detailed data are needed and where it would be helpful to move from observations to predictions.

Variation in heritage populations

In the keynote, we painted a picture of HL competence using intentionally-broad brushstrokes, thereby allowing for generalizations across a wildly heterogeneous population of speakers.

Several commentators mentioned that washing out the variation inherent to heritage speakerhood could deprive us of explanatory power (see the commentaries by Embick et al.; Gürel; Kupisch; Pearl; Flores & Rinke; Valian). The considerations are twofold. First, HLs resist characterization because the group of heritage speakers is not uniform. Second, perhaps some of the noteworthy properties of HLs arise in direct response to this variation among speakers. As a consequence, we will never have a predictive model of HL competence without an understanding of the factors leading to, arising from, and constraining variation.

Variation within a monolingual setting is often associated with identity: how you speak serves as a marker of who you are. As a result, different groups talk differently depending on their age, gender, socioeconomic status, etc. Comparing groups with each other, we can learn about the relevant identities involved. We can also learn about the language itself: by comparing younger speakers with older ones, we might learn about the direction of change ongoing within a language; taking further note of identifying characteristics, we might identify predictors of that change. The question---and it is to some extent a wide open one---is how variation manifests among heritage speakers (and bilinguals more broadly). Bilinguals have (at least) two very effective markers for identity: the different languages they speak. We might then wonder whether we should expect to find reduced identity-based variation within the individual languages of bilinguals.

In more traditional linguistics, a researcher was expected to deal with an idealized native speaker, one who is monolingual by assumption, and, often also by assumption, shares the linguist's own intuitions. As linguistics has expanded its methodological toolkit, the field's

empirical coverage has also grown broader, including larger groups of speakers and leaving us better prepared to capture more variation. We would like to suggest that the introduction of bilinguals into the empirical linguistic database simply takes this broader empirical coverage one step further. We are now prepared to think of individual grammars (i.e., idiolects) and grammars shared by smaller groups of speakers as overlapping parts of a larger system. On this view, the task shifts to understanding the relevant parts and the relationships among them. In earlier work on heritage speakers, the field took inspiration from creole studies, representing varieties of speakers along a continuum, from varieties closest to the baseline (acrolects) to the most reduced, recessive type (see Polinsky & Kagan, 2007). Here, inspired particularly by Embick et al.'s commentary, we consider how adopting a variationist perspective might benefit HL study.

Variationist theory (VT) assumes that different factors influence language structure and use, and that these factors are gradient; thus, the assumptions of VT are consistent with the proposed continuum of heritage speakers. VT is understood as both a set of data-collection strategies and a particular method of analysis. As such, VT is driven by an effort to look simultaneously at many different factors and to avoid attributing the observed phenomena or generalizations to a single factor---an outcome common to more theoretically-driven work. The approach involves observing different types of speakers who share different attitudes toward their language, then arranging the relevant groups along continua. This approach may help us understand the dynamics of change that leads to HL outcomes. Indeed, work in this direction has already started, as represented by Naomi Nagy's multigenerational Heritage Language Variation and Change project in Toronto (http://projects.chass.utoronto.ca/ngn/HLVC/0_0_home.php). Future heritage studies, including experimental ones, can apply VT to new data. In addition, as

Embick et al. suggest, the use of VT in heritage research will allow us to compare heritage speakers to other populations more directly, and in an insightful way.

VT can afford to treat bilingual groups along continua precisely because it deals with communities of speakers; in such communities, a particular linguistic phenomenon may change and spread progressively. However, the acquired grammar of an individual is discrete and is often associated with abrupt, parametric change (e.g., Kroch 2000; Roberts 2007). Typical triggers of such abrupt change include language contact or the mislearning of phonetic cues--- exactly the types of influence that play a role in HL development. VT predicts a progressive spread of changes in a community of speakers, for which a continuum representation is most adequate. Modeling the grammar of an individual speaker or a small group on the continuum calls for more distinct patterns.

Approaching language variation and change from the perspective of linguistic theory, we may predict discrete parametric options and identify the triggers that activate such options. For example, a language variety can have three genders, two genders, or no gender, all influenced by phonetic change (e.g., endings becoming unstressed and less salient, exactly what happened in the history of Romance). The expectation is that different heritage speakers will represent these options differently. On this view, heritage speakers as a group may offer a snapshot of change that normally spans several generations. The variation among heritage speakers is not chaotic or random; rather, it should be amenable to a set of predictions, and one value of heritage speakers is that they can allow us to observe diachronic change within a single generation. In this regard, we can capitalize on the generalization that heritage speakers amplify tendencies that may be incipient in the baseline, making them more visible to a linguistic researcher (for more on this point, see Flores & Rinke).

