



10-1-2015

# Partial Mergers and Near-Distinctions: Stylistic Layering in Dialect Acquisition

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## **Abstract**

Non-mobile individuals living in a community undergoing a linguistic change usually display a pattern of variation where citation styles are more advanced than naturalistic styles with respect to the change in progress. This suggests that speakers' intentions or norms, while they may shift only gradually, can do so more easily than their productions. Two groups of 'mobile' speakers—adults who grew up in one dialect area and moved to another, and children who acquired one dialect at home and another in the community—showed the opposite pattern: spontaneous speech approximated the dialect of the second community more closely than did word-list productions. Analysis of these speakers' low back vowels (the LOT and THOUGHT word classes) also suggest that most adults can at least partially learn a vowel distinction as well as a merger, though children are able to do both things more quickly and completely.

# Partial Mergers and Near-Distinctions: Stylistic Layering in Dialect Acquisition

Daniel Ezra Johnson and Jennifer Nycz

## 1 Introduction

Near-mergers occur when speakers produce a consistent distinction between two word classes, yet report that they sound the same (Labov et al. 1972, 1991). This may occur within a single style, as in Herold (1990), who administered minimal pair tests for *cot/caught* and *don/dawn* to thirteen adolescents at a Pottsville, Pennsylvania swimming pool, repeating a 1977 investigation at the same location. Judgments of sameness occurred more often than identical pronunciations, from which Herold concluded that “changes in categorizational behavior may outstrip changes in pronunciation when merger is in progress” (98–99). In other cases, near-merger may only reveal itself across styles. For example, Dan Jones from Albuquerque, New Mexico produced a clear difference between *pool-* and *pull-*class words in spontaneous speech and in tokens produced for a commutation test (Labov et al., 1972, Labov et al., 1991). In minimal pair tests, however, he produced no difference and accordingly judged the words to sound the same. Similarly, Bill Peters of Duncannon, Pennsylvania produced a “firm distinction” (Labov et al. 1972:235) between /a/ and /ɔ/ in his interview speech, but neutralized this difference in minimal pair tests and judged relevant words to sound the same.

Labov (2006) suggests that citation styles indicate “phonic intention, illustrating the norms of the speaker, in part” (152) rather than representing everyday performance. These norms may change to reflect ongoing changes in the community, as in the three examples just discussed, which were all collected in regions experiencing the relevant merger-in-progress. Production, meanwhile, may lag behind, raising intriguing questions about the nature of phonemic contrast (Labov et al. 1991). However, this is not the only possible scenario. Labov et al. (1991) also note that in citation style, “depending on the particular sociolinguistic configuration, the mean values may shift radically backwards towards an older, corrected value” (57). This second possibility presumably applies to changes occurring above the level of conscious awareness, in which the older variant receives an explicit evaluation as correct.

The canonical examples of near-merger reflect one sociolinguistic configuration, that of the non-mobile speaker whose input changes over time because they reside in a community undergoing merger-in-progress, a change which is likely to occur below the level of conscious awareness (Labov 1994). While changes in individual features occur, the folk linguistic perspective on the situation is likely to be that no change is occurring at the variety level: that is, everyone is still seen as speaking the same dialect, even if the input and corresponding norms may be subtly changing.

We present data from situations in which a change in input evokes a different perspective: that new input reflects a **different** dialect with at least some saliently different norms. Our data represent three types of configurations: mobile adult speakers who acquired their first dialect in one region and then moved to another, non-mobile adult speakers who married speakers of a different dialect, and children of mobile parents who have acquired one dialect in the home and encounter another in the community. For all configurations, we examine style shifting with respect to the low back vowel merger. While there is much interspeaker variation in our data, our results suggest that speakers who receive input from a new variety will often reflect that new input in their spontaneous productions yet “shift radically backwards”(or perhaps only do not shift as much forwards) in citation styles. We will discuss these results in light of two asymmetries often posited in sociolinguistic research: First, that mergers are easier to acquire than distinctions, and second, that children are better at acquiring new features than adults. Finally, we will consider what these patterns mean for current theoretical questions concerning the relationship between abstract categories and phonetic implementation.

