

[Articles (論説)]

Is a Native-like Accent in a Foreign Language Achievable? Examining Neurological, Sociological, Psychological, and Attitudinal Factors

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Abstract

This paper examines the neurological, sociological, psychological, and attitudinal factors related to the debate on whether or not it is possible to achieve a native-like accent in a foreign language. The first part of this paper examines the alleged biological or neurological constraints that are claimed to prevent the attainment of a native-like accent in a foreign language. Examination of the evidence overwhelming supports the existence of lifetime neuroplasticity and offers no support for such alleged constraints. The evidence is particularly strong for the existence of significant neuroplasticity in relation to foreign language acquisition. The second part of the paper discusses the social, psychological, and attitudinal factors that actually determine success in obtaining a native-like accent in the target foreign language. The conclusion is that the main reasons for individual differences encountered in foreign language acquisition, including accent, among people of all ages, are related to identity, emotions, motivation, openness, flexibility, and other psychological and affective factors.

Introduction

This paper focuses on the most salient factors related to the potential achievement of a native-like accent in foreign (additional) languages. From a perspective developed from extensive cross-disciplinary literature reviews and original quantitative research (Keeley, 2013, 2014) as well personal experience functioning in multiple and diverse languages in numerous domains, I argue that even when one learns an additional language as an adult it is possible to successfully speak with a native-like accent in the target language. Success depends on many factors that vary over time and situations, so there is bound to be variation in how closely the adult learner/user passes for a native speaker at any given time. These factors interact with one another and are cognitive, sociological, psychological, and attitudinal in nature.

During the past 26 years I have had the opportunity to observe Chinese students at a Japanese university where our classes are conducted in Japanese. Unlike English, Japanese does not have the status of being an international language. Therefore, most foreign students come to Japan to study Japanese at

language schools before entering the university so acquisition is almost always through immersion. Over the years, the number of students from Mainland China attending my classes has been increasing. There are Chinese students who sound like a Chinese speaking Japanese the moment a few words leave their mouth, while there are those who at times sound like native speakers of Japanese. It is not so much a matter of knowing grammar and vocabulary; rather it is more a matter of accent and body language. Nevertheless, usually those Chinese who are more successful at mimicking Japanese native accents and body language make less grammatical errors and demonstrate a richer active vocabulary.

Assimilation of a foreign culture in terms of acceptance (not feeling awkward or estranged when functioning in the foreign culture and corresponding language) takes the study of the corresponding foreign language beyond meta-linguistic knowledge (understanding of semantics, grammatical rules, syntax, phonology, etc.) to a level of acquisition that enables a high level of performance in the target language. In other words, in such a state it does not feel unnatural to participate in the culture and speak the language. There is no feeling of being a traitor to your identity associated with your mother tongue and the culture of your upbringing. Thus, I hypothesized that the social, psychological, and affective (SPA) factors of individuals who demonstrate successful cultural adaptation (living, working, or studying and functioning in a foreign culture) may also facilitate acquiring a foreign language in the terms of high-level performance defined as approximating that of a native speaker in oral communication. Oral communication is specified because it requires interaction with others, usually native speakers of the target language. In such interaction our emotions are engaged to a much greater extent compared to using the language in another form that does not involve direct on-the-spot communication, such as reading and writing. This hypothesis was strongly supported by a quantitative study carried out with Chinese students at Kyushu Sangyo University in Japan (Keeley, 2014, 2013).

SPA factors represent three broad but sometimes overlapping categories of factors. We can hypothesize that some factors are related to how the learners relate to the social environment in which the learning takes place (social factors), some factors are related to the individuals' psychological characteristics, and finally, there are differences in affective dynamics (generally associated with emotions) such as feeling, mood, manner, attitude and so on. These affective factors, in a broad sense, are subsumed under psychological factors. However, in contrast to what might be considered psychological traits, affective factors are

generally seen as being more volatile. Affective factors can be viewed broadly as psychological states related to underlying psychological traits. Ellis (1994: 483) stated, "Learners' affective factors are obviously of crucial importance in accounting for individual differences in learning outcomes. Whereas learners' beliefs about language learning are likely to be fairly stable, their affective states tend to be volatile, affecting not only overall progress but responses to particular learning activities on a day-by-day and even moment-by-moment basis."

Arnold (1999) defines affect in terms of aspects of emotion, mood or attitude that condition behavior. Dickinson (1987:25) describes it as being concerned with the learner's attitude towards the target language and users of it, as well as the learner's emotional responses. According to Hurd (2008:219), "The cognitive and metacognitive domains of language learning have been a dominating force on the SLA research agenda for at least three decades, while affective considerations have attracted less interest. Inspired by the work of Gardner and Lambert (1972), Gardner and MacIntyre (1993), Horwitz et al. (1986), and others, the 1990 s, however, witnessed a growing interest in affect which has continued to gather momentum." Hurd goes on to assert that affect and cognition are increasingly seen as multidimensional overlapping and interdependent constructs. Arnold and Brown (1999:8) contend that "The way we feel about ourselves and our capabilities can either facilitate or impede our learning ... and underline the difficulty of isolating the cognitive, for at many points affect inevitably enters the picture." Subsequently Arnold (1999:1) claimed, "Neither the cognitive nor the affective has the last word, and, indeed, neither can be separated from the other."

There has been and continues to be a lively debate between researchers in second language acquisition (SLA) concerning the degree that SPA factors affect ultimate attainment in SLA. Some researchers such as Long (1990) have proposed that maturational constraints, in the form an often ill-defined critical period hypothesis (CPH) for second language acquisition (SLA), negate the importance of SPA factors. In contrast, research carried out by such scholars as Brown (1980), Schumann (1997, 1975), Schumann and Wood (2004), and Taylor (1974) indicates that success or failure in SLA is largely the result of these SPA factors, with learner age being irrelevant or only indirectly relevant, in that children differ in these areas. This paper does not address all the arguments concerning the CPH, however, the evidence for the non-existence of age-based insurmountable biological (in particular, neurological) limitations to developing native-like accent/speech is presented. The first part of the paper address alleged biological or neurological constraints and the second part discusses the SPA factors that

actually determine success in obtaining a native-like accent in additional (foreign) languages. The conclusion is that the main reasons for individual differences encountered in foreign language acquisition, including accent, among people of almost all ages are related to identity, emotions, motivation, openness, flexibility and other psychological and affective factors as well as knowledge, awareness and experience about how to learn (metacognitive knowledge). The apparent age related differences are mainly a result of age-related differences in relation to these SPA factors and differences in foreign language use situations.

Part I: Alleged Biological/Neurological Constraints

Lifetime Neuroplasticity or Maturational Constraints ?