We therefore see variation within heritage populations as an exciting opportunity for future research, one that promises to further increase the connections among various subfields of linguistics. One important goal is to combine VT as applied to heritage speakers with the recognition of possible abrupt changes within individual grammars. If all the grammars converge---an unlikely but not an impossible scenario---the variation we find may become negligible.

What makes heritage languages different: The issue of triggers

In our keynote, we identified four common sources of divergence between heritage and baseline grammars:

1. Problems introduced in the morphology, where heritage speakers struggle with agreement and idiosyncratic marking paradigms.
2. Problems exacerbated by structural distance, where relationships at a distance are susceptible to reanalysis.
3. Problems in the interpretation of silence, where null or elided material is not recovered or identified properly.
4. Problems posed by ambiguity, where heritage speakers resist one-to-many mappings between form and meaning.

With these vulnerable areas of HL competence in mind, we then suggested potential triggers for the observed divergences. The first trigger concerns the quantity and quality of input from which the heritage grammar is acquired. The second trigger concerns the economy of online processing

resources available when operating in a less-dominant language. Together, these triggers result in three broad classes of grammatical outcomes: an avoidance of ambiguity, a resistance to irregularity, and the shrinking of structure. These outcomes, we argued, address the four problems outlined above.

The commentaries engaged with our suggestion that input and processing could trigger divergence in HLs. In this section, we discuss the role of input and processing pressures in light of those commentaries, highlighting avenues to pursue in furtherance of our understanding of HLs.

Input

Several commentators (Embick et al.; Gürel; Meisel; Pearl; Serratrice; Valian) picked up our discussion of reduced input as a potential trigger for the observed outcomes in HL. Some commentators were skeptical of the input's role in triggering divergence. Meisel points out that a bilingual child raised by particularly chatty parents could encounter more input in the home language than a monolingual child whose parents were more taciturn. If input quantity were directly correlated with acquisition outcomes, we might then expect to find deviations in monolingual competence similar to that found among heritage speakers. The reason we do not find such deviations, Meisel suggests, is that input quantity determines language proficiency, not competence.

While we agree that reduced input quantity alone cannot deliver the full range of HL outcomes, we believe there is more to the role of input in heritage outcomes than just the effects of quantity: input *quality* also plays a central role. However, here too we encounter skepticism. Gürel suggests that if the baseline language (i.e., the language spoken by the parents) is intact, it

is unlikely that input quality could lead to differences between the HL and the baseline. (This concern is echoed by Serratrice, who remarks that children acquire the language of their parents, so acquisition can never be divergent.) But here we intended a different notion of quality from the one Gürel uses, one that brings back into focus the issue of variation.

When we introduced reduced input quality as a potential trigger for HL outcomes, we had in mind the richness of the input available to HL learners vs. learners immersed in a larger community of speakers. By definition (or at least the definition we inherited from Rothman, 2009), HLs are not the dominant language of the broader society. Given their minority status, HLs are likely to be spoken by smaller communities; the result on input is reduced variation in speakers, genres, registers, etc.—in other words, reduced quality. We chose to treat input quantity and quality as complementary triggers for HL outcomes because of research documenting the independent effects of each factor (e.g., Gollan et al., 2015). To reiterate our claim from the keynote: “increased exposure to the heritage language will only get heritage speakers so far; they also need exposure from a variety of sources.”

Indeed, some commentators suggest that we might be downplaying the role that reduced input has on HL outcomes. Both Valian and Embick et al. point to research documenting the positive effects of input variability (i.e., the quality of input) on language learning (e.g., Naigles & Hoff-Ginsberg, 1998; Dewey et al., 2013; Barcroft & Sommers, 2005). Whatever the ultimate cause (see Embick et al. and the references therein for discussion), richer input appears to allow learners to better “map out the extent and limits of their language” (Valian). Once we adopt this more nuanced stance to the considerations of input, divergent outcomes in HL acquisition become more likely.

The challenge, as Meisel points out, lies in quantifying the necessary minimums: how much input—both in terms of quantity and quality—is necessary for the faithful acquisition of a language? In other words, where are the boundaries between faithful and divergent attainment as far as input is concerned? Relatedly, which phenomena are more susceptible to properties of the input during acquisition? Here, Pearl’s suggestion to compare bilingual development with monolingual development will surely prove useful, together perhaps with the variationist perspective offered by Embick et al. and Valian, which we addressed above.

