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The cognitive coherence of sociolects: How do speakers handle multiple sociolinguistic variables?

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Abstract

Sociolinguistic variables have social evaluations and are used at different rates by different speakers. Variants become indexical of social traits and social identities, and are taken as defining 'sociolects' associated with identifiable groups: e.g., 'working class speech', 'African-American English'. But since every speech community has many sociolinguistic variables, do the multiple variables cohere in forming sociolects? Thus if each variable has a variant considered 'working class', do working class speakers use all such variants simultaneously? Lectal coherence would imply that variables are correlated; if they are not, the cognitive and social reality of the 'sociolect' is problematic.

This paper investigates intercorrelations among two phonological and two syntactic sociolinguistic variables in 20 speakers of Brazilian Portuguese. The results show considerable cross-variable correlation, but much of it may be explained by structural or grammatical coherence. There is some evidence of socially-motivated coherence, involving gender as well as status differentiation. Female speakers show stronger correlation among variables than males, while non-standard phonology seems to be indexical of male identity. The conclusion is that some sociolectal cohesion does exist, but it may be weaker and more multidimensional, than is commonly assumed. Future work on lects should problematize their coherence.

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1. Introduction

A fundamental discovery of sociolinguistic research is social stratification: in many, perhaps all, societies, the prestige forms of sociolinguistic variables are used more by higher status speakers, in a roughly linear and typically monotonic correlation. Several lines of evidence show that speakers in such communities have cognitive awareness of these patterns. In their own behavior speakers manipulate their use of sociolinguistic variables for stylistic ends (using more prestige variants typically indicates a more careful speaking style); thus in careful styles, Labov (1966) finds New Yorkers increase their use of coda /r/ and Trudgill (1974) finds Norwich speakers increase their velar articulations of -ing forms, while Bell (1984) shows New Zealand broadcasters using different variants for different audiences. In their evaluation of the behavior of others (e.g., in subjective reaction tests) hearers assign status rankings to talkers in accordance with the use of such variants (voices utilizing prestige varieties or variants receive higher rankings on status scales); thus Lambert et al. (1960) showed Montrealers downgrading voices speaking French, and Guy and Vonwiller (1984) found Australians assign lower status ratings to speakers who use rising terminal intonations in declaratives. Finally, for many variables, speakers have overt evaluations of which variant is standard or 'correct'; thus English speakers explicitly condemn

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'dropping the g' (pronouncing the –ing suffix with /n/) and Caribbean Spanish speakers critique 'comiendo la s' (literally 'eating the s', i.e., deleting final /s/).

Given this observation of stratified sociolinguistic variation, it is common practice to reify the various strata as distinctive sociolects: thus we encounter labels like 'working class' or 'middle class speech', 'broad Australian' and 'general Australian', RP vs. Cockney, etc. Similarly, styles are reified as identifiable varieties: 'casual style' vs. 'careful style.' This usage is not restricted to linguists; popular and spontaneous commentary on social variety also appear to involve holistic perceptions of ways of speaking associated with particular social groups. However, 'folk linguistic' assessments of language varieties introduce a range of additional questions that will not be examined here, such as the existence of stereotypes, differences in social saliency among different variables, etc. (cf. Niedzelski and Preston, 2003).

The issue that I focus on here is that such reified social varieties will necessarily encompass multiple sociolinguistic variables. Every speech community known to sociolinguistic research has at least several linguistic elements that are socially stratified and stylistically variable. For example, Labov's classic description of social stratification in New York (1966) describes five major socially stratified phonological variables: coda /r/ presence or absence, raising of the nucleus of /æ/ and /oh/, and affrication and/or stopping of the interdental fricatives (TH, DH); it also gives briefer accounts of six other variables. In each case, the variants favored by higher status speakers are also favored by all speakers in their more careful speech styles. Given that each of these variables shows correlations with class and speech style, it is reasonable to expect that they correlate with each other, so that each sociolect would be characterized by a cluster of variables; working class speakers, for example, should use relatively high rates of /r/ vocalization, /æh, oh/ raising, and (TH, DH) fortition, all at the same time. Similarly, when varying their speech styles, speakers might be expected to synchronize their choices on all of these variables at the same time. If sociolects are indeed socially and cognitively coherent varieties, we should expect some degree of correlation among the different variables present in a community.

