Opinion Article

Is Bilinguality an Illusive Concept?

Abstract

Background and Objective: In an effort to study bilinguality, researchers in this field have often compared bilinguals with monolinguals, generally considering each group to be a homogeneous, monolithic body with no discernable within-group individual differences. This approach overlooks the various levels of proficiency among bilinguals, the age and order of acquisition of each of their languages, as well as their language history, and daily usage. Although monolinguals may not be conversant, some may still at leastpartially comprehend a secondlanguage. By failing to actively consider and collect more details about a variety of participant language attributes,researcher assumptions can lead to conclusions that are not a true reflection of the similarities and differences between monolinguals and bilinguals. Anumber of studies have found bilingual advantage in health-related outcomes as wellasperformance on cognitive tasks. All these reported findings are based on the performance of participants who may or may not be true bilinguals consequently impacting the results of this research [9,11]

Recommendations: The impact of considering a wide variable of participant characteristics in bilinguality research, including age and order of acquisition, daily usage, and fluency is examined. In addition, a recently proposedpsychometric model that evaluates the abovevariablesis discussed. Finally, recommendations are made on how to further improve the standards of research in bilinguality,includingperforming objective fluencytesting, and asking detailed questions about participants'complete language history.

Key Words: Bilinguality, proficiency, age of acquisition, language history, daily usage, monolingual, order of acquisition

Background

Since the earlytwentieth century there has been a great deal of interest in the study ofhuman languages. One area of interest has focused on bilinguals, individuals who can speak two languages, and trying to gain an understanding of how bilinguals compare to monolinguals. Researchers around the world have examined howthe ability to speak two languages may relate tosuch widely varying fields of study as cognition, socialization, family dynamics,and school performance [1,2,3,4,5].The behavioral aspects and linguistic tendencies of many bilingualsto*code mix*(simultaneously blend

words and phrases from two languages in one utterance) and *code-switch* (quickly switch from one language to another during the course of a conversation) have also beenstudied extensively[6,7,8].

A number of studies have shown that bilinguals perform better in cognitive tasks related to executive function and memory. These advantages have been reported in both children and young adults. However, while the bilingual advantage in inhibitory tasks and cognitive flexibility has been consistently reported across studies, the advantages in working memory has been questioned [9,10]. Bilinguality seems to also delay up to seven years symptoms and consequently diagnosis of dementia [11]. The health benefits of bilinguality have further been shown among stroke-related aphasia patients. Contrary to monolinguals, bilingual aphasia patients are better able to improve their phonological processing and language performance recovery [12].

Since the 1990s as more and more benefits of bilinguality were documented many neuroscientists became interested in conducting neuroimaging studies focusing on the neuroscientific aspects of bilinguality and how the brains of bilingualshave subtlestructural differences from those of monolinguals[13,14].Yet to this day,there are still anumber of fundamental disagreements among researchers about how the concept of “bilinguality” should be operationally defined. What attributes or characteristics should be considered when trying to identifybilingual individuals?What should researchers keep in mind when assigning research participants into, usually,dichotomousbilingual/monolingual groupings based on participants’ varying language abilities? Are there common standards or objective criteria that could be used in linguistic research to help better ensure research findings are sound, comparable, and generalizable?

Even as our understanding of the phenomena of bilinguality has developed, bilinguals have tended to be viewed as a monolithic group and compared to monolinguals in performance on various cognitive tasks, studies of linguistic identity, attitudes about their heritage language,or examinations of their brain structure[15,16,17,18]. This rudimentary method of classification that assigns anyone who speaks more than one language tothe same “bilingual” category regardless of their linguistic abilities, background,or how often they use their languages, can lead tounreliable and inconsistent results.

For the past 15 years,at a university in North Carolina many aspects of bilinguality have been studied[19,20,21,22].Efforts have been made to recruit German, Yapese, French, Spanish and Arabic bilingual speakers. Through the process of recruitment of these participants, the research team has faced the same challenges that many other language researchers have encountered; no two bilinguals are exactly the same and to find and classify bilinguals with close or equal linguistic abilities and similar linguisticbackground is a daunting task.