Pearl points to commonly-used computational methods predicting learning behavior in monolingual language development. As Pearl notes, questions of when some representation or generalization gets acquired often translate to questions of when children have received sufficient input. To answer this latter question, large-scale samples of realistic child language data are required, crucially naturalistic child-directed speech. If we want to make serious progress on the issue of how input leads to divergences in HL outcomes, the field needs a better picture of the input heritage learners receive. In other words, the field needs large-scale corpora of caretaker interactions with future heritage speakers (e.g., Jackson-Maldonado et al., 2011). With such corpora in hand, we can then compare the input typically available to heritage learners with that available to monolinguals, looking for differences that could help to explain and predict divergent outcomes.

Processing considerations

Another point that led to debate in the commentaries concerns the second trigger we raised in our keynote: an economy of online processing resources. On one side of the debate, some commentators reinforced the idea that processing considerations serve as a likely trigger of

restructuring in heritage grammar. Montrul and Mason link processing economy to low proficiency in the HL, and suggests that shortcomings in the lexicon can lead to divergence in heritage morphology. Putnam outlines a mechanism whereby weaker grammatical representations in the HL fall victim to similarity-based interference when the dominant language is not properly inhibited. In each case, the authors demonstrate how sharpening our characterization of the interaction between processing pressures and grammatical outcomes may further inform our understanding of HLs.

However, as was the case with input, some commentators were unconvinced by our appeal to processing economy as a trigger for restructuring in heritage grammar. Both Gürel and Felser call into question the idea that heritage speakers should be asymmetrically affected by processing considerations in their heritage vs. dominant languages. As Felser notes, the field lacks empirical support for our claim that maintaining two grammars poses particular problems for heritage speakers. Here, two factors must be distinguished: (i) the difficulty of maintaining two grammars, a highly-contested issue often discussed in the context of bilingual advantage or the lack thereof (Valian, 2015, 2016; Sekerina et al., 2019); and (ii) the processing advantage of monolingual baseline speakers over heritage speakers operating in their HL. The latter factor is well-documented in processing studies; heritage speakers are typically slower and less accurate than the monolingual baseline speakers (e.g., Jegerski et al., 2014; Keating et al., 2016; see Montrul, 2016, for a helpful summary of relevant studies). As for the former factor, we agree that the field needs more research on the processing signature of operating in HLs. The time is ripe to subject heritage speakers to the same range of studies common to investigations in traditional psycholinguistics and second language acquisition (for an early attempt, see Madsen, 2018, and the commentary by Sekerina & Laurinavichyute). Our raising of processing economy as a

potential trigger for HL outcomes was a conjecture meant to open the issue and spur future research, not a pronouncement of having settled the debate. The results would be informative not only for HL studies, but also for the ongoing debate about the cognitive value of bilingualism.

Still, there is more to say about the specific worries raised in the commentaries. Felser wonders why processing considerations should lead to reduced ambiguity, given that ambiguity has been shown to increase efficiency elsewhere. Here we return to the point we raised in the keynote in the discussion of ambiguity avoidance when oversupplying overt pronominal forms, where ambiguity avoidance at the sentence level carries systemwide costs. While it is true that the system as a whole might benefit from the presence of ambiguity, it would seem that the considerations that lead heritage speakers to avoid ambiguity operate quite narrowly.

Felser also wonders why only the HL should be affected by considerations leading to ambiguity avoidance, not the dominant language. In fact, we do find effects on both languages of the bilingual dyad. The issue is that most studies of HLs focus, expectedly, on the *heritage* language, which means that potential effects on the *dominant* language often go uninvestigated. In one study that examined both the heritage and the dominant language, Scontras et al. (2017) documented a reduction of ambiguity in the English of English-dominant heritage speakers of Mandarin. Thus, the evidence available accords with Felser on this point: the dominant language can also be subject to pressures that result in ambiguity avoidance; it is now up to the field to determine how frequently this situation arises. In phonetics, bidirectional influence in a bilingual dyad is often expected, based on the seminal work by Flege (e.g., Flege, 1987, 2007; Flege & Eefting, 1988), and by Paradis and Genesee (1996). Beyond the sound system, however, investigation of bidirectional influence in a bilingual dyad remains a desideratum, and we would like to make a call for it in this response.