## 2 Methods

### 2.1 Collection of Data

Data was collected using variations on standard sociolinguistic interviewing techniques (Labov 1984), as reported in more detail in Johnson 2010 and Nycz 2011. The data collected by Nycz is from 17 people (ages 30–70) who had moved as adults from Canada, a dialect area with no distinction between the LOT and THOUGHT lexical sets (Wells 1982; /o/ and /oh/ for Labov et al. 2006) to New York City, which has a fairly robust distinction between the two word classes. These subjects had lived in New York for as little as several months or as long as 44 years.

The data collected by Johnson is taken from a larger study of families living along the Rhode Island–Massachusetts border, particularly in Attleboro and Seekonk, MA. The speakers studied here include some who, like Nycz’s speakers, had moved from merged communities to distinct ones (M-to-D). They also include speakers who moved in the other direction (D-to-M). In addition, the data includes speakers (especially children) who moved little or not at all, but for whom the dialect initially acquired from parents was different, with respect to the merger of LOT and THOUGHT, from the dialect of their current peers, or at least from that of their spouses.

Taken together, the data comprises 41 speakers: 25 merged-to-distinct adults (17 from Nycz, 8 from Johnson), 10 distinct-to-merged adults, 3 merged-to-distinct children (brothers in one family), and 3 distinct-to-merged children (brothers in another family).

The interviews were usually conducted in the speakers’ homes, and were recorded as 16-bit, 44kHz .wav files, using electret condenser lapel microphones and digital recorders (Edirol R-09 for Nycz, Marantz PMD660 for Johnson). Nycz’s interviewees produced about an hour of spontaneous conversation, then read a 135-word list, presented on flashcards, containing words from the LOT and THOUGHT classes (10-13 for the first speakers interviewed, 30-35 for the others). They also read a list of 8 or 9 minimal pairs (e.g., Don/Dawn) and rhyming pairs (e.g., cog/dog), and reported whether the pair sounded the same or different (or rhymed or not).

Johnson’s interviews of the adults (parents) were done in pairs, those of the children individually, and they elicited spontaneous conversation of between 30 and 60 minutes’ length, though less for the younger children. Rather than a word list, a series of reading passages were presented on cards which contained one LOT-THOUGHT minimal pair each. Besides these pairs, which speakers repeated after reading each card and judged as same or different, the cards contained some 30–40 other words from the same word classes (for three speakers, interviewed earlier, the number was closer to 70). Furthermore, most speakers (all of the children, and some of the adults) also identified a series of 25 LOT-THOUGHT picture cards.

For this paper, we focused on the styles that were most comparable between the two previous studies: 1) spontaneous conversation, 2) the “overt” minimal and rhyming pair tokens (not the same words pronounced in the context of Johnson’s reading passages), and 3) speakers’ judgments of these minimal and rhyming pairs. We will abbreviate these styles as *conversation*, *pair production*, and *pair judgments* in the remainder of the paper.

### 2.2 Measurement

The stressed LOT and THOUGHT vowels in the words from the categories described above were aligned manually in the case of Nycz’s data, and using the alignment routine of the FAVE suite (Rosenfelder et al. 2011) in the case of Johnson’s. We excluded word-final tokens of THOUGHT (as none exist in the LOT set) as well as tokens where the vowel was preceded by the glides [j] and [w], where formant measurement was deemed to be unreliable.

We then measured F1 and F2 for each vowel at the F1 maximum, using a Praat script. This script worked by identifying five formants, with a maximum formant value of 5000 Hz for men and 5500 Hz for women and children. These values were then hand-corrected, ensuring that the measurements of F1 and F2 were taken along the trajectory of those formants, and that the measurement point occurred during the nuclear phase of the vowel.