In this respect, sociolects are conceptualized as being analogous to languages or dialects. A language consists of a cluster of linguistic properties occurring together in the collective usage of a speech community; similarly, regional dialects are typically identifiable by the simultaneous occurrence of lexical, phonological, and morphosyntactic characteristics. When bilingual or bidialectal speakers switch between the varieties they command, they typically do so holistically, using, for example, Spanish words, syntax and phonology all at once, not mixing and matching at will. If social varieties have a similar coherence, the variables that characterize them should exhibit some kind of binding force, a pattern of correlation or clustered usage.

However, it is also clear that many variables in speech communities index other social meanings and characteristics in addition to, or instead of, social and stylistic stratification. Variables that are involved in linguistic change are often strongly correlated with age (cf. Sankoff and Blondeau, 2007; Labov, 1966, 2001). Other variables have been shown to be indexical, either directly or mediated through other social meanings, of gender (Eckert, 1990), peer-group affiliations (Mendoza-Denton, 2008; Eckert, 1989), learnedness (Benor, 2001; Bucholtz, 1999), and so on. This suggests appreciably richer and more complex associations among the multiple variables present in any speech community, where each variable might, in principle have a distinct and unique set of indexical associations, without necessarily showing correlations in usage with other variables. From this perspective, speakers might be expected to pick and choose among variants in their repertoire to construct social meanings and identities (cf. Eckert, 2008 on 'bricolage').

Sociolectal coherence is therefore potentially disrupted by the diversity of associations between variables and social meanings and identities. Classic findings showing social stratification of linguistic variables, and the practice of reifying named sociolects like RP or 'middle class speech', imply that stratified variables should be correlated in usage, but if each variable has its own social history and interpretation, correlations among variables are not necessarily expected, at least on a broad scale. This raises questions about some common assumptions about how class, style, and speaker identity are reflected and constructed in speech. What would it mean to encounter a speaker who uses the prestige forms of variables A, C, and E, while using the nonstandard variants of variables B, D, and F? How can speakers reliably indicate their speech style or their social identity while using high rates of some prestige variants and low rates of others?

Answers to such questions will most likely require empirical investigation of multiple variables. Curiously, there is a dearth of research in the field that addresses whether clustering of variables actually occurs in the behavior of individuals. Labov pioneered the study of this question in his 1966 work, but his focus there was the vowel systems, which have a relatively tight structural organization with the result that change in one vowel will commonly affect neighboring vowels, often producing chain shifts. In such cases, the covariation observed is attributed more to phonetic principles (cf. Labov's three principles of chain-shifting, 1994), than to sociolectal cohesion. Aside from such sociophonetic work on vowel quality, sociolinguistic studies tend to focus on single variables, or if they look at multiple variables, they do so one variable at a time. In this paper I make the clustering question the central focus, by examining four variables in Brazilian Portuguese (BP) simultaneously, to look at whether they covary in the speech of 20 subjects from Rio de Janeiro (Guy, 1980). Each of the variables involves alternation between a socially favored 'standard' alternant, and a stigmatized nonstandard alternant. They all appear to be diachronically stable, in the sense that there is no evidence of a community-wide change in favor of one or the other alternant.

All are socially stratified, with the 'standard' alternants being more common in the speech of higher status speakers, and all evidence stylistic stratification along expected lines.