Taking stock, it is tempting to account for properties of HLs from a processing standpoint, stating that these grammars present the way they do because that architecture facilitates online integration of material by heritage speakers. Yet, together with some of our commentators, most notably Felser, we would like to caution against treating processing as a catch-all explanation for HL outcomes. Processing considerations can explain why heritage speakers adjust their grammars and predict what kinds of phenomena are most likely to be adjusted, but processing considerations do not necessarily predict the form of the grammar itself. Such predictability has to be embedded in the general principles of language design. Processing considerations might trigger divergences, but internal pressures present in a given language must be explored in order to explain the resulting HL design.

In search of grammatical architecture

The discussion of grammatical pressures brings us to the last point we would like to consider in this response. One of the outcomes we identified in HLs, namely the shrinking of grammatical structure, met with skepticism in the commentaries. Both Lohndal and Putnam raise the question of whether the grammatical systems in HL should be described as reduced. Some of the objections they raise may be more terminological in nature, namely, should we describe the processes of change in HLs as compared to the baseline as “shrinking”, “reduction”, or “restructuring”? As is often the case with terminology, no term is perfect and each comes with its own baggage. We would like to underscore that whatever term gets adopted, our main goal was to show that, in a number of instances, the grammatical architecture of a HL is different from that of the baseline. In our own work, we have shown this to be the case for the grammar of gender and number agreement in Spanish (Scontras et al., 2018), relative clause syntax

(Polinsky, 2011), and ellipsis in Russian (Polinsky, 2018); yet another case of such radical restructuring is observed in the complementizer domain in heritage Spanish (Cuza & Frank, 2011, 2015). We agree with the commentators that reduction is not the only outcome in HL grammars; after all, if shrinking of the structure were the only option, eventually there would be no structure left. Yet, reduction does take place, at least in some of the cases outlined above; thus, we see reduction as one of the instantiations of restructuring. The main challenge for future work is to understand and predict where exactly we can expect restructuring in a HL, and what type of restructuring may take place (including the shrinking of structure). In the rest of this section, we offer some general considerations for future studies of the grammatical architecture of HLs.

As we indicated in our keynote, the field is not quite ready to build a comprehensive model of HL, but that should not us stop from taking the first steps. In terms of predicting where exactly the heritage system could differ from the baseline, we would like to go back to the conjecture made above, namely that HLs can exhibit the extended diachronic trajectory of a language condensed into one generation of speakers. If this thinking is on the right track, we can expect the vulnerable areas of HLs (i.e., those areas of language structure where reanalysis and restructuring take place) to find correspondences in language change over time. Such change, in turn, is often due to the mislearning of phonetic cues, which affects case systems, concord and agreement, and, more generally, the synthetic marking of dependencies. These effects are exactly where HLs often differ from the baseline in a significant way. Another general area subject to reanalysis has to do with dependencies established at a distance. Crucially, HLs do not lose the knowledge of long-distance dependencies; for instance, there is no evidence that HLs lack anaphoric or referential dependencies (see Polinsky, 2018: Ch. 6, for a discussion and overview

of the literature). Nevertheless, while the general mechanism of building such dependencies remains available, HLs often differ from the baseline by making such dependencies maximally local. In our keynote, we mentioned the reanalysis of relative-clause dependencies as involving only subject gaps (Polinsky, 2011), which instantiates this tendency in heritage Russian. But having made the general prediction concerning keeping dependencies as local as possible, we should expect further instantiations of this tendency. For example, in a bilingual dyad where both long-distance and local binding are available, we expect only the local binding to survive in a HL.² Thus, in a dyad where both languages---the dominant and the heritage---have long-distance binding (e.g., in any pairing of Japanese, Korean, and Mandarin), it is to be expected that the heritage system would revert to local binding.

Along with vulnerable areas, we must also identify those aspects of language structure that remain relatively stable and resistant to change. Here, one could offer two considerations. First, different levels of language representation may be expected to be affected differently in a bilingual system, with age-of-acquisition factors playing an important role (as noted in the commentaries by Meisel and by Montrul & Mason). It is well known that heritage speakers, even the least proficient among them, maintain particular strengths in the production, perception, and categorization of sounds. In the morphosyntactic domain, less attention has been paid to what heritage speakers do well, if only because their morphosyntactic errors stand out against the backdrop of their impressive phonetic and phonological ability. Still, some patterns have started to emerge, and they deserve more detailed study both at the level of data collection and at the level of explaining the data if the patterns endure.