Of the 41 speakers analyzed, 6,773 measurements were made: 6,235 from conversation (4,042

LOT and 2,193 THOUGHT, reflecting the usual imbalance in the language, exacerbated by the removal of word-final THOUGHT) and 538 from pair production (270 LOT and 268 THOUGHT, the numbers not matching exactly because of several unmeasurable tokens).

**2.3 Modeling**

In the case of acquiring a merger, the target configuration of the two vowel classes is clear: they are identical. On the other hand, a speaker acquiring a distinction could separate their vowel classes in several directions, not all of which are necessarily “accurate” accommodations to the speakers with whom they are in contact. This can make it hard to compare the acquirers, especially when several phonetic dimensions are involved. Furthermore, there will always be variation within the target community with respect to the size of the distinction, especially in the case of LOT/THOUGHT, which is usually associated with considerable social meaning and commentary, although this is popularly focused on the phonetic realization of THOUGHT rather than on the existence of the LOT/THOUGHT contrast itself.

To simplify the problem, we used the vowel measurements of native, non-mobile speakers (24 Canadians and 9 from New York City and Providence) published in Labov et al. (2006). Unsurprisingly, these Canadians showed no significant difference between LOT and THOUGHT. The New Yorkers had an average distinction estimated at 334 Hz in F1 and 460 Hz in F2, while the Providence natives’ distinction was smaller overall: 214 Hz in F1 and 346 Hz in F2. In both cities, THOUGHT is higher and further back than LOT, but the height dimension is relatively more important in New York. There was some evidence of a similar “angular” difference between the distinction being acquired by formerly merged speakers in New York vs. those in Rhode Island, but in this paper we will assume that all speakers are aiming at the same target distinction, one that is implemented as a 2 Hz difference in F1 for every 3 Hz difference in F2.

By making this assumption, we can propose a single measure of a speaker’s acquisition of the LOT-THOUGHT distinction. If dF1 is defined as the estimate of the F1 of LOT minus the F1 of THOUGHT, and dF2 as F2 of LOT minus the F2 of THOUGHT, then the expression  $(3 * dF2 + 2 * dF1) / \sqrt{3^2 + 2^2}$  or  $(3 * dF2 + 2 * dF1) / \sqrt{13}$  represents the distance between the two vowel classes along the target axis. Unlike a Euclidean distance, this metric is only positive if THOUGHT is, roughly speaking, further back or higher than LOT (more precisely, if  $3 * dF2 > -2 * dF1$ ). See Figure 1.

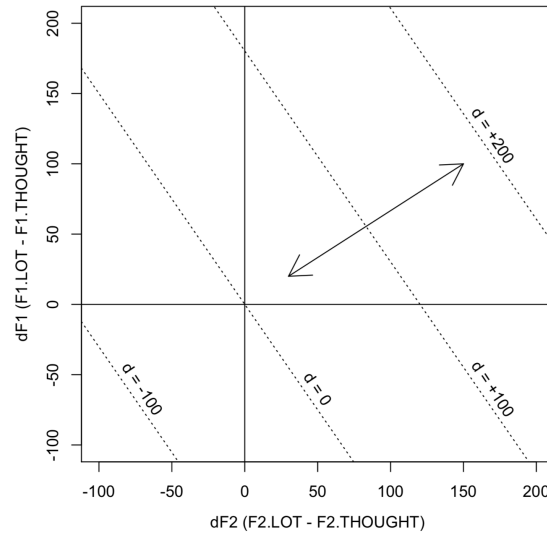


Figure 1: A metric for measuring the LOT-THOUGHT distinction:  $(3 * dF2 + 2 * dF1) / \sqrt{13}$ .

The metric defined above was used as the dependent variable in two mixed-effects linear regres-

sion models, fit with the lme4 package in R (Bates et al. 2014). The fixed-effects predictors of both these models were Speaker \* Word.Class \* Style + Preceding.Place + Following.Place, along with a random intercept for Word. This model specification allowed the presumably relatively universal phonetic effects of preceding and following place of articulation, and the more specific effects associated with individual word types, to be shared across speakers, while each speaker received their own estimate of the word class distinction in each style (conversation and pair production).

