PRELIMINARIES TO HAPTIC-INTEGRATED PRONUNCIATION INSTRUCTION

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This paper reports on aspects of a haptic (movement plus touch) integrated system for classroom pronunciation instruction. It is based, in part, on established pedagogical practice in the use of somatic/kinesthetic techniques such as gesture in language instruction (Acton, 1984, 2012; Celce-Murcia, Brinton, Goodwin & Briner, 2010; McCafferty, 2004), and management of vocal resonance in singing and voice training (Lessac, 1997). The pedagogical method is designed for use by relatively untrained instructors and is generally best delivered through video with classroom follow up. Relatively recent research and development in haptics, especially in the areas of gaming, prosthetics and robotics, provides a rich source of potential principles and procedures from which to draw in exploring and rethinking the "clinical side" of pronunciation work. The use of haptic integration procedures in various teaching systems, in the form of designated movement patterns accompanied by various "textures of touch" has been shown to more systematically coordinate sensory modalities involved and greatly enhance both effectiveness and pace of instruction. In field testing the basic English pronunciation system to be described, this application of haptic procedures shows promise of also enhancing efficiency in anchoring sounds, words and phrases and in facilitating both recall and integration of targeted material in spontaneous speech.

PRELIMINARIES

The essential, haptic-integrated English pronunciation (EHIEP) framework (Acton, 2012; in preparation) outlined below involves a set of about a dozen protocols, or ordered sets of procedures, that train learners in haptic-based techniques for classroom instruction. "Haptic" in this context refers to systematic hand movement across the visual field accompanying speech that typically terminates in *a touch of some kind*, like one hand touching the other. That touch occurs simultaneously with the articulation of a stressed syllable of a word, focal stress of a phrase or a prominent word in discourse (e.g., Acton 2010; 2012, Acton, Baker & Burri, 2009; Burri & Rauser, 2010; 2011.) EHIEP is based on the broader notion of "haptic-integrated clinical pronunciation research" (HICPR, 2012) that focuses more explicitly on both the physicality of pronunciation and a clinical perspective on integration of enhanced pronunciation into spontaneous speech (c.f., ICPLA, 2013), both areas not generally addressed adequately in contemporary pronunciation teaching.

"Haptic-integrated" should be understood in two senses. First, these pedagogical movement patterns (PMPs) are used in the classroom in integrated instruction for various functions, including presenting, correcting, practicing or anchoring new or "repaired" sound structures. Second, the haptic-based PMPs serve to better enable recall and subsequent integration into spontaneous speech of targeted structures or processes.

The four sections of the paper correspond roughly to the contributions of each of the authors to the development of the system and their part of the oral presentation at the conference. The first, by Baker, reviews key research studies on integration of pronunciation, including both integrated instruction and integration of focus-on-form into spontaneous speech. The second, by Acton, addresses the application of embodiment theory, kinesthetic learning and haptic research to the problem of integration of pronunciation. The third, by Teaman, reviews the range of structures and processes which can be worked with effectively in the EHIEP system. The fourth, by Burri, then situates some of the methodology with typical anecdotal reports from field tests. (In the oral presentation, during Burri's comments, many of the PMPs and related techniques were demonstrated. Representative examples are linked on the HICPR blog (HICPR, 2012.)

INTEGRATION OF PRONUNCIATION TEACHING AND PRONUNCIATION

The field of second language teaching has seen a dramatic shift in how pronunciation has been situated in the classroom. It has moved from being an integral component during the Audiolingual period to a relatively minor sub-skill in the Communicative era and beyond (e.g., Brown, 2008; Derwing & Munro, 2005; Levis & Grant, 2003; Murphy, 1991; Naiman, 1992). The last decade has seen a shift in perspective with the emergence of two issues in particular: how to effectively integrate pronunciation into general instruction and how to facilitate the transfer of new and "changed" targets from classroom to conversation.