Clarifying the degree of malleability of the brain over the human lifespan is an important part of studying foreign language acquisition. The critical period hypothesis (CPH), the assertion that once you pass a certain age the ability to acquire a foreign language is limited by insurmountable developmental neurological limitations, can be used by frustrated learners/users as a rationalization for non-success. Though age can be a factor in acquiring additional languages, the concept of insurmountable developmental neurological limitations is a substantial fallacy based on a limited understanding of neuroplasticity or the malleability of the brain at any age. In fact, Pascual-Leone et al. (2005:378-379) declare that plasticity is an intrinsic property of the nervous system retained throughout a lifespan and it is not possible to understand normal psychological function or the manifestations or consequences of disease without invoking the concept of brain plasticity. In addition they stated,

The brain, as the source of human behavior, is by design molded by environmental changes and pressures, physiologic modifications, and experiences. This is the mechanism for learning and for growth and development—changes in the input of any neural system, or in the targets or demands of its efferent connections, lead to system reorganization that might be demonstrable at the level of behavior, anatomy, and physiology and down to the cellular and molecular levels. Therefore, plasticity is not an occasional state of the nervous system; instead, it is the normal ongoing state of the nervous system throughout the life span. A full, coherent account of any sensory or cognitive theory has to build into its framework the fact that the nervous system, and particularly the brain, undergoes continuous changes in response to

modifications in its input afferents and output targets ... We should not therefore conceive of the brain as a stationary object capable of activating a cascade of changes that we call plasticity, nor as an orderly stream of events driven by plasticity. Instead we should think of the nervous system as a continuously changing structure of which plasticity is an integral property and the obligatory consequence of each sensory input, motor act, association, reward signal, action plan, or awareness. In this framework, notions such as psychological processes as distinct from organic-based functions or dysfunctions cease to be informative. Behavior will lead to changes in brain circuitry, just as changes in brain circuitry will lead to behavioral modifications.

The previous prevailing dogma in neuroscience was that the adult human brain was essentially immutable, hardwired, and fixed in form and function, so that by the time we reach adulthood we were pretty much stuck with what we had. There had been recognition of the fact that the brain could create (and lose) synapses, the connections between neurons that encode memories and learning. However, there was a misconception that when genes and development dictate that one cluster of neurons serve a specific function there can be no change in this configuration over a lifetime (Begley, 2007). This view of the brain has had profound ramifications in relation to such things as rehabilitation of adults suffering from brain damage, fixing the pathological wiring that underlies psychiatric diseases, and important for our discussion here, foreign language acquisition – especially in relation to distinguishing between unfamiliar sounds of foreign languages and mimicking native accents. Not understanding neuroplasticity in relation to foreign language acquisition has led to mistaken beliefs in alleged neurological limitations affecting the adult brain. Below is a contrast of the old paradigm of the brain with the new paradigm, which has emerged with growing evidence of brain plasticity.

Old: *The brain is fixed and finite.* You are born with a finite number of brain cells with fixed pathways and you cannot grow your brain at a cellular level.

New: *The brain grows new neurons.* The first evidence of adult mammalian neurogenesis in the cerebral cortex was presented by Joseph Altman in 1962. There was not much further investigation until Eriksson et al. (1998) demonstrated neurogenesis in the adult human hippocampus. In addition, Lillard and Erisir (2011) review evidence of that helped to cement the fixed-brain idea into the accumulated wisdom

of psychology and examine counterevidence: post-juvenile neuroplastic changes associated both with learning and with drastic changes in sensory and motor experience.

Old: *Brain regions are dedicated to specific functions and this structure does not change.* Certain parts of the brain have certain functions that can only be processed in that region.

New: *Brain regions are flexible.* Studies have demonstrated that while regions do tend to specialize in dedicated ways, this is not absolute. The human brain is capable of rewiring and reallocating its 'real estate' in ways that the old paradigm held were impossible (e.g., Begley, 2007; Doidge, 2007; and Merzenich, 2013).

Old: *Once mature, the brain declines steadily.* Brain functioning peaks sometime in early adulthood, and then begins a slow inexorable decline.

New: *As the brain ages, functionality may decline, maintain, or even improve.* While it is true that processing speed generally slows with age, it is possible to revitalize older brains through 'mental training or workouts' to produce functioning characteristics that closely resemble or even exceed those of younger brains (e.g., Smith et al., 2009; Willis et al., 2006). Certain types of functioning improve with age such as integrated functioning, and flexible problem solving (Anderson et al., 2008).

New: *We can impact how our brain ages.* Perhaps the most profound conclusion in recent years is the notion that there are things we can do to maintain our brain and potentially protect it from certain types of cognitive decline (National Institute on Aging).¹

Thus, neuroplasticity (or brain malleability) refers to the brain's ability to reorganize itself by forming new neural connections throughout life (Rakic, 2002). Basically, neuroplasticity occurs in the brain in three categories: (1) at the beginning of life when the immature brain organizes itself; (2) in the case of brain injury to compensate for lost functions or to maximize remaining functions; and (3) through adulthood whenever something new is learned and memorized.²

Concerning the first category of neuroplasticity, the brain develops most significantly during the first few years of life, but it is important to remember that

¹ <http://www.nia.nih.gov/alzheimers/publication/preventing-alzheimers-disease/search-alzheimers-prevention-strategies> Accessed Jul. 20, 2015.

² <http://sharpbrains.com/blog/2008/02/26/brain-plasticity-how-learning-changes-your-brain/> Accessed Jan. 19, 2016.

the brain remains plastic (changeable) throughout life. Often people interpret the rapid changes in the structure and size of the brain during the early years of life as an indication that the brain becomes rigid and inflexible after this period. Though it is easiest to shape and affect brain development in the early years, the brain changes and adapts to suit its environment throughout life.³ Importantly, Bruer (1999) shows that most learning is not subject to critical-period constraints, not confined to windows of opportunity that slam shut. He points out that in recent years developmental scientists eschew the use of the term '*critical*' altogether and talk instead only about *sensitive periods*. "*Sensitive period* is intended to carry the implication of longer, ill-defined periods, when specific kinds of experiences have particularly pronounced effects on development, still allowing that these effects might be modifiable or reversible by subsequent usage."⁴

Concerning the second category in which there is brain injury, neuroplasticity allows neurons in the brain to compensate for injury and disease and to adjust their activities in response to new situations or to changes in their environment.⁵ Brain reorganization takes place by mechanisms such as 'axonal sprouting' in which undamaged axons grow new nerve endings to reconnect neurons whose links were injured or severed. Undamaged axons can also sprout nerve endings and connect with other undamaged nerve cells, forming new neural pathways to accomplish a needed function.⁶

Concerning the third category related to neurological changes and learning, an intriguing experiment was carried out at Harvard Medical School lab where volunteers were instructed to learn and practice a little five-finger piano exercise (Pascual-Leone, et al., 2005). They were instructed to play as fluidly as they could, trying to keep to the metronome's 60 beats per minute. Every day for five days, the volunteers practiced for two hours. At the end of each day's practice session, they were subjected to a transcranial magnetic stimulation (TMS) test that allows scientists to infer the function of neurons. The TMS mapped how much of the motor cortex controlled the finger movements needed for the piano exercise. After a week of practice, the stretch of motor cortex devoted to these finger movements greatly expanded (Pascual-Leone, et al., 2005).

Having another group of volunteers merely think about practicing the piano exercise extended the experiment. They played the simple piece of music in their

³ Pascual-Leone, Amedi, Fregni, & Merabet (2005)

⁴ <http://blogs.kent.ac.uk/parentingculturestudies/files/2011/09/Special-briefing-on-The-Myth.pdf>

⁵ http://web.stanford.edu/group/hopes/cgi-bin/hopes_test/neuroplasticity/ Accessed Feb. 14, 2016.

⁶ Ibid.

head, holding their hands still while imagining how they would move their fingers. The scientists compared the TMS data of the two groups and discovered the ability of mere thought to alter the physical structure and function of our gray matter in the brain. The TMS revealed that the region of motor cortex that controls the piano-playing fingers also expanded in the brains of volunteers who imagined playing the music, just as it had in those who actually played it (Pascual-Leone, et al., 2005). The discovery showed that mental training had the power to change the physical structure of the brain. Mental simulation of movements activates some of the same central neural structures required for the performance of the actual movements (Roland et al. 1987, Decety & Ingvar 1990).