A separate model was fit for the speakers acquiring the distinction and those acquiring the merger, because some theories make opposing predictions about individual-word behavior in the two cases (for example, if more frequent words lead both changes, then these words would receive a positive coefficient in the M-to-D model, and a negative coefficient in the D-to-M model). On the other hand, the effects of preceding place (labial, coronal stop, front coronal fricative, back coronal fricative, dorsal, lateral, rhotic, vowel, none), which were coded across word boundaries in the case of vowel-initial words, and those of following place (labial, coronal stop, front coronal fricative, back coronal fricative, dorsal, lateral), are assumed to be constant and are treated as nuisance variables.

### 3 Results

#### 3.1 Canadian Adults in New York City (M-to-D)

Table 1 shows the LOT-THOUGHT differences for the Canadian speakers living in New York. All 17 speakers show a difference in the target direction in conversation, ranging from insignificantly small (4 Hz, 5 Hz) to quite substantial (93 Hz, 127 Hz). There is no clear correlation between the size of this difference and the length of the speaker’s residence in New York, the age at which they moved there, whether they intend to remain in New York, or whether their partner or spouse is a New Yorker, a Canadian, or neither (see Nycz 2011 for further discussion).

Speaker	Conversation	Pair Production	Difference	Pair Judgments
ES	4	43	-39	same
PW	5	45	-40	same
TM	8	82	-74	same
JF	18	-23	41	same
EW	28	-6	34	same
CW	33	30	3	same
NW	34	-11	45	same
DB	38	-16	54	same
VJ	40	-55	95	same
BW	41	4	37	same
GH	49	26	23	same
JC	61	30	31	same
LC	68	-74	142	same
LG	78	-4	82	same
BK	79	14	65	same
LW	93	14	79	same
SS	127	16	111	same

Table 1: LOT-THOUGHT differences (Hz), Canadian adults in New York (M-to-D).

Regardless of the explanation(s) for the large range of LOT-THOUGHT differences in conversation, we observe that the difference is smaller in pair production in a large majority of cases (14 of 17, or 82%). Indeed, 7 of the speakers show a negative value for pair production; that is, they appeared to distinguish LOT and THOUGHT in the opposite direction from the New York dialect. While some of these small differences may reflect measurement error or chance, there is no question that these speakers show more accommodation towards the second dialect in conversation than in

pair production, with only one speaker, TM, presenting a solid exception to this trend. In terms of pair judgments, all of these speakers, including TM, reported that the minimal and rhyming pairs sounded the same.

### 3.2 New England Adults (M-to-D)

The eight adults outlined in Table 2 grew up in an area of LOT-THOUGHT merger (either close to Rhode Island, or further north towards Boston or beyond) before moving, or otherwise being exposed long-term, to the distinction in the Massachusetts-Rhode Island border area. They are somewhat more uniform in their acquisition of a difference in conversation. With one exception, speaker VH, these adults all acquired a difference of at least 50 Hz (something that only 35% of the speakers in the previous section accomplished), and four of them show a difference of over 100 Hz (only one had done so, above). While a distinction of 100 Hz is several times smaller than the one natives produce, it is at least potentially audible (such differences are often obscured impressionistically, because they are smaller than contextual effects; but the statistical analysis reveals them).

However, while the speakers with somewhat less acquisition show the pattern where the difference is smaller in pair production (e.g., GV, JSf, KC), the others produced a difference in pair production that was as large as the one in conversation, in fact a slightly larger one (and in the case of RE, a substantially larger one). And in keeping with this, two of these speakers (MA and MP) judged some of the minimal pairs as different. On the other hand, two others (KRf and RE) judged all the pairs the same, despite differences in production larger than 100 Hz. Again, the observed social factors did not clearly correlate with the progress of acquisition. For example, two of these speakers did not actually move from their native merged communities, but have been exposed to the distinct pattern largely in the speech of their spouses. But while speaker JSf has been married to a distinct speaker for 55 years (ages 23–78), she shows only a modest LOT-THOUGHT difference, in comparison with speaker MA, who has only been married for 10 years (ages 24–34). In general, it is not possible to account for individual differences with a data set of this size.