Effective integration of pronunciation instruction

Since at least the1980s, methodologists have advocated an integrated approach to pronunciation teaching (e.g., Celce-Murcia et al., 2010; Chela-Flores, 2001; Gilbert, 1987; Murphy, 1991). Integration can take different forms. Many consider integration to refer to any form of pronunciation instruction added to the curriculum, even on an ad hoc basis. Scales, Wennerstrom, Richard and Wu (2006), however, argued persuasively that pronunciation must instead be integrated into oral skills curricula.

There are any number of reasons why pronunciation instruction may not be addressed systematically. One difficulty is that there may not be sufficient time to teach all of what appears to be the relevant features (Munro & Derwing, 2006). To address this concern, Morley (1991), Hewings (1995), Celce-Murcia et al. (2010) and Acton (2012) have all highlighted the need for a "targeted" approach that focuses on intelligibility. At this point, from a research perspective, relatively little is known about how teachers do integrate pronunciation in their classrooms. One study, Baker (2012), examined the case of ESL teachers who, to varying extents, attempt to integrate pronunciation in a fairly fixed intermediate-level curriculum—with mixed results--and the questions that they have about how best to do that.

Transferring classroom change to the real world

The other perhaps more critical question is how to anchor changed pronunciation such that it leads to use in authentic contexts outside of the classroom. Here, too, research has yet to systematically examine the impact of instruction on use outside the classroom, in natural

settings. Nevertheless, there are a number of studies on changed pronunciation within the classroom or classroom-like contexts. Quasi-experimental research has demonstrated that explicit pronunciation instruction can have at least a short-term positive effect on learner pronunciation (Couper, 2003; Derwing, Munro & Wiebe, 1997; Macdonald, Yule & Powers, 1994; Saito & Lyster, 2012).

Those studies provide more than credible "evidence" that pronunciation instruction can impact acquisition of intelligible English. However, it is still some conceptual and theoretical "distance" from mimicking a target form or reproducing it adequately in controlled or guided activities in the classroom to using it at Starbucks. As of yet, few studies have adequately assessed the transfer of pronunciation instruction to contexts outside of the lab or classroom. What we do have are a few anecdotal reports from learners of decontextualized pronunciation practice and consequent difficulties with applying oral communication skills (e.g., Liu, 2012). So, how can we best teach pronunciation in the classroom so that it will appear as enhanced intelligibility "out there?" One possible approach is to first "embody" it.

EMBODIMENT AND HAPTIC INTEGRATION OF PRONUNCIATION

The EHIEP system takes a decidedly "embodied cognition" (McNerney, 2011) approach to integrated pronunciation instruction. That is, the role of the body in shaping mind and conceptual development must be considerably more foregrounded in our understanding of how we learn and most effectively teach pronunciation. Perhaps that not always to the extent that Lessac (1997) maintained, that we should "Train the body first!" in developing the voice and acting body, but at least there should be a balanced "felt sense" (Gendlin 1996) of cognitive and somatic awareness and engagement.

When we refer to our use of movement and touch we will use the term "haptic," as distinct from "haptics." "Haptics" now generally refers to sensing and manipulation through touch, related to its application in technological systems for virtual reality, gaming, training and rehabilitation—and, to some degree, smart phones. Our use of "haptic" is closer to that common in the arts, for example, haptic cinema, theatre, video or live performance—the idea being to convince the viewer's brain that "real" touch is involved, coming in through the eyes—without use of a piece of haptic hardware such as a glove, arm prosthetic or body suit—or water mist in the air or gyrating chair. A good introduction to the concept of "haptic" as it is embodied in media is Marks (2002).

In an important recent article, Holme (2012) situates embodiment theory in the field of English language teaching from a cognitive linguistics perspective, pointing to four general principles that are converging to rapidly redefine the field: conceptualization, the lexico-grammatical continuum, usage, and *embodied learning*. Haptic-integrated clinical pronunciation (HICP) (and EHIEP) generally fits within that last category, connecting perceived vocal resonance to targeted sounds by employing upper body movement and touch.

