Code-Switching And Bilingualism: Psychological, Physiological And Cognitive Aspects

Code-switching is the ability for bilinguals to alternate their linguistic codes in the same conversation. Through this definition, code-switching evolved in research on different types of code-switching. These can include code-switching as being a sentence filler, expressing an attitude, and being appropriate with grammar (Toribio, 2001). An example of code-switching that's appropriate for grammar would be: a. "Todo mi familia speaks English well." which translates to b. All of my family speaks English well. An example of expressing an attitude of inquiry would be: a. "It is raining a lot these days, verdad?" which translates to b. It is raining a lot these days, isn't it? Now, code-switching is being studied tremendously to see what in fact causes bilinguals to code-switch within their languages. A specific aspect of bilingualism that has promise for future study is code-switching which will also be the primary purpose of my paper.

Definitions

Within code-switching and bilingualism, according to Harper (2015) language contains "symbols" that are presented as things that stand for other things, whereas words stand for things that are spoken or written. Now, bilingualism is proficiency within multiple languages on a continuous basis, not as either-or-idea. Within bilingualism, there are five subcategories underneath it of productive, receptive, simultaneous, sequential, and late bilingualism. The idea of productive bilingualism is that the individual can speak and understand both languages while receptive bilingualism is that the individual can understand both languages, but have trouble speaking or producing words within both languages. In simultaneous, sequential, and late bilingualism, there is a pattern present within the three timestamps. In simultaneous bilingualism, L1 (language one) and L2 (language two) are learned right around the same time. While in sequential or "early" sequential bilingualism L1 is learned first, but L2 is learned fairly early later on within childhood. Finally, late bilingualism is fairly common where the language is learned in adolescents and onwards (Harper, 2015).

History

Where did it all begin? Where did bilingualism and code-switching begin? Werner F. Leopold is the person who relatively had the earliest detailed studies about bilingualism. He was known as a German linguist and did a diary of his study between 1939-1949 on his daughter, Hildegard. Hildegard had an American mother so she lived with her in America in the beginning of her childhood. While in American her mother spoke German to her, but soon began to use English more frequently than German. German was the primary language at home, but it soon became English. Leopold documented this within his study and states that within 6 months, young children can forget their old language and pick up a new one in a new country, similar to what had happened to his daughter, Hildegard (Harper, 2015).

Demographics

The demographics of code-switching and bilingualism were fairly high in the year 2012, but within 7 years could have grown more. Bialystok, Craik, & Luk (2012) discovered that 20% of the population in the United States and Canada speak another language at home that isn't English. In those two countries, there's been an increased spread of bilingualism in large urban areas. In Log Angeles, 60% of the population is bilingual, while 50% of the population in Toronto is bilingual. For people around the world, 56% of the population across all of the European Union reported as being functionally bilingual. The numbers could have increased or decreased since 2012, but bilingualism has been given a rise (Bialystok, Craik, & Luk, 2012).

Cognitive

Bhatt & Bolonyai (2011) wanted to study why bilinguals code-switch, specifically are their causes to make bilinguals code-switch. Within their framework, they created an assumption that there is a system, a sociolinguistic grammar, that all bilinguals use. The authors viewed sociolinguistic grammar as set principals that enable bilinguals to have effective means of communication of meaning during any time of interactional bilingual context. They then discovered that there are five principles of code-switching within grammar usage of interpretive faithfulness, symbolic domination, social concurrence, face management, and perspective-taking. The first principle is interpretive faithfulness whereas people will code-switch when they perceive the language being used is insufficient to capture the meaning intended. The second principle is symbolic domination whereas people will code-switch to maximize power, status, and authority. The third principle is social concurrence whereas people will code-switch to create a connection, affiliation, and intimacy. The fourth principle is face management whereas people will code-switch to maximize the effectiveness of their public image with others or with themselves. The fifth principle is perspective-taking whereas people code-switch because they want perspective in interaction with other individuals. The results from this study stated that the five principles of code-switching within grammar usage were understood as operations of sociolinguistic grammar, which could be one of the causes on why bilinguals with code-switch due to meaning within conservational context.

In a study by Heredia & Altarriba (2011), they wanted to also encounter findings on the reason why bilinguals code-switch. The findings were that bilinguals that are Spanish-English lack language proficiency whereas they state they have a lack of knowledge of one language. Evidence suggests that it's a flaw that code-switching is promoted upon due to the inability to retrieve the correct word. They also state that an example of the word "presupuesto" in Spanish which means "estimate" in English is that not knowing the "correct" word means that they use don't use the word frequently. They also found that people will code-switch as a strategy to be better understood.

Another area of cognition for people who code-switch is that it depends on surrounding factors for the code-switcher. There are four areas that can provoke someone to code-switch of stress in the environment, individuals in conversation, the type of task, sentence context, and the influence of manipulation by the type of word stimuli. There will be more in-depth research in sentence context (Basnight-Brown & Altarriba, 2007). In the study regarding sentence context, it provided how listeners of code-switch will recognize speech and process those mixed languages. This study contained Chinese-English bilinguals that listen to sentences with the whole phrase in Chinese, but the code-switch word would be in English. The task was that they would be presented the code-switch word in intervals of 30-50 milliseconds to see if they are

able to determine the target (code-switch word) from the phrases spoken in Chinese. They then added on a manipulation that would include context as being short vs. long sentences. The short sentence would follow with “his/her flight is delayed” and the long sentence would follow with “he/she boarded a delayed flight”. The whole sentence would be spoken in Chinese while the code-switch word, flight, would be spoken in English. The results from the study found that in the long sentence, 59% of the word was needed in order for the bilingual to determine the correct word while 72% was needed in the short sentences for the bilingual to determine the correct word.