Bilinguality by nature is a multifaceted concept. No two bilinguals have the same linguistic history, exact age and timing of acquisition, level of mastery and fluency of one or both languages, and frequency of day-to-day usage. In light of these differences, finding and identifying participants with similar backgrounds requires a great deal of effort.For researchers,ignoring the diverse backgrounds and uneven linguistic capabilities of their participants can lead to overgeneralization and possibleerroneous research conclusions.

Who Can Be Considered Bilingual?

The recruitment of participantsfor scientific investigation in anydiscipline presents its own challenges. Thechallenges in language studies haveproven to be particularly formidable. For example, in psychological research, participants are often recruited based on age, race, gender, ethnicity, or other similar broad demographic inclusion criteria. However, in language studies, one can adhere to all these classifications and yet inadvertently assignbilinguals with completely different language capabilities and background into the same group. The level of fluency of bilinguals or their linguistic competence in one or both of their languages is often determined by self-reportamong adult participants. In fact, in a review of 186bilinguality studies, 29% of the studies were found to relycompletely on participant self-reported language proficiency. A similar proportion (30%) utilized vocabularyand proficiency tests such as the Peabody Picture Vocabulary Test or Shipley Vocabulary Test in order to estimate therough approximation of the individual's language capability. Finally, 23% of the186 studies under review did not make use of either self-report or any type of proficiency test [23].

Even the classification of monolinguals can potentially be overly simplistic and erroneous. In thecurrent connected global environment with ubiquitous internet access,is there truly anyone who is purelymonolingual with absolutely no knowledge of other languages? It has long been established that linguistic competence precedes linguistic performance[24].Not being able to speak a language does not necessarily mean one does not comprehend a language. So, how do we define being monolingual? Someone who cannot speak a second language?Understand a second language?Or both?In general, most language researchers recruit participants based on self-report, which is a woefully imprecise method of classification.

Additionally, ethnic and bicultural identity can play an important role in the preservation and mastery of heritage languages. Heritage language proficiency has been associated with bicultural identity. Moreover, immigrant adolescents and young adults who consider themselves bicultural and bilingual have been shown to have a better level of cultural adjustment.Furthermore, these bicultural young adultsare more capable of navigatingmulticultural environments and to be at ease with being considered bilingual [25,26]. Perhaps, this group is also more likely tobe willingto participate in bilingual research.

In short,bilinguals vary in their degree of second language proficiency andmonolinguals also vary in their degree of monolinguality.Consequently, bilingualitycouldbe consideredon a continuous scale,rather thantreated as a dichotomous attribute where participants are simplistically classified into either bilingual or monolingual groups.

Age and Order of Acquisition

One of the most salient factors that can influence bilinguality is the age of language acquisition (early, middle, or late childhood). Age is alsointertwined closely with the order or mannerin which two distinctlanguages are learned.

Early Bilinguals:

One distinct group are early bilinguals who learn both their languages**simultaneously**during the first years of life, typicallyat home. These children often grow up in multilingual communities and countries like Indonesia, Singapore, the Canadian province of Quebec, or parts of Switzerland.

The second group consists of children who fall into a middle childhood,**sequential** category. This group includes children who learn their heritage language (L1) at home early on, and their second language (L2)several years later when they start formal schooling in early or middle childhood. This group includes immigrant children in many countries,such asTurkish immigrantsin Germany, and Spanish speakers from Central and South America who migrate to the United States or Canada.

Late Bilinguals:

The final group are the **late**bilingualswho only acquire their second language sometime during adolescence or later. The late bilinguals will typically learn the second language in language classes or through travel and migration. Examples of this third group include American high school students taking classes in a language like Spanish or French,foreign students from countries like China and many other southeast Asian counties who come to English-speaking counties to study at overseasuniversities, or asylum seekers who relocate toEurope or North America to escape persecution.

Documented Differences Between Early and Late Bilingualism:

The early bilinguals are often more fluent, speak without a discernible accent and are quicker at language processing. Theobserved advantage of early bilinguals in language mastery has been interpreted as providing evidence for the existence of a critical period of language acquisition during early childhood or early adolescence. During this critical period, learning any language is considered to be comparatively easy.Correspondingly, this concept of critical period implies that learning a language even a few years later in

life (late adolescence or early adulthood) will become a much more challenging and laborious undertaking[27,28].

