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Introduction: Reconciling approaches to intra-individual variation in psycholinguistics and variationist sociolinguistics

https://doi.org/10.1515/lingvan-2020-0027

Abstract: The overall theme of this special issue is intra-individual variation, that is, the observable variation within individuals' behaviour, which plays an important role in the humanities area as well as in the social sciences. While various fields have recognised the complexity and dynamism of human thought and behaviour, intra-individual variation has received less attention in regard to language acquisition, use and change. Linguistic research so far lacks both empirical and theoretical work that provides detailed information on the occurrence of intra-individual variation, the reasons for its occurrence and its consequences for language development as well as for language variation and change. The current issue brings together two subdisciplines – psycholinguistics and variationist sociolinguistics – in juxtaposing systematic and non-systematic intra-individual variation, thereby attempting to build a cross-fertilisation relationship between two disciplines that have had surprisingly little connection so far. In so doing, we address critical stock-taking, meaningful theorizing and methodological innovation.

Keywords: psycholinguistics, variationist sociolinguistics, intra-individual variation, intra-speaker variation, SLA, language variation and change, language development

1 Intra-individual variation in psycholinguistics and variationist sociolinguistics

The overall theme of this special issue is intra-individual variation, that is, the observable variation within individuals' behaviour, which plays an important role in the humanities area as well as in the social sciences. While various fields have acknowledged the complexity and dynamism of human behaviour, intra-individual variation has received less attention in regard to language use. Linguistic research so far lacks both empirical and theoretical work that provides detailed information on the occurrence of intra-individual variation, the reasons for its occurrence and its consequences for language development as well as for language variation and change.

This collection of studies aims to bring together research on intra-individual variation from two linguistic subdisciplines – variationist sociolinguistics and psycholinguistics (with a focus on language acquisition and development) – in juxtaposing both systematic and non-systematic intra-individual variation. In what follows, we intend to trace the contours of the basic theoretical concepts, definitions and methodological issues at stake, while also referring to outstanding questions, first, in psycholinguistics (Section 2), and then variationist sociolinguistics (Section 3). In Section 4, we will then outline points of contact between both linguistic disciplines.

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2 Intra-individual variation in psycholinguistics

Time and timing in development are considered core constructs in psycholinguistics, in particular in research on second language acquisition (SLA): "All of the most relevant questions about SLA, including the age issue, L1 influence, individual differences, implicit versus explicit learning, the role of input, intentional versus incidental learning, and of course the order of acquisition of morphosyntax, are implicitly or explicitly about change over time" (Lowie and Verspoor 2015: 78). This focus on individual developmental trajectories over time is fully in line with an approach to L2 development based on the Complex Dynamic Systems Theory (CDST; Larsen-Freeman and Cameron 2008; Lowie and Verspoor 2015), which is argued to be "the most widely used and powerful explanatory framework in science" (van Gelder 1998: 622). CDST is a (meta)theory of change as well as a relational theory, with the following principal characteristics (among many others) accounting for language development in particular:

(1) Second language (L2) learning is a (non-linear) process rather than a product (there is no stasis, only change); and
(2) increased variability coincides with a developmental jump in L2.

Point (1) challenges the traditional assumption in SLA that the nature of the relationships among factors involved in L2 development is linear. Not only does this mean that studying performance at one point in time may provide an inaccurate or at least an incomplete picture of language development; recent trends tend to see individual differences (ID) variables as dynamic entities that change over time and may affect development differentially at different times (see e.g. Dörnyei et al. 2015). Of course, not all factors are equally variable, and the variability may depend on the time scale. Language learning aptitude and working memory, for instance, may be considered as relatively stable at shorter time scales but do tend to change across the life span (Waters and Caplan 1996). Motivated behaviour, on the other hand, differs across both shorter and longer timescales, from seconds (MacIntyre and Serroul 2015) to the lifespan (Kormos and Csizér 2008).