Within people who can speak two languages, it was found that individuals have inhibitory processes. In the study, they had three studies that compare the performance between monolinguals and bilinguals who are either middle-aged or older adults based upon the Simon Task. They wanted to provide if bilinguals have an advantage with enhancing executive functions and if bilingualism will attenuate negative effects within cognitive control in older adults. The results stated that bilingualism attenuates age-related decline in the efficiency of inhibitory processing (Bialystok, Klein, Craik, & Viswanathan, 2004). Within that, they also found that do have the advantage of when they start as children and progress when older to have an advantage in controlled processing. As well, that bilingualism boosts inhibitory control which would create a smaller effect on the Simon effect.

Physiological

Within a recent study done on early and late proficient bilinguals, they found new discoveries on certain structures of the brain that are intact for bilingualism. Within the study by Costa & Sebastián-Gallés (2014), they found significant amounts of grey matter in the left inferior parietal structures (in charge of verbal fluency tasks), left putamen (in charge of articulatory and phonological processes), and the Heschl Gyrus (in charge of auditory processes). They continued on with the study to find changes in white matter tracts to be associated with bilingualism, With 70-years old, successive high-proficient bilingual adults were reported to have higher white matter in the corpus callosum compared to those who were monolingual.

Another study that was done by Kutas, Moreno, & Wicha (2008) investigated the role of the subcortical-cortical network in language switching. Within the study, they collected data from the patients from neuroimaging. The results found the cortical-subcortical network that includes the thalamus, frontal cortex, and basal ganglia are involved in language switching. They also found that some researchers see the dorsolateral prefrontal cortex (DLPFC) is absolutely critical for controlling language switching and for controlling the languages that are unused. They had found with the use of neuroimaging that there was increased activation in the DLPFC when language switching was occurring, but it wasn’t always the case, it would depend. If there is damage to the dorsolateral prefrontal cortex then it can lead to uncontrollable language switching. Likewise, damage to the basal ganglia or front projects could lead bilinguals to have pathological and/or spontaneous code-switching. With the basal ganglia and thalamus, they discovered that these two parts of the brain are important for the inhibitory control of the unintended language, especially for the automatized language.

Future Study

The future study that I found related to code-switching and bilingualism that was done at the

American University of Sharjah (United Arab Emirates). Kharkurin & Wei (2014) examined the role of code-switching in bilingual creativity. They had 157 participants (56 males and 101 females) who's major language were English, Arabic, or Urdu. The researchers had participants fill out questionnaires regarding biographical (linguistic and cultural background), a self-report of code-switching attitudes and behaviors (why they code-switch and the emotional states they are in when they code-switch), and they took an assessment of the creativity of the Abbreviated Torrance Test for Adults (ATTA) (contain certain activities, an example would be that if you could walk on air or fly then identify the troubles you would encounter). Evidence suggests that emotional states affect us when we code-switch. They also found that there is greater innovative capacity for bilinguals who code-switch frequently and regularly compared to others who don't. They found that people who are multilingual will more frequently code-switch in certain emotional states, but the exploration of this area is complex and multidimensional.

The second future study I found dealt with code-switching to toddlers. Bail, Morini, & Newman wanted to examine how bilingual caregivers speak to their children between 18 - 24 months and if there were any negative and positive repercussions in code-switching at a child at that age. The participants in the study were 24 bilingual caregivers with their children between 18 - 24 months. All the children were exposed to English and Spanish from one or both caregivers and were exposed to both languages with a minimum of 30% to a maximum of 70% since birth. The caregivers spoke different types of Spanish depending upon the region they were from. They had caregivers fill out two language questions called the MacArthur-Bates Communicative Development Inventory (MCDI) Words and Sentences and another one that was adapted by Sebastián-Gallés and Byers-Heilein whereas both were available in English and Spanish. In the study, the caregivers were expected to code-switch at least once during their set play session with their children, some code switch often. The code-switch that was involved were inter-sentential and intra-sentential. From the results parents were more often to code-switch inter-sentially than intra-sentially, there was no negative impact on the child vocabulary development, and speaking more than language to the child wouldn't be detrimental to their language development. Exploration in future direction would be the behaviors presented when caregivers code-switch frequently to their infants due to the phenone of bilingual language acquisition, and the types of code-switch that vary depending on the situation.

Overall, the study of code-switching is constantly changing, from finding new ways that code-switching appears to the behaviors that are caused to code-switching. The history behind bilingualism was the first of many. While the cognition provided in both areas are still currently being explored. Then the physiological aspects of code-switching and bilingualism will be examined quite further on which areas of the brain it will continue to affect. Without the recognition of future studies, then we wouldn't know where to go from here on the world of linguistics in code-switching and bilingualism.