2. Four sociolinguistic variables in popular Brazilian Portuguese

The variables in question can be considered, and have been treated by several analysts, as the product of separate, independent linguistic processes (cf. Braga, 1977; Naro, 1981; Naro and Lemle, 1976; Naro and Scherre, 1990; Guy, 1980), but they display a linguistically interesting set of relationships. Two of them are morphosyntactic, involving the variable occurrence of plural markers. Nominal plural marking is historically obligatory across noun phrases with plural referents in Portuguese, but is variably absent in popular speech, giving alternations like these:

- 1.a. os leões 'the(pl) lions(pl)
- 1.b. os leão 'the(pl) lion(sg)

In the verbal system, an analogous alternation also occurs. Portuguese historically has had obligatory plural marking on verb forms with plural subjects, but popular BP variably omits verbal plural marking. This produces alternations such as:

- 2.a. Eles disseram. 'They(pl) said(pl)'
- 2.b. Eles disse. 'They(pl) said(sg)'

These two variables, nominal and verbal number marking, are logically and structurally independent – nothing prevents a language from having one obligatory and the other optional or absent (cf. standard English) – but since both involve the morphological category of NUMBER, they may be associated on some level.

The other two variables are phonological. Final –S (a sibilant phoneme whose phonetic realization depends on context and dialect) is variably omitted in popular speech, much like –s deletion in Caribbean Spanish. And nasal vowels are variably denasalized when they occur in final unstressed position (where Portuguese orthography indicates vowel nasality by a following <m>). These two processes generate alternations like the following:

- 3.a. menos 'less'
- 3.b. meno
- 4.a. vagem 'green bean'
- 4.b. vage

Each of these processes has a functional interaction with one of the syntactic variables of plural marking. In nominal plurals, the most common morphological marker is a suffixed –S. If this is deleted from a word that ends in a vowel or diphthong, the result will be a form that is superficially equivalent to the singular: *amigos* 'friends' minus final *s* = *amigo* 'friend'. And a similar issue arises for denasalization. The most common third person verbal plural marker is nasality of a final vowel. Indeed, for many regular verbs, vowel nasality is the ONLY marker of plurality, so denasalization has the effect of generating a surface form that is superficially equivalent to the singular. Thus for each pair of variables, there is a trading relation between the phonological variable (–S deletion or denasalization), and the morphosyntactic variable: an increased rate of denasalization or –S deletion will appear to lower the rate of plural marking. Cases like 5 and 6 will be ambiguous: the unmarked word (*amigo*, *fala*) in a plural context could result from EITHER a phonological or morphological process.

- 5. os amigo 'the(pl) friend(sg)'
- 6. Eles fala. 'they(pl) speaks(sg)'

Nevertheless, there are many words that are not ambiguous: for –S deletion, all nonplural words with final –S (as in 3), plus nominal plurals that have root-final consonants or other irregularities (as in 1a), and for denasalization, all nonplural words ending in a nasal vowel (cf. 4), plus many plural verbs with more complex plural marking (preterites, irregulars, monosyllables, verbs with stressed desinences, etc.; cf. 2a). These cases make it clear that the phonological processes exist independently of the syntactic variation. They also provide us with a substantial corpus on which to analyze the variables separately. In what follows, I present analyses of the phonological variables that are based only on the

derivationally unambiguous cases. The analyses of the morphological variables include ambiguous cases along with the unambiguous ones, but incorporate factors to control for the effect of the phonological variation.

In terms of social evaluation, all of these variables involve alternations between a standard and a socially stigmatized variant. Agreement (both nominal and verbal) is standard, while non-agreeing utterances (cf. exx. 1b, 2b, 5, 6) are stigmatized. Similarly, the phonological reductions (vowel denasalization and -S deletion) are both stigmatized, while their unreduced counterparts (with realized nasality or final -S) are considered standard. Consequently, given the extensively documented finding that speakers in complex speech communities are socially stratified with respect to their usage of sociolinguistic variables, and the general perception that social varieties of speech are coherent, we adopt as a working hypothesis that these variables should be highly correlated in the usage of Brazilian Portuguese speakers: someone who uses more standard alternants of one variable should use more standard alternants of the other variables as well, while speakers who are more non-standard should use more nonstandard alternants across the board. But given the linguistic relationships among the variables sketched above, we must consider any correlations that emerge among the variables for potential linguistic motivations as well as for sociolectal coherence.