Related to this, point (2) highlights the *meaningfulness* of intra-learner variation. The prevailing approach to SLA up to the beginning of this century has been to focus on product-based explanations of SLA (Lowie and Verspoor 2015), which is reflected, among other things, in the assumption that the variation in interlanguage is either rather systematic or completely random and relegated to "(white) noise" – despite the fact that SLA has had a long-standing research tradition regarding intra-individual variation in interlanguage amongst L2 learners (see e.g. Hyltenstam 1977; Tarone 1982) and has always enjoyed a "vibrant interest in the controversial notion of free or random variation" (Ortega 2014: 195). In Widdowson (1979: 195), for instance, we can read that "change is only the temporal consequence of variation", and Ellis (1985) argued that free variation constitutes an important mechanism of development.

According to an early paper by Ellis (1985), intra-learner variation can be categorised into systematic variation versus non-systematic variation. Systematic variation can be situational (variation along the style-continuum, ranging from the vernacular to the careful style in accordance with the prompting of the situation), contextual (variation relating to the elements that precede and follow the variable structure in question), or psycholinguistic (variation relating to the extent to which the type of language use allows time for planning and encourages or discourages monitoring). Non-systematic, free variation – sometimes referred to as "random variability" (Ellis 1985: 136) despite its rather non-random characteristics (see Singleton, this special issue) – relates to the existence of two or more forms in the learner's mind, which occur "in (1) the same situational context, (2) the same linguistic context, (3) the same discourse context, (4) perform the same language function, and (5) are performed in tasks with the same processing constraints" (Ellis 1985: 136). Others, particularly in cognitive psychology (see e.g. Fagot et al. 2018), distinguish intra-individual variation as a function of the time period considered: across long-term periods (developmental change), across trials within tasks (inconsistency), and across tasks at a given point in time (dispersion).

From a generative linguistic perspective, Sorace (2005) was the first to refer to intra-individual variation in order to make predictions for L1 features susceptible to attrition in adults' 'endstate grammar'. She suggests

that purely syntactic features and features that are at the interface of syntax and other cognitive-linguistic domains (e.g. syntax-semantics) are differentially affected by L1 attrition, in that the latter present 'residual optionality' in the native grammar of speakers who have been exposed to an L2 for many years.

One could probably do worse than making a further distinction between 'intra-learner variation' and 'intra-speaker variation'. The former can be considered to occur when two more *target-like* and *non-target-like* forms are in (free) variation, which has a long tradition in SLA (see e.g. Cancino et al. 1978), while the latter refers to a subject making use of a variety of *target-like forms* to express a (nearly) identical range of functions and meanings, which is a major goal of investigation in sociolinguistics (see below). Note, however, that there is no one target language. Even if one claimed that the target was a standard form of language, it would be inadequate, i.e. a language is not a single homogeneous construct to be acquired (Larsen-Freeman 2015).

As said above, a general finding in SLA is that non-systematic, free intra-learner variation occurs during an early stage of development and then disappears as learners develop better organised L2 systems – but cf. Penris and Verspoor (2017) and Pfenninger (in press), who argued that we may see strong fluctuations even after the system has settled, arguably because an advanced learner may be aiming for a new strategy. Recent years have seen new attempts to view this type of variation as a prerequisite of development, particularly within the CDST framework, where it is suggested that a large amount of variability signals that the learner is apparently trying things out and that the subsystem under consideration is unstable (Lowie and Verspoor 2015; van Geert and Verspoor 2015). Moments of instability are referred to as 'variability' (Verspoor and Smiskova 2012). Variation as a normality rather than an aberration is also a key component in dynamic usage-based (DUB) theory (Langacker 2000), although the focus there is on inter- rather than intra-individual variation. In DUB theory, each individual has to experience, discover and practise the language on their own: "Each individual is considered a dynamic system whose progress is best predicted by this individual's prior experience" (Behrens 2009: 392). Even though there are common patterns, not every learner will behave in the same manner in all respects.

As becomes amply clear in this special issue – particularly in the contributions by Bülow and Vergeiner, Lowie et al., and Pfenninger – CDST is a metatheory of change with wide transdisciplinary implications (Larsen-Freeman 2009). Precisely because it is a metatheory, it does not dictate the use of unique research methods, nor does it exclude existing research methods so long as those methods are fundamentally congruent with the principles of complexity (Mason 2008). This makes it particularly useful for interdisciplinary approaches to a certain topic, as is the case in this collection of studies.