In pronunciation teaching the value of gesture and kinesthetic techniques has always been assumed (e.g., Celce-Murcia et al., 2010), but there has been little systematic instruction or study to date of the use of directed movement in the classroom or its impact back "on the street." There has been, on the other hand, substantial research (e.g., McCafferty, 2004) on the place of gesture in second language acquisition, in general, and related cross-cultural communication (e.g., Kendon, 2004).

In the earliest accounts of pronunciation teaching methods we find informal suggestions for gestural reinforcement of stress patterns, rhythm, intonation and other features (Acton, 1994; 1997). There are, as well, literally hundreds of teaching tips on the Web that allude to some use of the body in phonics and pronunciation instruction, for example, "kinesthetic phonics" and the well-known Total Physical Response teaching approach (Asher, 1972). For instance, Acton's (1984) article on dealing with fossilized pronunciation included reference to three kinesthetic techniques: using upper torso nods for practice phrasal stress, baton-like movement to control spontaneous speaking and using rubber band stretching to anchor vowel length, a commonly used technique today (Gilbert, 2012.)

In 2004 Acton began working on a research project with a team of counseling psychologists that involved the use of eye movement in the visual field, a therapy termed Observed Experiential Integration (OEI, 2012; Acton, in press). The focus of those therapeutic techniques is, in essence, rapid integration of changed attitudes and behaviors—achieved by working "through the body" to anchor change. Shortly thereafter, we began experimenting with similar strategies in pronunciation teaching. (For more specifics on the development of the EHIEP system and related research, see the HICPR blog, HICPR, 2012.)

Initially, the basic innovation of the EHIEP approach was to take commonly used classroom gestures and "anchor" them with touch, in effect making the use of those pedagogical movement patterns (PMPs) more consistent, systematic—and effective. The key elements of the techniques involved are:

- PMPs involve hands moving across the visual field, not unlike sign language.

- Locations in the visual field are associated with specific sounds or processes (related to OEI and other psychological models); high or low pitch, for example, may be associated with analogous relative positioning, up or down.

- Hands typically touch each other or one hand contacts a point on the body coinciding with lexical stress or discourse prominence. (That practice is also quite similar to some American sign language anchoring of highly emotional signs w/touch.)

- The PMPs appear to promote integration of targeted pronunciation. Although we lack "hard" evidence of that, other than a series of field tests in classrooms and clinical, one-on-one observations , our experience and the extensive research based on the use of haptic and haptics systems in general seems unequivocal in pointing to the power of haptic engagement to facilitate high-impact integrated learning.

EHIEP is designed for use by relatively untrained instructors, taught, if necessary, almost entirely through short videos which train learners and instructors in techniques for haptically anchoring and integrating essential features of basic English pronunciation.

ESSENTIAL ENGLISH PRONUNCIATION: LINGUISTIC PRELIMINARIES

This section describes the phonological categories that EHIEP emphasizes. The inventory of phonological targets intersects reasonably well with those used in general pronunciation instruction (e.g., Celce-Murcia et al., 2010; Gilbert, 2012). Even though EHIEP is quite different methodologically from standard approaches, the structures it deals with and its pedagogical

priorities should be familiar to most instructors. Although the approach is somewhat more holistic in its assumptions about the learning of pronunciation, it is generally consistent with current SLA theory as it relates to acquisition of the sound system. It is important to note, however, which features are explicitly included and which are not. So, before reviewing the structures that are covered, some comments will be made about what is not covered and why.

EHIEP does not attempt a comprehensive treatment of all phonological structures of English but instead embodies core parts of the L2 learner-oriented phonology—although, in principle, any phonological element or process is amenable to haptic embodiment for classroom use. Likewise, these principles could be applied to the sound system of any language.