Speaker	Conversation	Pair Production	Difference	Pair Judgments
VH	-42	30	-72	same
JSf	54	28	26	same
KC	68	13	55	same
GV	70	18	52	same
RE	101	192	-91	same
KRf	106	120	-14	same
MA	108	144	-36	mixed
MP	144	134	10	mixed

Table 2: LOT-THOUGHT differences (Hz), New England M-to-D adults.

### 3.3 Patrick Children (M-to-D)

While the New England adults in the previous section are a fairly miscellaneous group, the three children discussed here (Table 3) grew up in the same family. Their father is speaker MP from the previous section, who while originally merged, now produces a moderate LOT-THOUGHT distinction which he does not generally recognize. (Indeed, the allophonic range of his LOT and THOUGHT, statistically factored out here, is much larger than any regular difference between the word classes.) Their mother is an L1 Spanish speaker who grew up in Mexico and Texas; analysis of her vowels revealed no trace of a LOT-THOUGHT contrast. We can assume that to the extent the Patrick brothers have acquired a distinction, it will have come from their peers; they have always lived in Warwick, RI, a community mostly of native Rhode Islanders where the low back distinction is generally present.

The two older children, JP (age 15) and RP (age 12), display patterns that are similar to the New England adults above, only “more so”: in conversation, they both have differences greater than 150 Hz (a size not seen for any distinction-acquiring adult), and their pair productions are smaller, but not much smaller. JP judges his pairs as different, while RP judges his similarly-distinct pairs as the same. The youngest brother, PP, has acquired slightly less of a distinction in conversation (exactly 150 Hz), but his pair productions are barely distinct at all, at least on average. This pattern is more reminiscent of the Canadian adults, and could reflect his youth and relationship to his (essentially) merged parents. There is also a possibility that PP’s merged pairs are related to incoming merger in his peer group, although not enough other data was gathered to test this (see Johnson 2010).

Speaker	Age	Conversation	Pair Production	Difference	Pair Judgments
JP	15	171	152	19	different
RP	12	187	140	47	same
PP	11	150	-3	153	same

Table 3: LOT-THOUGHT differences (Hz), Patrick children (M-to-D).

### 3.4 New England Adults (D-to-M)

As noted, one advantage of looking at speakers acquiring a merger is that the target (identity of the two word classes) is known. However, outside of a real-time study, the starting configuration of such speakers’ vowels, before contact with a merged second dialect, can never be precisely known. The same applies to observation of a stylistic difference in the size of the distinction; without knowing what this style difference was beforehand, we must be cautious in attributing it to differential loss of the distinction in different styles. In fact, Johnson (2010) fairly consistently found that native, non-mobile speakers in the Rhode Island area produced larger phonetic contrasts in pair production than in conversation (the reverse of the pattern reported by Labov 1966 for the same vowels in New York). Because of these considerations, we can really only draw coarse-grained conclusions, for example, from what looks like the general loss of the distinction, or qualitatively large differences between conversation and minimal pairs.

Speaker	Conversation	Pair Production	Difference	Pair Judgments
KRm	103	253	-150	different
DH	110	125	-15	different
KH	120	61	59	different
RS	125	254	-129	different
TD	129	289	-160	different
EC	130	117	13	mixed
BP	162	141	21	mixed
JSm	166	167	-1	different
AA	183	376	-193	different
WJ	194	195	-1	different

Table 4: LOT-THOUGHT differences (Hz), New England D-to-M adults.

Table 4 shows that these ten adults behave quite similarly in conversation; they show differences ranging from 103 to 194 Hz. As suggested already, LOT-THOUGHT distinctions of this size are perhaps 2-4 times smaller than those characteristic of native, non-mobile adults from this region. So while we cannot say exactly how much of their distinction each of these speakers has lost, we can be confident that they have all lost quite a bit of it. As usual, the individual variation is opaque: WJ, who maintains the largest contrast here, has lived in a merged community for 66 years, from the age of 7 to 73.