3 Intra-individual variation in variationist sociolinguistics

As language use is inextricably interwoven with its inherent social function and its agents (i.e. individuals) who interact over time (cf. The Five Graces Group 2009; Hiver and Al-Hoorie 2020), language exists both in individuals and in communities. Even though the focus of variationist sociolinguistics has been more on the group level, it never completely lost sight of the individual's linguistic knowledge (cf. e.g. Harrington et al. 2000; Haugen 1953; Hernández-Campoy 2016; Weinreich 1953). Thus, in variationist sociolinguistics, attention has always been given to systematic individual variability in the context of style and/or discourse i.e. intra-speaker variation (cf. e.g. Bell 1982, 1984; Coupland 2001; Labov 1966, 1972).

The notion of patterned stylistic intra-speaker variation is one of the fundamental results of variationist sociolinguistics (cf. the programmatic text of Weinreich et al. 1968). However, sociolinguists of the first and second wave, i.e. the quantitative Labovian branch of variationist research which focuses mainly on language variation and change (cf. Eckert 2012), are not so much interested in intra-individual differences or in individual language behaviour; the focus is rather on individuals "as members of social classes and ethnic groups, sub-populations that are assumed to exist but have seldom been validated in actual communities" (Kretzschmar 2015: 157). Within the program of Labovian variationism, the individual speakers have been mostly regarded as representatives of the speech community (and its internal structuration). As Becker summarises, "individual speakers are crucial to analysis, but primarily in the aggregate as representatives of

those macro-demographic categories that pattern with linguistic usage (age, gender, race/ethnicity, socio-economic status)" (Becker 2016: 88). As a result, the speech community has remained the central anchor point in the second half of the 20th century in variationist research (Labov 2001: 33f., 2006: 380). The language use of the individual has only been taken seriously to a very limited extent. As Labov (2001: 34) tellingly pointed out, "the individual does not exist as a linguistic object". Accordingly, in variationist sociolinguistics, varieties were mostly seen as coherent, categorical and homogeneous entities. The axiom of coherent varieties also presupposes the linguistic coherence of their speakers, who should behave as homogeneously as possible with regard to the use of a certain variety, speech style, etc. (for a critical review of this axiom, see e.g. Becker 2016; Boyd and Fraurud 2010; Bülow 2020).

Thus, little attention has been paid to non-systematic speaker-inherent variation that might occur independently of the context or communication partner i.e. in the same style of speech in similar situations. To avoid terminological confusion, we use the notion of 'intra-individual variation' if an individual varies in the same style of speech (see Section 3.1), while 'intra-speaker variation' refers to those cases where individuals style-shift (see Section 3.2).

3.1 Intra-speaker variation and style shifting

One of the main questions in sociolinguistics, if not to say in linguistics in general, is the following: "Why did **this speaker** say it **this way** on **this occasion**?" (Bell 2014: 293). This question implies two things: first, variationist sociolinguists are not only interested in describing linguistic data but also in explaining them; second, single speakers vary in their language use for several reasons. As outlined above, variation in the speech of individual speakers attributed to stylistic variation is today "a key ingredient of variationist sociolinguistic research" (Hernández-Campoy 2016: 31). Stylistic variation, in turn, is closely related to the term intra-speaker variation, which Bell (2007: 90) defines as "[t]he range of variation for particular sociolinguistic variables produced by individual speakers within their own speech". Synchronically, there have been three major approaches to study intra-speaker variation and their factors, namely (1) Attention to Speech, (2) Audience Design and (3) Speaker Design (cf. Schilling 2013).

The Attention to Speech approach was laid out in Labov's (1966) pioneering study on the Lower East Side. In his study, Labov showed that the stylistic repertoire of each speaker is closely linked to his or her social status. This is, in turn, related to the degree of attention that speakers pay to their speech (Labov 1972). Labov revealed how one individual would range from zero usage of a phonetic variant in a careful speech style to near categorical usage of the variant in a casual speech style. "Underlying the array of styles in Labov's interview," argues Schilling-Estes (2004: 379), "was the belief that style shifts are triggered primarily by the amount of attention people pay to their speech itself as the converse – in other words, how self-conscious people are as they speak."