Foreign Language Acquisition and Neurological Change

Osterhout et al. (2008) studied second language learning and changes in the brain. They investigate how modern brain-based methods can be used to discern some of the changes that occur during L2 learning (L2 indicating second language). According to the authors' conclusions in the paper, their results suggest that the brain of an adult second-language learner is a highly dynamic place, even during the earliest stages of L2 learning. They employed modern methods that are capable of revealing at least some of these changes. In particular, the methods used in their study are sensitive to changes in the brain's electrical activity, changes in the location of this activity within the brain, and changes in the structure of the learners' brains.

The authors comment that at first glance, their results might seem surprising since a large amount of literature has supposedly shown that the ability to learn a language seems to degrade with age. Their learners were not young children but instead were young adults. In their discussion of the critical period hypothesis (CPH) they note that the causes of age effects on L2 proficiency are controversial, and refer to two frequently cited theoretical studies. One is the study by Johnson and Newport (1989) and the other is Kuhl (2004). The work of Johnson and Newport as well as that of Kuhl implicate the same underlying cause for age-related effects on language learning, namely, a reduction in neural plasticity that degrades the ability to learn and retain new linguistic information. However, Osterhout et al. (2008) assert that despite the popularity of this view, there is little direct evidence to support it. Furthermore, they note that the CPH also seems to be inconsistent with accumulating evidence that the brain remains remarkably plastic throughout one's lifetime.

It is true that early life neurological changes include large-scale axonal and

dendritic extensions and reorganization while neuroplastic changes in adulthood typically are at a smaller scale, involving changes to the synapse, unmasking, the addition and subtraction of dendritic spines or axons terminal boutons, and adjustments to myelin, changing the speed of neural conductance. However, there are three exceptions to the principle of smaller scale adult changes: (1) widespread changes in the cortical fields, which result from the combined effect of many smaller changes; (2) adult neurogenesis, which also brings new axons and dendrites; and (3) axon growth in response to extreme changes in sensory and motor input. It should be noted that changes in early life could result from passive exposure, although attention and vigilance may facilitate neuroplastic change. Later in life attention paid to external stimuli and the meaning of the stimuli to the organism are key to neuroplastic change (Lillard & Erisir, 2011). Thus, in the case of foreign language learning, as an adult, the amount of attention paid to input and the meaningfulness of input can account for significant differences in neurological change and subsequent performance in the target language.

The importance of attention and meaningfulness of stimuli in determining neurological change has been demonstrated clearly in the experiments of Michael Merzenich and his colleagues with adult monkeys. Mental activity affects and perhaps enables neuroplasticity. Neuroplasticity occurs when the mind is in a state of attention and focus. In one experiment reported by Recanzone, Schreiner, and Merzenich (1993) the neurological changes were reward dependent. There were two sets of monkeys both receiving auditory stimulation along with stimulation on the fingers. The monkeys that were rewarded for indicating changes in the auditory stimulation only demonstrated neurological change (cortical map expansion) in the area of the somatosensory cortex, the neural circuitry involved in processing the auditory stimuli. Monkeys rewarded for indicating changes in the stimuli to the fingers only demonstrated neurological change for the neural circuitry involved in processing stimuli to the fingers.

Thus, we can clearly see the importance of attention and meaningfulness (or in a sense, motivation) in the process of learning. The results indicate that the brain is going to restructure along the lines of what is focused upon, what receives attention and mindfulness, and often on what is in some shape or form rewarding. This observation supports the significance of noticing in learning new languages. By noticing I mean being attentive and aware of all aspects of the language you are learning. This means noticing how words may be related to those of languages you already know, for example, noticing the semantic boundaries of words (e.g., differences in idiomatic expressions that do not allow

for literal translation), noticing the syntax, and of course noticing the phonetic structure of the language and prosody. From a cultural or socio-linguistic standpoint it means noticing the hierarchical structure in the society and what type of speech (or register) is appropriate for what type of situation.

Hesling et al. (2012) examined brain mechanisms underlying the processing of connected prosodic speech comprehension in moderately- and highly-proficient late second language learners. A main finding was that L1 (native language) and L2 (additional language)-connected prosodic speech stimuli were found to share the same neural network encompassing both the dorsal and ventral pathways in highly-proficient L2 subjects. Furthermore, a positron emission tomography (PET) study of a subset of late bilinguals who managed to become extremely fluent in their L2 (second language) demonstrated that the cortical representations of L1 (first language) and L2 were indistinguishable from and similar to those of native speakers (Perani et al., 1998). In comprehension tasks, the ultimate level of proficiency in L2, more than the age of acquisition, seems to predict whether the cortical representations of L1 and L2 match. This evidence clearly contradicts the crystallization hypothesis, which predicts that the later a second language is learned, the more the cortical representations of the second and the first languages will differ. It is not so much of an age-dependent phenomenon and more of a level-of-attainment phenomenon. This is also confirmed by research carried out by Leonard et al. (2011) that clearly demonstrates it is the lack of proficiency rather than secondary acquisition order that determines the recruitment of non-classical areas for word processing. In other words, the more fluent a person is in an additional language, the more word processing in the brain resembles that of the mother tongue.

Furthermore, the idea that imprinting of a language during the very early stages of life is crucial to level of attainment in an additional language (what researchers such as Kuhl (2004) mistakenly conclude) is clearly false. A study was carried out using fMRI by Ventureyra et al. (2004) on Korean adults who had been adopted at a young age by French families. These adults became fluent in their second language and report no recollection of their native tongue. Unlike young immigrant children, they had no connection to their mother tongue after moving to their new country. Their second language completely replaced their first language in neurological terms. The results of their study complement studies of recovery from large left hemisphere lesions by showing that this form of plasticity is not limited to exceptional situations of brain insult or intractable epilepsy, but that it also occurs in the normal brain.

Mechelli et al. (2004) also conclude that the degree of this structural reorganization in bilinguals is correlated with their second language performance. They note that their results are consistent with growing evidence that the human brain changes structurally in response to environmental demands. The size of and shape of areas of the brain respond to how they are used. Maguire et al. (2000) demonstrated navigation-related structural change in the hippocampi of London taxi drivers. London taxi drivers take an exam demonstrating ability to navigate London's complicated grid. It usually takes about three years of intensive training and twelve attempts to pass the exam. The hippocampi (one on each side of the brain) play a crucial role in memory. Drivers with forty years experience had more grey matter (which contains the neural-cell bodies) in their posterior hippocampi (an area important for spatial memory) than did drivers with just a few years experience. Once the cab drivers retired their hippocampi slowly shrunk back to more average sizes.

There is also evidence that restructuring or the creation of grey matter is not just a result of long-term language acquisition. Kwok et al. (2011) concluded that the adult human brain is capable of new rapid growth when exposed to stimuli similar to what babies experience as they are learning from their environment. In their study colored cards (2 shades of green and 2 blue) were shown to 19 adult volunteers, each with nonsensical names. The participants were then asked to accept the new words as actual descriptors for the new colors and to memorize them so that they could reply with the correct color name at a later date and to match them when asked. The subjects practiced over a period of three days with five sessions each day with a total time of less than two hours. After this experience all the subjects underwent fMRI scans and it was revealed that new grey matter had formed in the left hemisphere of their brains. However, it is not yet clear if the new matter was comprised of new neuron formation or if they were simply dendrites (branches). This is the first experiment to demonstrate such rapid increase of grey matter. The inducement of this rapid increase is credited to the method they used that is claimed to simulate the rapid learning of word meanings by children. This is supported by the fact that the areas of the brain that grew new matter were parts of the brain known to process color and vision, and more importantly, perception.