There is considerable variation in pair production for these speakers: four (AA, KRm, RS, TD) maintain pair contrasts that are more than twice as large as in conversation. Since Johnson (2010) never found such a large style difference with non-movers, this does suggest that greater loss of the distinction has occurred in conversation than in pair production. On the other hand, the other six speakers do not show a great difference between styles, a pattern that is harder to interpret. Again, pair judgments were conservative; only BP and EC judged any of the minimal pairs the same, and while their production differences were among the smallest, they were no smaller than those of DH and KH, who judged all the pairs as different (like the other six speakers).

### 3.5 Newman Children (D-to-M)

The three children interviewed in the Newman family have grown up in Attleboro, MA, a city that for adults is divided between merged and distinct sections, but where children and adolescents are generally merged with respect to LOT-THOUGHT. The parents of the Newman brothers are both from New York and Eastern Pennsylvania, hence distinct. The Newman children were homeschooled in part, which would have reduced their degree of contact with merged peers, but they definitely had some such contact. Table 5 shows the results for the Newman children.

Speaker	Age	Conversation	Pair Production	Difference	Pair Judgments
TN	18	32	-84	116	different
JoN	15	38	207	-169	different?
JaN	12	58	104	-46	different

Table 5: LOT-THOUGHT differences (Hz), Newman children (D-to-M).

All three brothers maintain a small LOT-THOUGHT difference in conversation, between 32 and 58 Hz. These differences are 1/4 to 1/2 the size of those of the D-to-M adults in the previous section, suggesting a greater degree of acquisition of the merger (or put another way, the loss of the distinction). In terms of pair production, the youngest two brothers produced a much larger distinction for the minimal pairs, like four of the D-to-M adults, and again suggestive of conversation leading pair production as the distinction is lost. However, the oldest brother showed a reversed LOT-THOUGHT difference in pair production, unlike any of the D-to-M adults. All five of TN’s minimal pairs show LOT higher/backer than THOUGHT, although the difference is not consistent enough to be statistically significant. Whether or not this is a real “flip-flop” (Hall-Lew 2013), the pattern is probably a sign of impending merger. Based on this data, it may be that pair production trails behind conversation as a distinction is lost, but at some point, a reorganization occurs, after which more monitored styles reflect the incoming merger. While this makes TN more like the speakers reviewed in Section 1, he is only a single individual, and he does not judge the minimal pairs the same, which is certainly one of the hallmarks of a near-merged or fully-merged speaker.

## 4 Discussion

Using a univariate measure of the distance between LOT and THOUGHT (along a diagonal axis with a slope of 2/3, in the usual F1/F2 space), we analyzed 41 speakers in five categories: 17 Canadian adults living in New York City (M-to-D, or merged-to-distinct), 8 New England M-to-D adults, 3 M-to-D children (the Patrick brothers), 10 New England D-to-M adults, and 3 D-to-M children (the Newman brothers). In each category there was substantial individual variation, which could not be well accounted for in the case of the adults, and in the case of the children generally made sense according to their age (and thus the extent of their exposure to the second, peer-group dialect).

Abstracting away from several ambiguous cases, and a general methodological weakness in the case of the D-to-M speakers (namely, that their LOT-THOUGHT configuration and style-shifting pattern before leaving the distinct dialect area was unknown), this data shows that **most adults**

**accommodate long-term towards a second dialect, whether this involves (partially) losing the LOT-THOUGHT distinction, or acquiring it.** This result challenges the usual argument that distinctions are more difficult to learn and reproduce than mergers (Labov 1994), suggesting that a differential ability of adults to learn mergers vs. distinction is not the explanation for the variety-level tendency for mergers to spread (both diachronically and geographically) at the expense of distinctions.