EHIEP does not deal explicitly with many formal phonological rules, such as those relating to schwa or unaccented vowel qualities, for three reasons. First, for general intelligibility, some are simply not necessary or belong further along in the process. The overall priorities are close to those proposed by Jenkins (2000) in defining a general pedagogical model for "English as an International Language (EIL), as will be elaborated in what follows. Second, as noted earlier, EHIEP is based on the assumption that somatically grounded "exemplars" (c.f., Pierrehumbert, 2001) are key to learning the sound system. So, in the EHIEP approach, haptically reinforced,, context-situated lexical items are the primary targets of instruction. That does not exclude or restrict the use of more metacognitive explanations and rules; it only requires that sounds, words and phrases first be experienced as sensually, resonantly—and memorably as possible. Third, because the system is designed for instructors with little or no background in pronunciation teaching, much of the work must take place somewhat more experientially and inductively.

EHIEP does work extensively with the "feel" or felt sense of word and sentence stress in the body, but it does not explicitly teach word stress rules (such as methods to determine where word stress falls in individual words or compounds), spelling rules, phonics or formal phonetics. (Use of a standard, learner's dictionary with audio files is highly recommended.) In principle, although the sound system of any language can be haptically anchored, our work until now has focused on North American English (NAE) and the basic vowel systems of a few other languages.

In the following, the linguistic structures that are covered are described briefly in terms of how they relate to this approach.

Vowels

Standard vowels are covered: tense, lax and diphthongs. The inventory is consistent with most contemporary sources such as Celce-Murcia et al. (2010), which uses the terms "simple vowels," "vowels with an adjacent glide," and "diphthongs" to cover the same categories. Although the vowel coverage is for general NAE, other English vowel systems and dialects can be easily adapted. Each vowel is represented by a unique PMP that embodies it and is used in the learning process whenever that vowel in a word is targeted, typically in a stressed syllable.

Stress

For word and phrasal stress, one stressed syllable is targeted in an individual word or phrase. The focus is on the stressed syllable, itself, without paying undue attention to the unstressed syllables. (There is a PMP for secondary stress but it is not typically used when the focus is on simple intelligibility.) Word and phrasal stress are anchored and practiced in a fashion similar to that of vowels in that a PMP anchors the vowel in targeted stressed syllables. In general, stress assignment and anchoring (with PMPs) is only done in context, in conversational settings and

style, with texts to be spoken aloud, not read silently. No attention should be paid to complicated rules of stress, but simply to noticing and performing the stressed targets. That does not preclude, however, attention to such processes in related receptive skills and grammatical training.

Intonation

EHIEP uses three basic intonation contours (level, rise, fall) and two compound contours (rise fall, fall rise), which are made up of the three basic contours. An additional final fall (for discourse final utterances) or a final rise (often used to signal uncertainty) can also be attached to the end of a phrase. There are, of course, many other nuances to the intonation system, but that set seems to get learners connected to the important, basic forms, providing a solid basis for future work. (An advanced, "Expressiveness" module contains additional intonation-based features that are more discourse dependent.)

Rhythm grouping

Groups of one to seven syllables with one prominent syllable, are targeted and practiced. The rationale for the maximum number of syllables allowed is based, at least in part on research and experience in the limits of learner production groups. (Up through intermediate level, seven syllables is about all learners can manage without taking a break!) That involves identifying and haptically anchoring (with PMPs) the strongest, stressed syllable in each rhythm group.

Conversational rhythm

Based on the same set of 1 to 7 syllable groups or feet, conversational rhythm is represented using two different sets of PMPs by the overall, relatively regularly spaced pattern of feet in a clause or sentence.

Discourse features

After PMP's are introduced to learners, they have the chance to practice the structures in short conversations called "two by sixes" which are six turns each practiced in pairs. These conversations give learners the chance to practice pronunciation at a higher discourse level. Discourse features that might arise out of this are final falls (mentioned above in the intonation section), contrastive stress, discourse final lengthening and conversational rhythms that go between speakers and not just within the utterance.

Consonants

A dozen or so consonants that typically carry a high functional load for achieving basic intelligibility are addressed in optional mini-modules.