3. Methods and data

The data are drawn from sociolinguistic interviews recorded with 20 native speakers (11 men and 9 women) of Brazilian Portuguese. All subjects were lifetime residents of Rio de Janeiro interviewed for the 'Competências Básicas' study of popular Brazilian Portuguese (Lemle and Naro, 1977). Given the appreciable social stratification that exists in this speech community, it is worth noting that these were speakers of the popular vernacular: their socioeconomic status was lower working class – all lacked formal education and were illiterate, most of the women worked as domestic servants, and the men held unskilled or semiskilled laboring positions. Each speaker was interviewed on seven separate occasions, with an average interview duration of approximately one hour; hence the total corpus represents approximately 140 hours of recorded speech. Typical sociolinguistic protocols were observed in the interviews: interviewers introduced topics designed to elicit maximally casual style (e.g., contemporary popular culture, subjects' personal experiences and opinions, etc.), but sought to allow the interview to proceed as a normal conversation, hence allowing topical flexibility, and avoiding a question and answer format.

Since we are interested in rates of use of these variables – which is the dimension on which social stratification is typically demonstrated – and not idiosyncratic differences, if any, in the constraint effects or the distribution of occurrences across conditioning environments, the analysis presented here focuses on the factor weights for the individuals extracted from a multivariate analysis of the entire corpus (using Sankoff's Varbrul routine, Rousseau and Sankoff, 1978, cf. also Guy, 1988). Each speaker has one of these values for each of the four variables, reflecting whether they use more or less of a given variant than other speakers in the corpus (while controlling for contexts of usage and Ns). We then calculate correlations (Pearson's r) for each pair of variables. If speakers are consistently stratified in the same relative way for all variables, each speaker should have comparable weights for all four variables, and the correlation statistic should be high. But if a speaker's usage of one variable is unrelated to their usage of other variables, then we would get random mixes of high and low factor weights and low correlation scores. What do the facts show?

4. Results

4.1. All speakers

The overall correlation matrix for the four variables appears in Fig. 1. Four of the six possible correlations are significant at the .05 level or beyond. Deletion of -S is highly correlated (inversely) with Nominal agreement, but nothing else. The two syntactic variables are also significantly correlated with each other, and both are correlated with the other phonological variable, Denasalization.

This is better visualized in the graphic layout in Fig. 2. This shows the cross-domain relationships between phonological and syntactic variables in the vertical dimension, and within domain relationships (phonology with phonology, syntax with syntax) in the horizontal dimension. Note that the syntactic variables were treated in terms of likelihood of agreement, which is the prestige variant, while the phonological variables show likelihood of denasalization or

Denas	Verb Agr	S del	Nom Agr
-.450*			
.256	-.371		
-.436*	.592**	-.740***	

Significance: * $p < .05$, ** $p < .01$, *** $p < .005$

Fig. 1. Correlations among four sociolinguistic variables of Brazilian Portuguese.

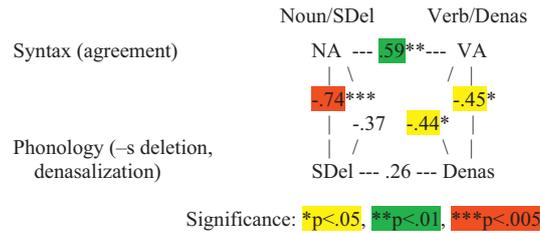


Fig. 2. Correlations among variables in 20 speakers of popular Brazilian Portuguese.

deletion, which are the nonstandard variants. Hence between-domain correlations (in the vertical dimension) are negative, while within-domain correlations have positive values.