The Audience Design approach was modelled by Bell (1984) and has its roots in Speech Accommodation Theory. It explains style shifts by the fact that speakers respond to their addressee, and even third persons, e.g. auditors or overhearers, affect style. Bell (1982) showed that the same newscaster shifted several linguistic variables as a function of their audience (higher status audience vs. local community audience) even if the institution, the genre, the studio setting and the amount of attention paid to speech were held constant. Therefore, Bell emphasises that style should not be reduced to the status of an independent variable that only explains sociolinguistic variation. Instead, stylistic variation itself needs to be explained. Bell (1984: 146) concludes that "[l]anguage does not co-vary with style, rather style is *itself* one axis of sociolinguistic variation. […] so the 'style' axis should be correlated with genuinely independent variables".

The third and most recent approach to intra-speaker variation is the Speaker Design model, which is deeply grounded in third wave sociolinguistics and social constructivism. It differs from the Audience Design approach in that it views style shifting not mainly as a response but primarily as a resource that people exploit to take a certain stance or to (re-)create speaker identity (see Coupland 2001; Eckert 2000). Thus, research on intra-speaker variation focuses on the aspect that speakers are "*not* bound to elements of the external situation

as they shape their speech, but they use their speech to help shape and re-shape the external situation […] as well as their interpersonal relationships and, crucially, their personal identities" (Schilling-Estes 2004: 378). Further, this approach takes a macro perspective considering all kinds of linguistic variables – ranging from phonological and morphosyntactic to pragmatic and discourse level elements – and its interplay with socio-situational factors as social group affiliation, dresses and make-up or music.

To sum up, research on intra-speaker variation today is "at the centre of sociolinguistic theorization and method" (Bell 2014: 297). It has developed from responsive to initiative accounts for style-shifting, "where speakers' agency in society emerges as a crucial role for social meaning-making and positioning" (Hernández-Campoy 2016: 31).

While the stylistic variation approach focuses on the question why speakers style-shift, one fact that is often ignored is that speakers may vary in the same situation while speaking to the same addressee. There is empirical evidence for speaker-inherent variation that occurs in the same style of speech in similar situations irrespective of the context or the communication partner. In order to distinguish this aspect of variation from intra-speaker variation we refer to the former as intra-individual variation. In the following sections, the focus is primarily on intra-individual variation over time, which is closely related to the concept of change across the lifespan.

3.2 Intra-individual variation over time

Principally, in modern variationist sociolinguistics, there is a broad consensus that individuals' language development is not limited to the phase of child language acquisition. There is striking evidence that individual repertoires can vary and change across individuals' lifespans. These individual changes are mostly assessed against the backdrop of change at the community level.

In recent decades, a number of panel studies have expanded our understanding of changes across the lifespan. Their results have shown four different trajectory types in post-adolescent speakers (cf. Bülow and Vergeiner this special issue): 'stability', 'age-grading', 'lifespan change' and 'retrograde change'. We speak of age-grading when we find changes in the individual against the backdrop of general stability at the community level (Labov 1994: 83). Whereas individual changes, in which speakers "make post-adolescent adjustments to their speech in the direction of community change" (Wagner 2012: 377), are referred to as 'lifespan change' (e.g. Sankoff and Blondeau 2007), individual changes against the community trend are called 'retrograde change' (Buchstaller 2016; Wagner and Sankoff 2011). In the latter case, speakers mostly turn towards conservative variants after retirement (Sankoff 2013: 269). The former case is typically driven by younger speakers.

Surprisingly, effects of 'age-grading', 'lifespan change' and 'retrograde change' are only marginally reflected in the major approach to study language variation and change, the apparent-time construct. The apparent time construct, which was established by Labov (1966), is fundamentally based on the assumption that individuals stabilise their linguistic repertoires after adolescence. This was in line with the Critical Period Hypothesis (CPH) (cf. Lenneberg 1967; Penfield and Roberts 1959) in the 1950s/1960s, which claimed, among other things, that the brain loses its plasticity during the process of maturation (cf. Penfield and Roberts 1959: 236). Building "on the assumption that individuals' speech patterns are largely fixed by early adulthood" (Wagner 2012: 372), Labov (1966, 1975) argued that variationist sociolinguists could study language variation and change in a cross-section of a speech community by comparing the language use of different age classes as a proxy for historical time.