It is evident that the structure of the brain changes as a function of learning and the degree of the change is associated with the level of proficiency achieved, whether it be learning to navigate the streets of London or learning and functioning in an additional language. In light of this observation, it is prudent to

propose that learning cognate languages, languages with similar phonetic composition, and/or languages that are similar in structure should require less reorganization and increase in grey matter compared to non-cognate languages with dissimilar structures and phonetic composition such as English and Thai. This assertion is supported by research on neuroanatomical markers of speaking Chinese. Crinon et al. (2009) identified regional structural differences in the brains of native speakers of a tonal language (Chinese) compared to non-tonal (European) language speakers. The investigation involved 31 native Chinese speakers, 7 English speakers who had learned Chinese in adulthood, and 21 European multilinguals who did not speak Chinese. The results identified two brain regions in the vicinity of the right anterior temporal lobe and the left insula where speakers of Chinese had significantly greater gray and white matter density compared with those who did not speak Chinese. Importantly, the effects were found in both native Chinese speakers and European subjects who learned Chinese as a non-native language in adulthood, illustrating that they were language related effects and not ethnicity effects. On the basis of prior studies, they suggested that the locations of these grey and white matter changes in speakers of a tonal language were consistent with a role in linking the pitch of words to their meanings.

As seen in some of the studies discussed above, arguments for a critical period for SLA based on the assumption of age-related loss of brain plasticity are weak. Thomas (2012) points out that research with a range of species demonstrated that periods of heightened plasticity are a major phenomena in behavioral and brain development, but that periods of plasticity do not end so abruptly and are not as irreversible as first thought (Bolhuis, 1991; Michel and Tyler, 2005; Thomas and Johnson, 2008). The term *sensitive period* was therefore preferred. The concept of sensitive periods predominantly arises from work on perception, not higher cognition (i.e., skills such as literacy, numeracy, and reasoning). For example, there is little current evidence that the brain's plasticity for learning to read reduces with age.

Johnson (2005) offered three categories of explanation for the end of sensitive periods, in other words, for why functional plasticity should reduce. The first category is based on termination arising from internal factors controlled by maturation or an external environmental trigger. This category would not apply to continued human language acquisition commencing from infancy since it is normally an ongoing process throughout the human life even in the case of monolinguals. The category is mainly based on observations of non-human animal

development. The second category maintains that learning is self-terminating, in that the system drives itself into a representational state where it is no longer responsive. It is true that humans often allow their learning in various areas to be self-terminating. However, the important fact is that concerted effort coupled with the appropriate related awareness overcomes this self-termination. The third category proposes that underlying plasticity does not actually reduce, but the constraints on plasticity (such as environmental inputs) become stable.

In relation to Johnson's third category, Thomas (2012) proposes that a subtle loss of plasticity can be caused by a process of assimilation. He states,

The formation of stable representations of one set of information stops the system from perceiving new, different information because that information is simply assimilated via top-down processes into old information. If the system cannot perceive changes in the world, it cannot adapt to them. In this case, even though the system has not lost intrinsic plasticity, it will appear to have done so because it cannot detect the changes to which it should respond. (p. 6)

A perfect example of this in learning foreign languages is the lack of recognition and production of sounds in a foreign language that are not critical to meaning in the languages known by the learner. However, with proper awareness and effort this obstacle is far from insurmountable. Adults can learn to distinguish between sounds not important in the language(s) they speak. There are many reasons why an accent may sound like a foreign accent such as correct pronunciation of individual words, the quality of phonetic entities, prosody (rhythm, stress, intonation), etc. In relation to phonetic differences between the learner's native language (or other languages that the learner successfully pronounces) and the target foreign language, the ability to distinguish and produce sounds in a new target language that do not have distinct equivalents in one's language repertoire is an important factor. In order to understand variations in accents and pronunciation among fellow speakers of your native language there are neural mappings that subsume all the related sounds that are not important in determining meaning.

This phenomenon of neural mapping subsuming other neural cortex geography is not restricted to language. Merzenich et al. (1996) have described what they call 'brain traps,' that occur when two brain maps, meant to be separate, merge. One example they cite is that if monkey's fingers were sewn together and so forced to move at the same time, the corresponding neural maps for the separate fingers in the brain would fuse, because their neurons fired

together and hence wired together. This also occurs when a musician uses two fingers together frequently so when the musician subsequently tries to move only one finger both fingers move. Merzenich claims that the same phenomenon occurs when sounds are not differentiated in a language. One common example is the difficulty of Japanese speakers in distinguishing the difference between *r* and *l*. Each time they are pronounced or not heard without distinction then the non-distinction is reinforced.

Since the basis of the problem is the absence of a differentiated auditory cortex for certain sounds, the solution is to seek to create differentiation by first introducing exaggerated differences that are noticeable. Thereafter, the sounds are normalized progressively as the subjects successfully differentiate the sounds. The process requires that the speakers always pay close attention throughout the exercises, something not normally done when listening to normal speech. Merzenich concludes that it is possible to teach anyone to speak an accentless second language as an adult with proper training (Merzenich et al., 1996). Iverson (2005), of the UCL Center for Human Communication, echoed the same conclusion at the “Plasticity in Speech Perception 2005” workshop.⁷ He asserted that the our ability to hear and understand a second language becomes more and more difficult with age, but the adult brain can be retrained to pick up foreign sounds more easily again. It was also noted that this observation builds on an important new theory that the difficulties we have with learning languages in later life are not biological and that, given the right stimulus, the brain can be retrained.

This same phenomenon can be observed between many languages. In the case of a Korean speaking Japanese, it is not a problem of not being able to distinguish between the sounds represented by *ga* (が) and *ka* (か) in Japanese. Koreans also produce and distinguish these two sounds when speaking Korean. However, the phonetic rules of Korean never allow for the ‘*ga*’ sound to be the first sound of a word. On the other hand, Korean phonetics requires that the ‘*ka*’ sound mutate to ‘*ga*’ when it is preceded by another sound in a word (in other words when it is not the first syllable in a word). Thus, when saying the Japanese word for university (大学-*daigaku*), Koreans can easily imitate the Japanese pronunciation. However, many Koreans do not pronounce the word for student (学生-*gakusei*), in which the second sound of in the word university comes first, like Japanese native speakers pronounce it. Instead they say what sounds like ‘*kakusei*’.

⁷ International Speech Communication Association (ISCA) workshop on plasticity in speech perception held by UCL at Beverage Hall, Senate House, 15th - 17th June, 2005.

There are Koreans I know who have been in Japan for more than 20 or 30 years who still fail to pronounce the sound 'ga' like Japanese do when it is the first syllable of a word. Conversely, there are Koreans that have only been in Japan for a few years and imitate the Japanese pronunciation without difficulty. When observing the behavior of both groups in interaction with Japanese, I can sense a different affective relationship between the individuals from these two groups and the Japanese. The ones who do imitate Japanese pronunciation seem to express a greater affinity towards Japanese people in their behavior. This is evident in their willingness to imitate Japanese patterns of non-verbal communication (for example body language) when interacting with Japanese. They appear to have a more developed sense of a 'Japanese self' coexisting with their identity as a Korean. Their willingness to imitate appears to be accompanied by the development of the ability to notice the differences. When I bring this subject up with Koreans who do correctly imitate Japanese pronunciation they are invariably aware of how many other Koreans do not and confirm that they also sense a difference in affective stance of these Koreans towards the Japanese. As discussed above, recent neurological research indicates that attention, mindfulness, and noticing are important in the process of developing neurological change – learning.