What do these results imply? At first look, one might think that finding four significant correlations out of six is good, suggesting that speakers do in fact locate themselves on the social hierarchy consistently for most of their variables. More standard speakers mark more plurals in both nouns and verbs, and denasalize and delete -S less (i.e., their productions are closer to citation forms, with more standard phonology). However, this may be an overly charitable interpretation of the results. There are, as we have noted, potential linguistic motivations for three of the correlations.

Consider first the two sets of variables that have a surface trading relationship, -S deletion and Nominal Agreement, and Denasalization and Verbal Agreement. The scattergrams for these pairs appear in Figs. 3 and 4; both are clearly correlated. In the data used here, the values for each process are independent of the other (because we excluded or controlled for derivationally ambiguous cases). But in the cognitive experience of individuals, where ambiguous cases are

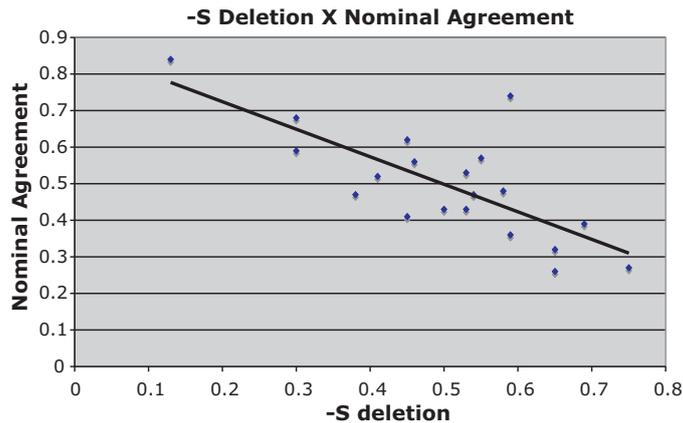


Fig. 3. A trading relation: -S deletion by Nominal Agreement ($r = -.74, p < .005$).

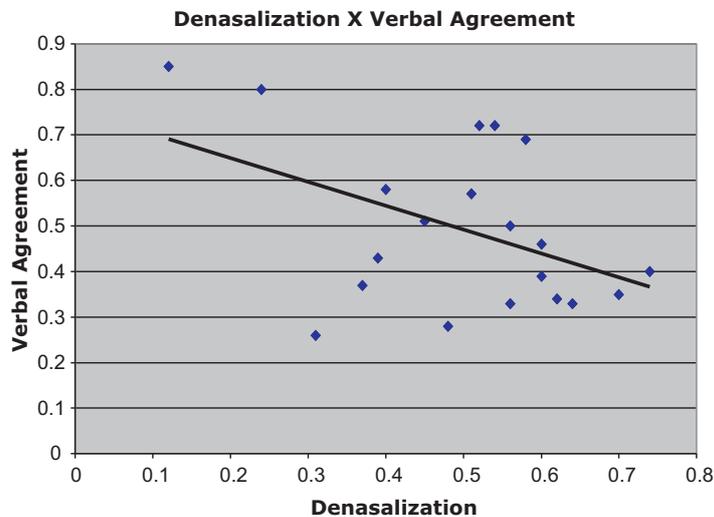


Fig. 4. A trading relation: Denasalization by Verbal Agreement ($r = -.45, p < .05$).