**Children also seem able to acquire both kinds of systems, and show a greater degree of accommodation despite a shorter period of exposure.** This is consistent with previous second dialect research finding that young children are especially adept at picking up the patterns of a new dialect (e.g., Chambers 1992, Tagliamonte and Molfenter 2007). Moreover, the length of exposure seems to matter for children, while it seems not to for adults. This is again consistent with general indications that there is much more interspeaker variation among adults than children (see Nycz forthcoming for a review). Whether the reasons for this are biological (e.g., due to a sensitive period which results in more consistent acquisition among children), social (due to the greater ability of adults to use socioindexical resources to construct identity), or a combination of factors is an intriguing question that we leave for future research.

Despite the rough equivalence in the progress of the Patrick children (acquiring the distinction from peers) and the Newman children (acquiring the merger from peers), we note that Johnson (2010) found that most children in this area underwent not partial acquisition of the merger, but full-blown merger-by-expansion under the influence of a majority-merged peer group. For this reason (and remembering that the Newman brothers' peer contacts were restricted by their partial home-schooling), we suggest that children are even more able to learn a merger than a distinction, perhaps through a different or an additional mechanism, and that this accounts for the observation that mergers are all but irreversible on the variety level, and expand at the expense of distinctions.

**Whether it involves acquiring the distinction or losing it, the accommodation is usually – but by no means always – more advanced in conversation than in pair production. Pair judgments tend to be the most conservative of all, reflecting the norms of the speaker's first variety.** This is the opposite of what happens in the well-known cases of near-merger, in which people's judgments reflect the incoming change while their conversational speech is more conservative.

We suggest that this difference is due to the differing folk linguistic perspectives involved: while speakers in a community undergoing change-in-progress may implicitly align with that community and thus reflect that community's changing norms in their expression of "phonic intention", speakers who are exposed to what is seen as a "different" dialect may not align with that dialect and its associated identity in the same way, and continue to reflect "their own" dialect in their expression of phonic intention. More detailed work examining the relationship between individual speakers' place identity and their stylistic use of variables is needed to evaluate this hypothesis. However, patterns in a subset of our data suggest that there is something to this idea.

While their acquisition of the LOT-THOUGHT distinction is arguably greater, the New England M-to-D adults do not show as consistent a stylistic pattern as the Canadian M-to-D adults, where conversation was usually in the lead compared to pair productions. We might propose that Canadians' larger difference between styles is characteristic of an "earlier" stage of second dialect acquisition, and that in cases where the distinction grows larger in conversation, pair productions (and even pair judgments) eventually catch up. But if the Canadians show an "earlier" stage of acquisition than the New Englanders, this cannot be interpreted temporally, since we have seen that an individual's acquisition does not necessarily continue to progress, even after decades.

However, even though they are equally aware of an accent difference, the degree of cultural difference experienced by Canadians in New York is larger and more salient than that experienced by the New England migrants (and certainly the New England non-migrants, who simply married someone from across the dialect boundary). This difference may lead the Canadians to reflect their 'first' identity in pair productions and judgments to a greater degree (or for a longer period) than the New Englanders.

The differences in production and judgments described here complicate the traditional notion of phonological contrast and how it relates to phonetic implementation. In cases of both near-merger (as detailed in previous literature) and near-distinction (exhibited here by M-to-D adults and chil-

dren), people produce a difference which is not always accessible to them in the same way that other phonemic differences are. This runs counter to a feed-forward model of phonology and phonetics, in which distinct abstract categories could give rise to identical surface outputs, but the reverse would seem to be impossible. But for the “near-mergers”, it does seem that their underlying contrast is neutralized in some way, while a surface difference remains. For the “near-distinctioners”, a surface difference is acquired before (or otherwise in absence of) a more abstract distinction. Taken together, these situations seem to require a ‘hybrid’ model of representation (Pierrehumbert 2006), more specifically one in which abstract categories are not necessarily prior to phonetically detailed exemplars, but are not necessarily derivative or “emergent” from them either.

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