Part 2: Social, Psychological, and Attitudinal Factors Determining Accents

Accent is a Choice

Through our accent(s) we reveal affiliation with a specific culture(s) and groups defined at various levels: national, regional, ethnic, social, educational, etc. A foreign accent is ultimately a conscious and/or subconscious choice that is strongly tied to emotions related to identity. Of course there are neurological explanations for the lack of recognition and production of sounds in a foreign language that are not critical to meaning in the languages known by the learner as described above. However, all these limitations can be overcome given motivation and effective training, or even without explicit training when one reaches a certain threshold of affinity towards the target language group and is flexible in allowing for the creation of additional linguistic and cultural identities. The ability to imitate native accents is influenced by attitudes towards the target group and target language. Actually, it is more willingness than ability. It is also modulated by emotional state and general mental state at the time one is speaking

The process of adjusting to the prosody of languages is greatly facilitated by experience with multiple diverse languages and dialects. Every language or dialect has distinct prosodic characteristics that give the language or dialect its rhythm. Prosody consists of intonation, stress, and isochrony, which is the postulated rhythmic division of time into equal portions in a language into three alternative ways. English and Dutch are examples of stress-timed languages in which the temporal duration between two stressed syllables is equal. Spanish and Italian are syllable-timed languages in which the duration of each syllable is equal. Finally, Japanese is an example of a mora-timed language in which the duration of every mora (the unit of time equivalent to the ordinary or normal short sound or syllable) is equal. Heavily accented speech in a foreign language is often the result of not being flexible when it comes to prosody - forcing your mother-tongue prosody on the language you are learning. Many people hold on to the prosody of their mother tongue when they learn foreign languages and they sometimes become multilingual with an orientation toward a mono-linguistic/cultural identity.

Jacobsen (2008) hypothesized that subjects who want to blend into the target community more will also try, consciously or unconsciously, to minimize their foreign accents, while subjects who are less concerned with being accepted as legitimate members of the target ethnic community will do so to a lesser degree. This hypothesis was investigated in a small-scale study of ethnic Russians in the USA focusing on the analysis of the relationship between the degree of L2 accent, or phonological proficiency, and self-identification and on the expression of this analysis in individual variation patterns. In the conclusion Jacobsen (2008:16) states;

Phonological proficiency in this study was constrained to objective evaluation of subjects' accents in English and did not take into consideration the length of English instruction or the age of first exposure to English. The degree of each subject's accent was compared to the ethnic self-identification of each subject, and a clear pattern indeed emerged. As accent signals foreignness more saliently than any other layer of linguistic knowledge, uncovering a connection between success in the acquisition of phonology and other factors is crucial for promoting our understanding of the effects of individual differences on second language acquisition. Clear interaction between the degree of target accent attainment and self-identification was indeed observed: subjects with higher proficiency and less accent in English tended to identify

themselves with the American culture and society to a greater degree than subjects with lower proficiency and greater accent.

A number of studies⁸ suggest that adults are in fact capable of attaining a native-like accent, which runs counter to the claims of a critical period hypothesis for additional language acquisition. Nikolov's study (2000) is particularly interesting in terms of her interpretation of the data (observations). Her study involved thirty-three successful language learners aged 20 to 70, all of whom had acquired their target language after puberty. Of these, twenty were of native speakers of various languages learning Hungarian and thirteen were of native speakers of Hungarian learning English. As judged by three groups of native speakers, six of the learners of Hungarian and five of the learners of English were either generally or often mistaken for native speakers. She observed that, "these successful language learners want to sound like natives, they share intrinsic motivation in the target language which is often part of their profession, or they are integratively motivated ... They work on the development of their language proficiency consciously and actively through finding chances for communicating with speakers of the target language, reading and listening extensively..." (p. 122). In summary, desire (or passion), integrative motivation, diligence, and effective use of opportunities to practice the target language were all important variables leading to success in the study.

Identity and Accent

"It's like everyone tells a story about themselves inside their own head. Always. All the time. That story makes you what you are. We build ourselves out of that story."

– Patrick Rothfuss, *The Name of the Wind*

The ability and tendency to identify with other human beings plays an essential role in the development and transmission of human culture as well as language acquisition (both primary and additional language acquisition). The first step in the process is the development of a self-concept in infants and viewing others as intentional agents. The latter ability usually occurs between nine to twelve months of age. Concerning the transmission of culture Tomasello (1999) wrote,

After they (*infants*) understand others as intentional agents like themselves, a whole new world of intersubjectively shared reality begins

⁸ Bongerts et al. (1997); Nikolov (2000); Bellingham (2000); Neufeld (2001).

to open up. It is a world populated by material and symbolic artifacts and social practices that members of their culture, both past and present, have created for the use of others. To be able to use these artifacts as they were meant to be used, and to participate in these social practices as they were meant to be participated in, children have to be able to imagine themselves in the position of the adult users and participants as they observe them. Children now come to comprehend how 'we' use the artifacts and practices of our culture – what they are 'for' ... this ability to see the self as one participant among others in an interaction is the social-cognitive basis for the infant's ability to comprehend the kinds of socially shared events that constitute the basic joint attentional formats for the acquisition of language and other types of communication. (p. 91)

Thus, we can view natural language as a symbolically embodied social institution that arose historically from previously existing social-communicative activities and not as some bizarre genetic mutation unrelated to other aspects of cognition and social life as envisioned by Chomsky (1980) and propagated by Pinker (1994).⁹

Language acquisition is also a process of identity construction and how a person sees him/herself in relation to the language being acquired and in relation to the speakers of that language along with their culture. Every time language learners interact in a foreign language, whether in the oral or written mode, they are engaged in identity construction and negotiation. Wegner (2000:239) commented, "Identity is not an abstract idea or label, such as a title, and ethnic category, or a personality trait. It is a lived experience of belonging (or not belonging). A strong identity involves deep connections with others through shared histories and experiences, reciprocity, affection, and mutual commitments." The languages we speak and how we speak them serve to define our linguistic and cultural identities. Everyone has a dialect and speaks with an accent. It is only when the accent and dialect have strong social and political status do people feel that they do not speak with an accent.

Norton (2000: 10) stated, "To invest in a language is to invest in an identity." Norton uses the term investment to describe the socially and historically constructed relationship of learners to the target language and how it relates to motivation for SLA. Norton's reason for re-conceptualization of motivation in this context is revealed in an interview with the author published in *The Language*

⁹ See Tomasello (1999) for a more detailed discussion of the evidence.

Teacher, June, 2002:

When we speak of the motivated or unmotivated student we tend to think of the student as having a unified, coherent, ahistorical identity that is unchanging across time and space. In this view, motivation is considered an immutable personality trait of the language learner. I have known students to be in one context motivated, in another context unmotivated. Theoretically, too, the notion of motivation does not capture the complexity of student identity – an identity that is often the site of struggle ... it struck me that there was a need for a more powerful construct to capture the complexity of student motivation ... I found this new language in the concept of investment ... investment is best understood in the context of a post-structural identity. When we invest in a second language, we desire a wider range of identities ... Investment, then, is not at fixed personality trait, but a construct that attempts to capture the relationship of the learner to the larger, changing, social world. We are encouraged to seek broader explanations for success or failure in language learning; we are encouraged to view the student as having a complex identity that is best understood in the context of wider social, historical, and economic processes. To invest in a language is to invest in an identity.