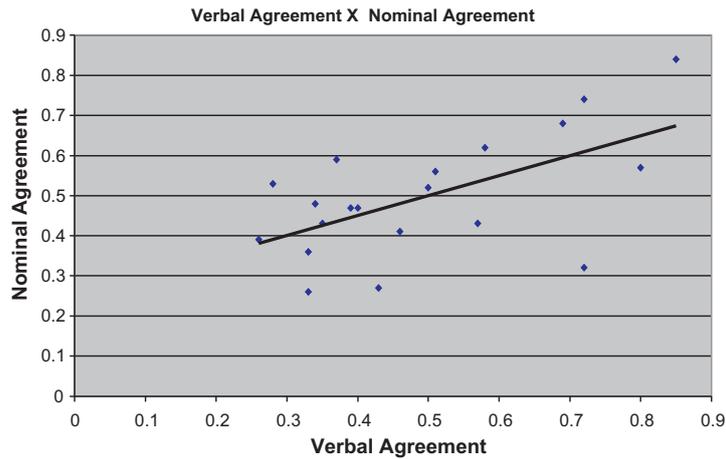


Fig. 5. An abstract syntactic relationship? Verbal and Nominal Agreement ($r = .59, p < .01$).

included, it should always be the case that high rates of the phonological processes will be associated with lowered rates of plural marker occurrence, since the former obliterate the latter (-S deletion deletes nominal plural markers, Denasalization converts regular verbal plurals into superficial singulars). The correlations seen here within these two pairs could therefore be learned directly from this gross surface pattern, rather than as a social perception of the coherent association of sociolinguistic variables. Hence the vertical associations in Fig. 2 may not constitute clear evidence of sociolectal cohesion. However, the diagonals in the figure do not suffer from this problem, so the significant correlation between denasalization and nominal agreement ($r = -.44, p < .05$) is presumably real and unconfounded: the two bear no superficial or deep structural relationship, denasalizing vowels has no effect whatsoever on nominal plural -S markers. But note that the opposite diagonal, which is also unconfounded by any trade-off, is not significant: S-deletion and Verbal Agreement are not significantly correlated.

Within-domain correlations also deserve some consideration. Nominal and verbal plural marking are strongly correlated, as we see in Fig. 5; speakers who put in more nominal plural markers also use more verbal agreement. But is this a purely social association arising from the common social prestige accorded to agreement? One might postulate a stochastic syntax with a single abstract parameter for agreement; perhaps, 'express the phi feature {PLURAL} with probability X, wherever it occurs'. Although the syntactic operations involved are different (nominal plurals are redundantly copied across all words in a noun phrase *in situ*, while verbal plurals involve agreement with the subject, accomplished in some theories by movement), a single parameter model would predict a high degree of correlation between Nominal and Verbal plural marking, as we find.

In the phonology, however, there is no obvious structural generalization relating a process deleting a consonantal segment, -S deletion, and a process that alters the featural makeup of a vocalic nucleus. Any correlation between these two should arise only from social synchronization of rates of use, from the cohesion of the sociolect. But in fact, we find no significant correlation here, as Fig. 6 shows (the one speaker in the lower left corner is an outlier accounting for a large

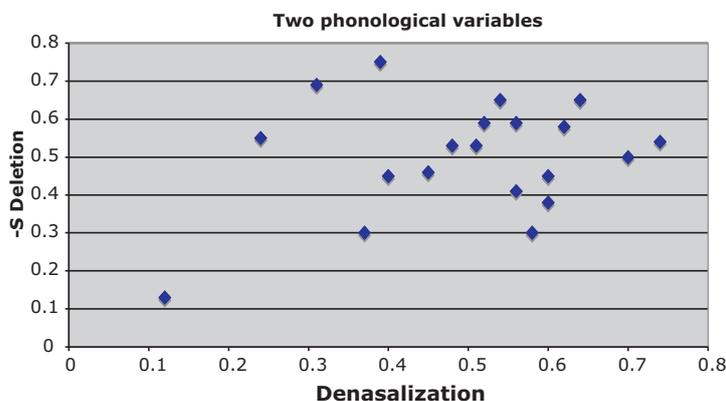


Fig. 6. No structural relationship: S Deletion and Denasalization ($r = .26, p > .28$ n.s.).

proportion of the variance; without this speaker, the *r* statistic for this chart is actually negative, and even less significant $p > .62$).