Today, the apparent-time construct as well as the CPH are challenged by two observations (at the very least): first, the brain retains plasticity throughout its lifespan, as it is constantly adapting to new experience (e.g. Bialystok and Kroll 2018; Gutchess 2014); second, panel studies attest 'age-grading', 'lifespan change' and 'retrograde change' beside stability (cf. Bülow and Vergeiner this special issue). The impact, however, that these processes have on language change in the community has so far been poorly studied. Thus, to better understand its interplay, we need more real-time-panel studies in which we control for several varieties or styles of the individuals' language use. To put it more simply, we need more studies on intra-individual

variation over time, at best with many data points. This also requires a better understanding of the cognitive mechanisms in the process of language variation and change.

4 What can psycholinguists and variationist sociolinguists learn from each other?

The various contributions in this special issue show that there are different forms of intra-individual variation, which can be approached differently in terms of both method and theory. Regrettably, what is missing is a comprehensive typology of intra-individual variation across the boundaries of the different linguistic (sub-) disciplines. In what follows, we would like to discuss – with an eye on the papers in this special issue – how psycholinguistics and variationist sociolinguistics can inform each other.

In part, the study of intra-individual variation was promoted through the advent of techniques designed to model language development, as several papers in this special issue show. Two psycholinguistic contributions – Pfenninger's and Lowie et al.'s – align with a broader, more holistic approach adopted by a growing number of L2 researchers that entails seeing language learning and language learners as dynamic, complex, adaptive systems within which all factors interact and affect one another. CDST sits at the intersection of psychology and L1/L2 acquisition, as it has been introduced into the fields of L1 development (Van Geert and Van Dijk 2002), L2 development (De Bot et al. 2007; Larsen-Freeman 1997) and cognitive science and psychology (Thelen and Smith 1994; Van Gelder and Port 1995).

In variationist sociolinguistics, references to the dynamic complex and adaptive systems framework in the realm of individuals' linguistic behaviour are rarely made in order to explain language development (but cf. Bülow et al. 2018, 2019) – although such an endeavour would deliver various benefits. Bülow and Vergeiner's contribution, for instance, is an attempt to provide explicit references to the CDST by example of sociolinguistic panel data that demonstrate that group-derived estimates cannot be easily generalised to individual language usage and *vice versa*. This result is partly confirmed by the sociolinguistic contributions of Schleef and Schreier respectively, although no explicit references to complexity theories are provided. Their studies point, among other findings, to a high degree of intra-individual variation in the same style of speech in adolescents from London and Edinburgh at one point in time (in Schleef's study), and in older speakers from Tristan da Cunha at one moment as well as across time (in Schreier's study).

What both psycholinguistic and sociolinguistic papers in this special issue show is that within-person structures differ across individuals, defying the ergodicity assumption, that is, the often-made, highly debated and rarely tested assumption of an equivalence of within- and between-person structures of psychological variables (e.g. Borsboom et al. 2003; Lindenberger and Oertzen 2006; Molenaar 2004). The ergodicity principle requires homogeneity of all individuals' within-person structural relations, meaning that intra-individual variation of all persons in a population is alike. Inter-individual differences, as found, for instance, in Bülow and Vergeiner, and Pfenninger, empirically defy the notion of equivalent within-person factor structures, demonstrating the necessity to differentiate between patterns and causes of static structures, measured in a sample of individuals at a single point in time, and time-dependent structures measured in a sample of time points within the same individual (Molenaar 2004). Within-person analyses thus reveal that average cross-sectional findings conceal important differences between groups of participants. Inter-individual differences may not allow a comparison of all individuals in a sample regarding a specific research question, and they may indicate qualitative rather than quantitative differences. This common violation of the ergodicity principle in socio- and psycholinguistics thus represents a common ground and point of departure for researchers in the two disciplines to learn from each other through the cross-fertilisation of ideas and methods.