Language is so closely tied to identity that when someone does not look like he/she should speak with a certain accent (e.g., if a person of Pakistani origin speaks with a Scottish accent) people often become suspicious or at least want to find out why it is so. Ethnicity often leads to certain assumptions about language ability in various cultural and social environments. In Asia the native speaker of English is assumed to be Caucasian. In particular, native speakers of English with Asian ethnicity often face discrimination in hiring for positions teaching English in Asia (Kubota & Lin, 2009). I have lived in Asia all most of my life (mostly in Japan - 34 years). The fact that I am 191 cm blonde Caucasian often leads people to often assume that I do not speak the local language. So whether I am in Japan, China, Thailand, Laos, Vietnam, Korea, Indonesia, or Malaysia I must constantly establish that in fact I do speak the local language before the people I am addressing will speak their mother tongue in a natural manner (no pidginization for the supposed benefit of the foreigner or resorting to broken English). Additionally, both my sons are native speakers of Japanese. Though they do have some slight Asian features inherited from their Japanese mother, their overall appearance and names belie the fact that Japanese is their mother tongue.

However, their speech and mannerisms tend to establish immediate legitimacy as a native speaker of Japanese as long as the interlocutor is open to reading the signals (sometimes people do not see with their eyes nor listen with their ears).

In today's modern world children are exposed to a wide variety of speech as they acquire their first language (television programs, videos, and all other sorts of audio/visual media). Nevertheless, children acquire a particular style that is emotionally significant for them. McGilchrist (2009) stressed the importance of empathetic identification in the process of acquiring language,

A child does not acquire the skill of language, and more than the skill of life, by learning rules, but by imitation, a form of emphatic identification, usually with his or her parents, or at any rate with those members of the group who are perceived as more proficient. I have suggested that such identification involves an (obviously unconscious) attempt to inhabit another person's body, and this may sound somewhat mystical. But imitation is an attempt to be 'like' (in the sense of experiencing what it is 'like' to be) another person, and what it is 'like' to be that person is something that can be experienced only from the inside. Not just the acquisition of language, but the everyday business of language involves such inhabiting. Communication occurs because, in a necessarily limited, but nonetheless crucially important, sense, we come to feel what it is like to be the person who is communicating with us. This explains why we pick up another person's speech habits or tics, even against our will. It explains many of the problems of emotional entrainment in conversation, the countertransference that occurs, not just in therapy, but in ordinary, everyday life, when we experience in our own frames the very feelings that our interlocutor experiences. And empathy is associated with a greater intuitive desire to imitate. (p. 115)

Sarah Jones as a One-Woman Global Village

Sarah Jones is Tony-Award-winning monologist who truly understands what it takes to have flexible linguistic and cultural identities. She demonstrates a 'chameleon-like' ability to slip in and out of characters in her solo performances. She does an amazing job in imitating the accents, prosody, and body language of her characters representing different cultural and linguistic backgrounds as well as working with the stereotypic cultural thought and behavior patterns of these cultures in her monologues. In her off-Broadway hit *Bridge & Tunnel* she portrayed as many as fourteen personae. In a TEDx talk she describes how she

has always been interested in the invention of self or selves. She states,

We're all born into certain circumstances with particular physical traits, unique developmental experiences, geographical, and historical contexts. But then what? To what extent do we self-construct, do we self-invent? How do we self-identify and how mutable is that identity? Like, what if one could be anyone at any time? Well my characters, like the ones in my shows, allow me to play with the spaces between those questions.¹⁰

Some of Sarah's performances are available on YouTube and I encourage you to watch them so you can get a direct experience of her mastery of flexible identity. For Sarah, the body and the voice serve as the laboratory for the social experiments that she performs on stage. Through her struggles with her racial identity at a young age, her mother is European and Caribbean mix while her father is African American, she learned to be confident about her beauty outside of Western constructs of what is beautiful. She learned about the essential and important aspects of one's core identity allowing her to be flexible in regard to all the rest.

Construction of New Linguistic and Cultural Identities

In recent years, there has been a move towards recognizing the relationship between identity and motivation in foreign language acquisition. Among the affective variables modulating foreign language acquisition, Ehrman (1996:137) focuses in particular on learner identity and self-concept: "Every imaginable feeling accompanies learning; especially learning that can be as closely related to who we are, as language learning is." My own personal journey in learning languages as well as discussion with others has made me aware of the importance of the transformational experience brought on by the process of acquiring a new language. This transformational experience has been described in various ways in the second or foreign language literature as well. In *Never Quite a Native Speaker: Accent and Identity in L2 and L1*, Marx (2002) states:

The desire to learn a new language can sometimes be an overwhelming influence on an individual's life. Even where the 'ultimate' acquisition of a foreign language is not essential for survival in a new cultural milieu, participation of any form in the culture and the intentional acquisition of a new linguistic identity can result in a 'seismic mental shift' (Hoffman, 1989:105) in a language learner's understanding and interpretation of the

¹⁰ <http://www.youtube.com/watch?v=sucza6EOIf0> Accessed Jan 14, 2016.

world around him. This is especially pertinent in the case of immigrants and other language learners who are immersed in the new language and culture and who intend to remain in that culture, at least for a significant amount of time. (p. 264)

In her paper, Marx focuses on how identity and identity change is reflected in one's accent. As a Canadian native speaker of English she explores the construction of her new linguistic and cultural identity in German over a three-year sojourn in Germany. Initially her attempt not to be labeled as an American by her accent modulated how her mother tongue affected her accent in German. Still not able to mimic a native speaker of German and having already had experience learning French, she superimposed aspects of a French accent on her German. The fact that French students were more readily accepted than Americans by the locals she encountered was one of the motivating factors for doing so. As she began to mimic her local counterparts in non-linguistic forms such as style of dress and social behavior, she made progress in developing a more native-like German accent. She started to imitate aspects of regional German dialects and accents; not just the accent and dialect of where she spent most of her time but also the accents and dialects of places she visited. During this process she experienced significant influence on the way she spoke and wrote in her native English. She actively pursued the game of trying to pass as a native speaker in short interactions with locals.

After reaching a high level of proficiency in German and more success in creating the impression of being a native speaker of German, she returned to Canada. For the initial three months her accent in English was not only affected by her German but also her impression of a British accent since she often sought to mimic a British accent to a certain extent while teaching English in Germany since it seemed to her that this was the preferred accent in English amongst her students there. One important reason for the 'foreign' accent in her native English was the desire to express that her experiences and acquired ability in foreign languages had transformed her and she was no longer the same as monolingual Canadian speakers of English.

There are certain aspects of her account that coincide with which my experiences while becoming a multilingual. I have often and still do at times play the game of trying to see how long I can pass as a native speaker in the target language I am using. Though this is not really possible for me to do in Asian countries except over the phone due to my physical appearance, I have also consciously and unconsciously mimicked regional accents and dialects of the

languages I have learned. My American accent in English was also strongly affected by my first year studying abroad at a university in Colombia at the age of 18. Instead of directly returning to America, I continued to study and travel abroad learning Portuguese, French, German, and Serbian/Croatian before an extended stay in America (nine months). So there were quite a few linguistic and cultural identities at that time that could potentially affect my accent in English. Similar to Nicole Marx, I sometimes did and still do allow this effect on my accent in order to express a distinction between monolingual speakers of English and myself. I use the term ‘allow’ here to express that it is possible to prevent this from happening. However, it is much easier to approximate my original monolingual accent in American English when interacting with people who have a similar accent due to the chameleon effect.