Viewed in this light, the results are somewhat less encouraging for a model of socially motivated correlation, or sociolectal cohesion. Of the three relationships in Fig. 2 that have potential linguistic motivations (the two trading relations between plural markers and the phonological processes that eliminate them, and the abstract relationship between the two plural marking processes), all are significantly correlated. But of the three pairings that have no linguistic motivation for correlation, only one shows a significant correlation (denasalization with nominal plural marking), while the other two are not correlated.

These results are therefore equivocal on the hypothesis that a speaker will reliably treat all socially stratified variables in their language in a similar way. However, this is only the simplest possible hypothesis about social stratification. Many cases in the literature show that socially stratified variables can also be sensitive to other dimensions of social organization, such as age and gender (cf. Sankoff and Blondeau, 2007; Labov, 1990; Trudgill, 1974). Such variables are also actively used by individuals to construct social identities in a complex interplay with local and supralocal norms and practices (cf. Eckert, 1989). So it is possible that broad correlations have not emerged because there are other social factors in play or other social meanings being indexed that differentiate among speakers' usage of these variables. Hence a more refined analysis is indicated, which may show correlations that have failed to emerge so far. In what follows we also consider the gender and age of speakers in the analysis.

4.2. Gender and age

Looking at gender, we find that females show somewhat higher mean usage rates than males of the prestige forms of all of these variables, which is consistent with much research in sociolinguistics (cf. Labov, 1990, 2001). One variable is sharply differentiated by gender. Denasalization is used at above-average rates by ten of the eleven men in the corpus, while seven of nine women have below average use. This implies that denasalization has some indexical relationship with masculinity in this community, which could potentially confound our search for cohesive sociolects. Age, however, shows no community-wide association with any of these variants; there is no systematic evidence of ongoing change in progress or age-grading for these variables.

To control for any gendered patterns of use of these variables, we present in Fig. 7 the within-gender correlations for the four variables. For the women, these are very encouraging for the hypothesis of sociolectal cohesion: five of six variable pairings show significant correlations. For the men, however, the picture is less clear: only three pairs correlate at the .05 level. Interestingly, two new correlations, not seen in the pooled data, emerge among the men: the two phonological variables are correlated, and there is a significant correlation of the rate of nominal agreement with age: older men show more agreement.

These results do not offer a simple answer to our research questions. The women arguably confirm the hypothesis of coherent sociolects: they consistently show co-varying usage of socially stratified variables. A woman who uses more of

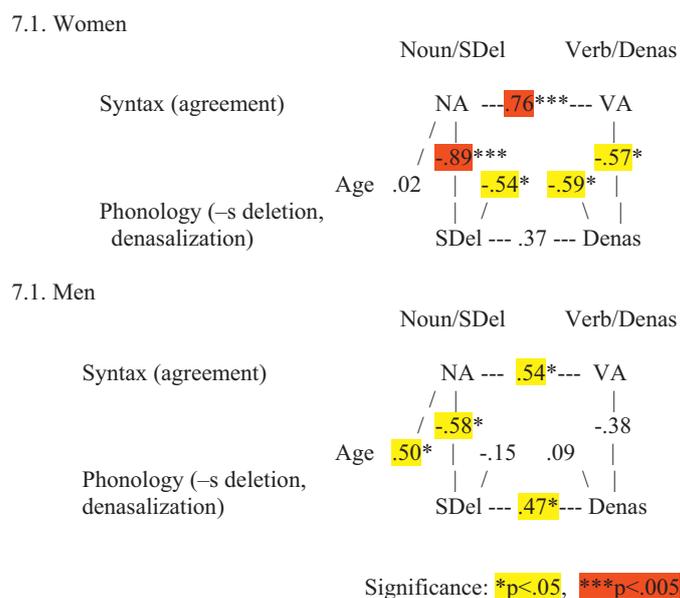


Fig. 7. Within-gender correlation matrices.

	speakers	%
All four variables same hhhh, mmmm, etc.	5	25%
Three variables same hhhx, llxx, etc.	5	25%
Two same, others adjacent hhmm, mmhl, etc.	6	30%
Two same, others dispersed hhll, hhml, llmh, etc.	4	20%