One such pattern has to do with the resilience of the categories of tense, agreement in person, and determiners (Polinsky, 2018). We contended in our keynote that these categories are

resilient because of their inherently indexical nature, which makes their interpretation relatively stable and unproblematic. If we are on the right track, then the stability of personal agreement is particularly striking given that agreement in number and gender is quite vulnerable, as we have already indicated. But the generalization concerning the stability of indexical categories is based on a limited set of data and needs to be further tested empirically with different language dyads. Even if it survives further empirical scrutiny, the generalization should be unpacked with more attention to detail:

1. Does the morphological encoding of tense remain robust in languages that are in contact with a dominant language lacking morphological expression of tense (e.g., Mandarin or Indonesian)?
2. Does the expression of person remain equally robust in languages that use agreement and those that use clitics instead?
3. Is the category of determiners retained in a HL whose dominant language lacks determiners (surprisingly, no such dyads have been systematically explored, as most dominant languages---English, German, Hebrew---have articles)?

The issue of grammatical resilience and vulnerability is linked to the issue of transfer from the dominant language to the HL, as brought up particularly forcefully in the commentary by Muysken. It is understood and accepted that “transfer from the dominant language does not always happen” (Sekerina & Laurinavichyute), but Muysken’s comments point to an issue which has not received enough attention in heritage literature: assuming possible constraints on transfer, exactly which features can transfer from the dominant language to the HL, and how? In

grammar, individual changes can be driven by *direct* or *abstract* transfer. By direct transfer we imply the copying of a lexical form or a morphosyntactic structure of the dominant language into the weaker language of a bilingual. Such instances of transfer are relatively visible, and they have been documented largely for the lexical domain. Abstract, more subtle transfer is harder to detect; under abstract transfer, potential changes in the target structure are motivated by differences in the grammatical makeup between the two languages. For example, there is evidence that the maintenance of gender distinctions is better supported in those HLs whose dominant language has gender contrasts as well, and what matters is not the number of genders but the availability of gender as an abstract category (see Schwartz et al., 2015, who show that heritage Russian speakers dominant in German or Hebrew perform better with gender contrasts than heritage speakers dominant in English or Finnish). In a recent comprehension-based study of heritage Russian with Hebrew as the dominant language, we observed that HL speakers were more likely to accept mismatches in numeral-noun constructions as compared with adjective-noun constructions (Meir & Polinsky, in press). Numeral-noun constructions are structured differently in Hebrew and in Russian, while adjective-noun constructions have the same general structure. The differential comprehension of numeral-noun constructions suggests that properties of the dominant language influence HL restructuring, facilitating reanalysis in the weaker language.

More examples of abstract transfer can be researched. For instance, we can ask what happens if the dominant language in the dyad does not have verb raising and the weaker language does: should we expect that the mechanism of verb raising would become unavailable or weakened? What happens when a dominant language with harmonic word order, such as Japanese or Korean, comes into contact with a language that combines some head-final and some

head-initial orders, for example, Chinese or Dutch? What happens when the dominant language has pied-piping under extraction and the HL does not? We realize that some of the proposed dyads may not be readily available because of social or demographic reasons, but this is an area where our knowledge of parametric variation in morphosyntax is firm enough to propose interesting comparisons in a top-down manner; with the comparisons in mind, we can then go looking for possible data sources. An approach along these lines may give the field of HL study an even firmer connection to linguistic theory.

Taking initial steps toward a predictive model of language competence under unbalanced bilingualism was the motivation for our keynote article, and in our response to the commentaries we have continued along the same path. Spurred by the commentators, we have suggested several avenues worthy of pursuing, including variationist approaches, psycholinguistic studies, corpus-creation and input analysis, and further connections to linguistic theory as a means to sharpen our predictions. We hope that the result can serve as a roadmap of sorts for future research on heritage languages and their connection to other types of language.

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¹ Several commentators raise the issue of comparison populations for HL research (Embick et al.; Flores & Rinke; Pearl; Serratrice). As we mentioned in our commentary, there is a growing body of evidence showing that some of the changes in a HL are already present in the immigrant baseline but not in the homeland language (for example, the increasing use of overt pronouns in Spanish, starting with the first generation of immigrants, as demonstrated by Otheguy & Zentella, 2012). We therefore contend that a three-way comparison---between the homeland variety, the language of first-generation immigrants, and the corresponding HLs---is often most informative, if of course all these varieties are available for observation.

² We pointed out in our keynote that a change of this sort has been documented in heritage Korean, with English as the dominant language (Kim et al., 2009); but English has local binding only, so one could always contend that abstract transfer has taken place (we will take up the issue of abstract transfer below in this section).