Everyone experiences the chameleon effect to a certain extent in our language and behavior. Often the chameleon effect is expressed as the unintentional physical and verbal mirroring between people who are getting along well. People may mimic each other’s body posture, hand gestures, accents, word choices, and other behaviors. In such cases the body may be autonomously (without conscious awareness) making the interaction smoother and increasing the level of liking while communicating. Chartrand and Bargh (1999) describe the chameleon effect as the perception-behavior link in social interaction. Their experimental evidence indicated that (1) the motor behavior of participants unintentionally matched that of strangers with whom they worked on a task, (2) mimicking the posture and movements facilitates the smoothness of interactions and increases liking between interaction partners, and (3) dispositionally emphatic individuals exhibit the chameleon effect to a greater extent than do other people.

Their first experiment demonstrated that the perception-behavior link is the proximal cause of the chameleon affect: changes in the interlocutor’s behavior caused changes in the participant’s behavior, in absence of the participant’s awareness of this influence. Experiment 2 provided explicit evidence that nonconscious mimicry serves the adaptive function of smoothing interactions and fostering liking. Finally, Experiment 3 demonstrated that those who frequently take the perspective of interaction partners mimicked the mannerisms of the confederate to a greater extent than did those who less often take the perspective of others, as would be expected if social-perceptual activity mediated the effect.¹¹

Furthermore, conversational participants also tend to immediately and

¹¹ Chartrand & Bargh (1999).

unconsciously adapt to each other's language styles. There is matching of acoustic features such as accent, speech rate, and pitch (Giles et al., 1991; Chartrand and van Baaren, 2009) and lexico-syntactic priming across adjacent or nearby utterances (Pickering and Garrod, 2004; Ward and Litman, 2007). A speaker will even adjust the number of articles and other function words in their next utterance in response to the number in their partner's immediately preceding utterance (Danescu-Niculescu-Mizil and Lee, 2011). This remarkable level of coordination is thought to have arisen as a way to achieve social goals, such as gaining approval or emphasizing difference in status.

Accents in Hebrew – Identity and Empathy

The above observations are supported by research carried out in Israel by Ibrahim, Leikin, and Eviatar (2008) at the University of Haifa. Basically, they conclude that the more empathy one has for the native speakers of the foreign language one is speaking, the lighter the accent will be in that language. The researchers also indicated that in addition to personal-affective factors, it has been found that the 'language ego' is also influenced by the sociopolitical position of the speaker towards the majority group. Israel offers a perfect location for exploring SLA due to that fact that, besides the core group of native Hebrew speakers, the population of the country is composed of many immigrants who learn Hebrew. There is also an ethnic minority of Arabs, some of whom learn Hebrew from an early age and others who learn the language as mature adults.

The participants in the study (students from the University of Haifa) were divided into three groups: 20 native Hebrew speakers, 20 Arabic speakers who learned Hebrew at the age of 7-8, and 20 Russian immigrants who learned Hebrew after the age of 13. The participants' socioeconomic characteristics were identical. All were asked to read out a section from a report in Hebrew, and then to describe - in Hebrew - an image that was shown to them. The pieces were recorded and divided into two-minute sections. Additionally, the participants filled out a questionnaire composed of 29 statements to measure their empathetic abilities. Thereafter, 20 other native speakers of Hebrew listened to the pieces that had been recorded and rated each piece according to accent 'heaviness'. Thus, each participant received a score on the weight of his or her accent and another score for level of empathy. This experimental design was similar to that of the quantitative study in Keeley (2013 & 2014) but less broad in scope.

The study showed that the accent level of Russian immigrants and of native Arabic speakers was similar. It also revealed that for the Russian immigrants,

there is a direct link between the two measures: the higher the ability to exhibit empathy for others, the weaker the accent. Amongst the Arabic speakers, however, no such link – either positive or negative – between level of empathy and heaviness of accent could be seen. The researchers' hypothesis is that in the group of Arabic speakers, a new factor enters the 'language ego' equation: sociopolitical position. The researchers believe that the pattern among Arabic speakers demonstrates their sentiment toward the Hebrew-speaking majority group, and the Arabs consider their accent as something that distinguishes them from the majority. The research shows that both personal and sociopolitical aspects influence accents additional languages. For identity-based reasons some people do not seek to mimic accents when speaking in a foreign language such as in the case of the native speakers of Arabic. When identity issues are not limiting the mimicking of accents we can see that empathy towards the native speakers of the target language can clearly account for individual differences – such as in the case of Russian speakers of Hebrew.

More on Empathy, Identity, & Accent

Empathy is also predicted to be relevant to acquisition in that the empathic person may be the one who is able to identify more easily with speakers of a target language and thus accept their input for language acquisition (lowered affective filter). Guiora developed the notion that empathy can be conceptualized as a comprehending modality alongside inference, and intuition. According to Guiora (1965:780), "Empathy is the process of comprehending in which a temporary fusion of self-object boundaries, as in the earliest pattern of object relations, permits an immediate emotional apprehension of the affective experience of another, this sensing being used by the cognitive functions to gain and understanding of the other." Language behavior is a unique and complex attribute of man, not only in the evolutionary sense, but also in the developmental psychology history of each individual. Language behavior evolves within the context of a more general psychological growth. It is reasonable to speculate that even certain structural aspects of language are in part shaped by and express the broader personality context from which they have emerged (Guiora, 1968).

Guiora and his colleagues have suggested that empathy might play a significant role in a learner's relative ability to acquire authenticity or pronunciation in a second language. Along with his colleagues, Guiora studied this relationship with the aid of a test for Micromomentary Expressions (MMEs) to measure the quality of empathy (Guiora et al., 1972). The study confirms the

original hypothesis that empathy as measured by the test for MMEs is positively related to the ability to authentically pronounce a second language. More empathetic individuals tend to be better listeners and better attuned to the native features of speech; therefore, empathetic individuals tend to acquire a more native-like proficiency in pronunciation. Second language learning exerts a very specific demand with regard to self-representation since a change in accent signals a change in linguistic/cultural identity. The most sensitive index of the ability to take on a new identity (the degree of permeability of the language ego boundaries) is the ability to achieve native-like pronunciation. Empathic capacity is also dependent upon the ability to give up one's separateness of identity. Individual differences in the ability to pronounce a second language should reflect individual differences in empathic ability.

The most salient determining factors of developing native-like accents in additional languages are not necessarily age-related or age-dependent. They include the degree of relationship interest, flexibility of identity or ego permeability, curiosity, interpersonal engagement, and empathy. Infants are strongly driven by the interactional instinct and once caregivers basically satisfy this need the desire to seek more interaction can wane or be maintained depending on an individual's traits and experiences. People learn to communicate to satisfy their needs. As people develop a feeling of belonging to specific groups they conform to the modes of communication used by those groups. This will not only determine their accent(s) but also the way they express themselves in terms of numerous aspects of verbal and non-verbal communication.

Schumann (1975) also studied empathy through hypnosis of individuals and concluded that empathy was more than a factor in pronunciation in an L2 and had a positive relationship to overall success in L2 acquisition. Schumann also maintains that emphatic capacity or ego flexibility, particularly as operationalized under the concept of lowering of inhibitions, is best regarded as an essential factor in the overall ability to acquire a second language, rather than simply in the ability to acquire native-like pronunciation. Thus, the concept that lowering inhibitions is an important part for SLA in general is seen in both Schumann's and Guiora's experiments.