Fig. 8. Distribution of speakers by clustering patterns of use of the variables.

one high-status variant will use more of the other high status variants simultaneously. But the male speakers are not so coherent. Their one correlation with age might suggest a linguistic market effect: in this sample, the older men more often work in jobs that involve higher demands for standard usage than younger men (e.g., Cantidio, age 50+, who spent most of his life working as an attendant at an upper class men's sports club). And the correlation between phonological variables, not found for females (nor for the pooled data) raises the interesting possibility that non-standard phonology (but not syntax) is systematically indexical of masculine gender (this could be fruitfully investigated with cross-linguistic evidence). But overall, the correlations among these variables for the men are insufficient to confirm the hypothesis of sociolectal coherence.

4.3. Clustering of variants

Finally, let us move beyond pairwise comparisons of the variables to look at broader patterns of clustering. For this analysis, we divided the range of usage rates of each variable into thirds: high (h), middling (m), and low (l) rates of usage of the prestige variant. Then we classify each speaker according to their usage rates of the four variables. Thus each speaker will have a classification like hhmh (high-high-mid-high), hmml, etc. A speaker who is maximally coherent in their treatment of these four variables would have the same rating for all: hhhh, or mmmm, for example. A slightly less coherent pattern would show three variables with the same classification: hhhl or llmm, for example. Speakers with only two variables classed the same can be further distinguished as to whether the non-identical variables are adjacent (e.g. mmhl or hhmm), or dispersed (e.g. hlll). The distribution of the speakers with respect to these patterns is shown in Fig. 8.

This distribution is much more coherent than would be expected by chance: if a speaker treated each variable randomly, the chances of getting all four of them in the same third of the usage range would be 3.7% (one in 27), instead we have 25% of subjects with this pattern. The chances of having three in the same usage range would be one in nine (11%), but we observe 25% of our speakers with this pattern. Nevertheless, the evidence for sociolectal coherence is not overwhelming: 20% of the speakers show no meaningful clustering of these variables.

5. Conclusions

The results of this analysis indicate that social cohesion among different linguistic variables may be weak, even if each variable independently shows classic social and stylistic stratification. Speakers can tend towards the high status end of the social spectrum for one variable, while simultaneously displaying relatively lower status usage of another. This presents a challenge for the development of cognitive models of the social influences on speakers' production and perception of language. Holistic models, in which particular varieties or registers characterized by clusters of socially evaluated variables become identifiable in a community, may be difficult to reconcile with the less than robust correlations that we have found. Of course, it is conceivable that this study has had the misfortune of investigating the wrong variables; perhaps there are others in this speech community that are robustly correlated. But these four variables are all very strongly socially stratified in Brazilian Portuguese, and three of them (nominal and verbal non-agreement and –S deletion) are the object of considerable popular attention and overt stigma. So another reasonable conjecture, based on these data, is that the reified sociolect, which implies a parallel with languages and regional dialects, is the wrong model for sociolinguistic variation. Speakers use sociolinguistic variables in fluid, rapidly changing ways, for stylistic purposes, identity construction, management of social relationships, and the like. Different languages or dialects, spoken in different places by speakers who have little contact across language or dialect lines, are not ordinarily involved in such fluid manipulation (leaving aside bilingual and bidialectal communities); hence their coherence may arise from speakers' relative isolation from other varieties and lack of choices, rather than from a cognitive perception of the holistic nature of their own variety.

Consequently, future work on social variation should problematize the coherence of varieties, registers, and styles, and entertain the possibility that each sociolinguistic variable is separately evaluated, and is independently available for indexical associations with social characteristics and identities. Classic social and stylistic stratification of linguistic variables are robust and pervasive phenomena in human communication, but the indexical associations between such variables and the social dimensions of class and speech style may be different only in degree from other cognitive associations, not different in kind.

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