Based on the idea that processes of human interaction along with domain-general cognitive processes shape the structure and knowledge of language, recent research across a variety of disciplines in the cognitive sciences, particularly in a complex systems framework, has demonstrated that (1) patterns of use strongly affect how language is acquired, is structured, is organised in cognition, and changes over time; and (2)

processes of language acquisition, use, and change are not independent of one another but are facets of the same system (see e.g. The Five Graces Group 2009). Importantly, the idea that the nature of language follows from its role in social interaction (joint actions of communication between conversation partners) also has important implications for historical sociolinguistics (cf. e.g. Nevalainen 2015). The communicative process is fragile – interlocutors misunderstand each other, they have different knowledge of prior uses of the conventions: one speaker might produce non-native-like utterances, consequently introducing variation, which is a necessary precondition for language change. Importantly, the interactions that mould a speaker's grammar continue throughout their lifetime. Because building up cognitive representations underlying language use is ongoing, even adult grammars are not fixed and static but have the potential to change as experience changes (e.g. MacDonald and Christiansen 2002; Sankoff and Blondeau 2007; Wells et al. 2009) – "learning never ends" (Mufwene 2012: 389). These general assumptions are empirically supported by Berg's micro-analysis of historical panel data produced by individual writers in 15–17th-century England. Such an approach allows him to study social and cognitive factors that influence the individual writers across their lifespan. Furthermore, it becomes evident that panel data help to study innovation and diffusion of linguistic variants (see also Pfenninger; Bülow and Vergeiner). In other words, panel data, whether written or spoken, facilitate our understanding of the mechanisms of emerging trends and the interplay between micro- and macro-level variation. In order to better understand the innovation and diffusion of linguistic variants, we need much more micro-development studies, especially in variationist sociolinguistics, with many data points and shorter time intervals. Despite recent findings in psycholinguistics that intra-individual variation is an important source of information in addition to the mean performance in both ageing and child L2 development, the empirical sociolinguistic evidence is still far from sufficient to demonstrate the usefulness of adding a measure of variability to that of the mean level, and its specificity.

Moreover, a number of methodological and theoretical issues and questions are pending. For instance, the meaning of intra-individual variation is not very clear from a theoretical point of view. Singleton argues in his contribution that the prototypical CDST claim that variability is indicative of growth implies that there is a period of randomness before the sorting-out period commences. He cautions, however, that the assumption of randomness "has often been rather loosely or lazily made", based on a variety of observations.

On the basis of sociolinguistic case studies, Ender and Kaiser demonstrate in their paper that important methodological questions are still not sufficiently discussed in empirical research on both intra- and inter-individual variation. They juxtapose different methods of measuring and analysing inter-situational variation along the dialect and standard language spectrum in speakers from Austria.

In addition, few psycholinguistic and sociolinguistic studies have analysed intra-individual variation (1) in later life (using dense measurements) and (2) across the entire lifespan, from childhood to advanced old age, using the same tasks in the different age groups or comparing tasks of varying complexity, to determine whether intra-individual variation would be larger in more complex tasks and assessing for possible interactions of age and complexity. This becomes particularly evident in Schreier's analysis of style-shifting and individual variation in the speech of four elderly people in Tristan da Cunha: "In the future, more attempts need to be made in both SLA and sociolinguistics to offer a general theory for lifespan development of intra-individual variation in L2 learners, following in the footsteps of Labov's (1964: 91–93) developmental model for the acquisition of standard spoken English across the lifespan."

5 Conclusion

As argued in this introduction, linguistic research is in need of further empirical and theoretical work that provides detailed information about, and discusses the role of intra-individual variation in the processes of language development, language variation and language change. This special issue puts a focus on intra-individual variation from a psycho- and a sociolinguistic perspective that is due to various sources: (1) the nature of language development and change, (2) features of the contexts of learning and using language and (3) properties of the speakers and learners themselves. By considering these different types of variation within

a broad interdisciplinary perspective, the collection addresses a number of theoretical and methodological questions debated in the fields in question. Together, the papers in this special issue cover a range of linguistic domains, participant populations and study designs, and this diversity also allows us to better understand the nature of intra-individual variation.

Finally, intra-individual variation is in great need of future research, particularly as far as micro-development studies with many data points are concerned. Fostering comparative and methodologically rich research will contribute significantly to expanding and renewing our models of development, variation and change.

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