Stevick (1978) views learner reluctance to imitate sound patterns of a target foreign language in terms of how the positive effects of empathy may be limited by socio-cultural factors – identity issues. In particular, for a person whose upbringing and previous social development have left him uncomfortable with the people of a certain culture, any success at mimicry of the language of that people

will set up conflicts with the self-image he has come to depend on. This observation was evident in the experiment involving Arabs speaking Hebrew in Israel. Concerning pronunciation, Stevick claims that the learner's attitude towards the target culture may be the most significant factor in the level reached. If a learner's own cultural heritage reference group does not approve of the foreign culture of the target language then the learner will have to choose between two alternatives: submit to the pressure of the reference group or defy that pressure and attempt to acquire native-like pronunciation of the target language.

Stevick (1978) contends that the subtle 'subphonemic' and 'suprasegmental' aspects of pronunciation, precisely because they are less necessary for intelligibility or for 'academic correctness', are the parts of pronunciation that carry the greatest amount of information about the student's loyalty to his native group or his openness to the target culture. This can also hold true even when there is not a specific target culture associated with the foreign language learning activity. In the case of Japan the main stumbling block is the fear of not sounding like a member of their native linguistic/cultural community when they are studying English in school. Japanese students who have acquired a native-like accent while overseas are quick to hide their ability to sound like a native in English classes back in Japan for fear being bullied for their differences. Mimicking a native accent in English is often interpreted as an indication of being a traitor to Japanese identity.

Empathy and identity are also elements of Gardner and Lambert's (1959, 1972) integrative orientation for explaining motivational factors. In particular, integrative motivation can facilitate native-like pronunciation and accent. The very existence of high integrative motivation suggests empathy and openness towards the target language native speakers or in the case of ill-defined groups, such as learning English as a lingua franca, empathy and openness towards others not belonging to the learner's heritage language/culture. A person who does not progress in mimicking a native speaker of a target language may be resisting what seems to him/her to be an encroachment on his/her personality. As we have seen identity issues can suppress the power of empathy to facilitate mimicking of accents. We can conceptualize empathy as engendering or promoting somatic experience in the learner of the native speaker's communicative actions. Depending on the degree of successful mimicking, the body will reflect the native speaker at least in the movements of the body associated with vocalization and more comprehensively in all the associated non-

verbal communicative embodied actions.

The accumulation of the experience of successfully acquiring additional languages obviously empowers learners in many ways in their quest to learn more languages. One of these ways can be an increase in the ability to use empathy and identity in a facilitative manner - allowing empathy and identification with speakers of the target language. In this process you can lower your inhibitions to mimic their speech and other communicative patterns. You can develop greater empathic resonance in terms of the function of the appropriate mirror neuron circuits. That is to say, in a biological motor-response sense, empathy sets the stage for more sophisticated responses – a more complete mastery over verbal and non-verbal embodied communication responses.

Self-formation in Cultural Adaptation & Foreign Language Acquisition

The process of cross-cultural adaptation and foreign language acquisition, particularly when engaged in simultaneously such as in the case of learning a foreign language in the country where it is spoken, both serve as a vehicle of self-discovery. Intercultural experiences and foreign language learning contribute to the construction or reconstruction of a sense of self, a process that may be referred to as 'self-formation.' When speaking to people who have participated in programs for studying a language abroad, they often describe their experiences as profoundly meaningful often crediting them with bringing about changes at fundamental levels.¹² The experiences usually involve a transformation of their sense of self both in how they view their own culture and language as well as their direction in life. The new culture and language create the opportunity for self-reflection and self-learning. This means that the simultaneous process of cross-cultural adaptation and foreign language acquisition involves learning about the new culture and language as well as better understanding about one's self within the context of a new culture and language.

The transformative processes associated with the development of intercultural competence and re-examination of one's cultural identity reflect fundamental processes of self-formation. The same is true in the creation of a new linguistic identity. The more one speaks a foreign language naturally with ever greater mimicking of a native speaker accent, the more the person is going through a transformative process and overcoming the emotional resistance to the

¹² See for example Milstein (2005).

creation of a new cultural/linguistic identity. Culture shock can be viewed in terms of an experience in self-understanding and change, as an individual moves from a state of low self and cultural awareness to a state of higher self and cultural awareness. A parallel process in the linguistic dimension occurs when there is successful foreign language acquisition. This perspective views the powerful emotional and affective reactions to cross-cultural and cross-linguistic environments as part of the transformative dimensions of intercultural learning and foreign language learning.

Kim and Ruben's (1988) intercultural transformation assumes individuals grow during intercultural encounters through the process called the stress-adaptation-growth dynamic. Kim (2001:35) explains that the theory maintains the individual is a dynamic, self-reflexive system that observes and renews itself "as it continuously interacts with the environment (a supra-system made up of many person-systems)." These many person-systems are more complete when they are complemented with development of ability in the languages associated with the cultures in which one interacts.

Issues of Legitimacy and Authenticity

Issues with feelings of legitimacy and authenticity can be particularly strong when modifying your accent in your mother tongue. Though accent modification is common in one's mother tongue, Baratta (2014) says it can threaten the way we feel about our personal identity, often causing anger and frustration. Baratta's research is based on an ongoing survey of children, students and staff from different institutions and schools, involving 98 people so far. It reveals that while most accept the practice, a third of respondents say they feel like a fraud when they consciously modify their accent. Many Brits consciously modify their accent in social situations as a means to create a better impression but some feel that accent modification as synonymous with selling out and a clear threat to their sense of self.¹³

Authenticity and legitimacy can actually become psychological impediments to social flexibility. These issues are closely related to identity and we can draw a direct parallel between identity flexibility and social flexibility. In modifying behavior and speech to be congruent with a target language and culture there is always the possibility of not feeling authentic or legitimate. The traditional focus of SLA has been on how foreign language learners seek to emulate the native speaker in terms of grammar, lexical accuracy and pragmatic appropriateness

¹³ <http://www.manchester.ac.uk/discover/news/article/?id=12449>

(appropriateness of what you say, when you say it and how you say it). These are all aspects of communicative competence in a foreign language/culture but do not encompass all the aspects of foreign language acquisition and use.

Authenticity and legitimacy are constructed within the frame of social context and they deal with the feelings that otherwise competent non-native speakers may grapple with in their interaction with native speakers of the target language and culture. Self-evaluations of lacking authenticity and legitimacy can be detrimental to fluent native-like speech in the target language. To avoid these detrimental effects there must be an acceptance on the part of non-native speakers that they can become authentic and legitimate speakers. Essentially it is being comfortable with having multiple social, cultural, and linguistic identities that are brought to the forefront when appropriate.

Conclusion

The first part of the paper addressed alleged biological or neurological constraints for adult success in foreign language acquisition. The evidence for lifetime neuroplasticity is overwhelming and the determinants of changes in neural processing are greatly dependent on experience, attention, and reward. As discussed, researchers such as Osterhout et al. (2008) point out that alleged age-related neurological constraints are inconsistent with accumulating evidence that the brain remains remarkably plastic throughout one's lifetime. Studies clearly demonstrate that level of acquisition is a strong determinate of how a language is processed in the brain.

The second part examined the SPA factors that actually determine success in obtaining a native-like accent in additional (foreign) languages. The conclusion is that the main reasons for individual differences encountered in foreign language acquisition among people of almost all ages, including accent, are related to identity, emotions, motivation, openness, flexibility and other psychological and affective factors as well as knowledge, awareness and experience about how to learn (metacognitive knowledge). The apparent age related differences are mainly a result of age-related differences in relation to these SPA factors and differences in foreign language use situations. The construction of a new linguistic /cultural identity is a central factor in determining how close one speaks with a native-like accent in the target language. Empathy towards the speakers of the target language can play a significant role in acquiring authenticity or native-like pronunciation and accent in a target language.

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