EHIEP IN THE CLASSROOM AND BEYOND

This section discusses two features of the EHIEP system that have been shown to be consistently effective in a second language/ESL learning context, plus a brief, informal observation as to the positive impact that haptic learning and teaching has had on a non-native instructors.

Classroom Correction

The fourth author has implemented the EHIEP system and haptic classroom correction principles in advanced seven-week long academic preparatory courses at a postsecondary institution. The course syllabus covered common academic components such as interactional strategies, a survey assignment, a debate, a final presentation, as well as vowels, consonants, rhythm, and intonation.

Students were introduced to a new pedagogical movement pattern (PMP), given opportunity to practice it during the week, and then reported back on difficulties, results and insights gained.

The class consisted primarily of Asian and Middle Eastern students, many of whom faced typical challenges in distinguishing – both receptively and productively – between tense and lax vowels. Learning and experiencing the lax and tense vowel PMPs in class provided students not only with a haptic anchor but also with a visual picture of the difference in vowel positioning, established as a visualized matrix resembling the IPA vowel chart, filling the visual field in front of them--a standard feature of HICP work. In terms of correction, the instructor used the vowel PMPs extensively, during regular class work and discussion to give feedback and to correct students' pronunciation of words, particularly new vocabulary whenever necessary. Seeing, doing and experiencing these vowels predictably resulted in frequent "Aha!" responses. Pronunciation diaries included consistent reports of awareness of "corrected" and "to be corrected" vowels in spontaneous speaking as well.

Rhythmic Feet Fight Club

"The Rhythmic Feet Fight Club" was also used in a seven-week long intermediate speaking course. Students were first taught to parse text and to identify focal stress. For this particular process, basic guidelines based on Gilbert's *Clear Speech* (2012) were used. Once students were able to apply these general guidelines to fixed text, they were then taught to hold a tennis or golf ball in one hand, or sometimes even putting on boxing gloves, to attend to focal stress and experience the rhythm of the English language using "boxing-like" movement and touch. (See HICPR (2012) blog for example video.)

Once students were introduced to the Fight Club, the technique was later utilized in a variety of speaking tasks or contexts, not as a planned intervention but as "somatic noticing," implemented when focus on conversational rhythm or perhaps a complex idiomatic phrase was appropriate. Students often reported that this particular protocol helped them feel the rhythm of the language when they speak. In fact, it was observed that if students practiced the Fight Club systematically for approximately 5-10 minutes, about three times a week on their own, their overall fluency and their ability to speak rhythmically often improved noticeably within a few days--occasionally even overnight!

Non-native instructor identity

In a graduate, applied phonology seminar at a postsecondary institution, teachers-in-training enrolled in the course, learned, practiced and demonstrated most of the EHIEP protocols as part of their final course assessment. Learning and experiencing these haptic protocols and PMPs has proven particularly beneficial and empowering for the non-native speakers.

One student from Korea, for example, was very quiet and shy at the beginning of the program. From her perspective, the haptic work contributed substantially to a remarkable transformation that took place in terms of her identity, confidence and oral production. In one of her weekly reflective papers, she explained that both the warm-up and intonation PMPs, which she practiced daily, were especially helpful for developing her confidence and expressiveness. Both the instructors and the classmates' observations confirmed the student's report. She even did an impressive, expressive and well-received presentation at a provincial TESL (BC TEAL) conference.

CONCLUSION

It is, of course, nearly impossible to adequately represent in text form, as we have attempted here, what is obviously a very experiential process. Even simply observing EHIEP instruction passively without "dancing" along with the model and students is only enough to give one a preliminary felt sense of the process. What is being taught in terms of linguistic targets in the haptic-integrated format is not in any sense "new." How it is taught is, however, and especially the focus on embodiment as a balance to contemporary, highly cognitive instruction holds real promise. The particular efficacy of haptic engagement in integrating the senses, well established in general "haptics" research, should prove to be an invaluable resource for pronunciation teaching not only in enabling more effective presentation and correction in general instruction but also in working with the integration of sound change into spontaneous speaking.

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