The overt advantage of early bilinguals is also supported by the neuroscientific changes taking place during early child development. The development of overall brain size and the process of the myelination of axons are mostly complete by mid-childhood[29,30]. Nevertheless, it is important to remember that any initial advantage of learning an L1 or L2 language at an early age will be lost if the language is not spoken regularly. The unused language will end up disappearing. This is seen in countless bilingual immigrant children who as adults lose their heritage language.It is also important to remember that having an accent does not reflect language competenceand the attitude and determination to use and preserve one's heritage language plays an important role in the preservation of any critical period advantage.

Fluency and Proficiency

Estimating the level of fluency of bilingual participants in linguistic studiesis often challenging and complicated. Even the most experienced language researchers cannot agree on this point. Some considersomeone with minimal communications skills in both languages, a bilingual. Other researchersonly consider someone with a reasonable level of competence in one or both languages to bebilingual,and still others do not consider a person to be a true bilingual unless thereis clear evidence of biliteracy, the ability to read and write in a different language[31,32,33]. Grouping individuals who have limited second language abilities in the same category along with those who have a vast vocabulary and knowledge of a second language has the potential to make the results of any study unreliable. A number of investigators have used vocabulary tests such as the Peabody Picture Vocabulary Testor other proficiency measures such as the Shipley Vocabulary Test. Such tests, although reliable indicators of vocabulary knowledge,can scarcely be considered as a well-rounded measure of one's full knowledge of grammar or conversational language. Therefore, the true linguistic proficiency of an individualremains elusive for most of these studies. In my own research, as part of the experimental design, bilingual participants have to take part in a half-hour interview in the language under investigation with a native speaker of that language. This type of interview along with an87-itemquestionnaire about the language history and the frequency of language usage in every setting has enabled us to get a better grasp of the language proficiency of our participants [34,35].

For the sake of consistency and reliability of research in this area, the investigators must develop a set of standards to determine what level of linguistic competence in L2 qualifies someone as being a bilingual and design proficiency tests that go far beyond vocabulary testingin order to provide a uniform standard for future investigations.

Attitudes and Maintaining Heritage Language

It is a long-established fact that bilinguals use their first or second language (L1 or L2) to different degrees, and in different settings. Some*balanced*bilingualsuse their

languages seamlessly in both community and home settings, while others only use their heritage language at home and use the societally dominant language outside the home. Sadly, a third group, in order to better assimilate in their schools and communities,gradually stop using their heritage language and end up becoming monolinguals [36].

The sociolinguistic aspect of heritage language maintenance and loss has been the focus of much research and speculation. In truly multilingual countries like India, Singapore or Belgium, children are born and raised in multilingual environments where linguistic diversity tends to be embraced. These individuals maintain two, three, or sometimes four or more languages. They use their different languagesin different settings and manage to preserve and maintain their languages throughout their lives. Thesebalanced bilingual or multilinguals would provide an optimal subject pool for language research.Sadly, although approximately 70% of the world's population are considered bilingual, very few countries and cultures have managed to embrace and nurture different languages equally. Many countries have one official (or unofficial) languagethatserves as the language of formal and governmental communications. Through the passage of time, the official language tends to gain dominance over other languages.

A second group are children of immigrants who learn and speak their L1 at home and L2 later at school and their communities. Most heritage language decay and loss start with formal schooling and accelerates during adolescence. This group often manages to maintain some level of bilinguality,but lacks biliteracy skills and often their own children, the third generation of immigrants,will grow up as monolinguals. In language research, it can be difficult to determine how to categorize or group thissecond type of bilingual.The level of proficiency and the attitudes about the languagefor this group can range widely and there are likely to be large individual differences in both proficiency and embarrassment about using their native language.

The last category are the ones who start off as simultaneous or sequential bilinguals, but in an effort to either "fit in" better with their monolingual peers ordue to lack of acceptance of their native language in their environment, they gradually use their L1 less and less until they completely switch to L2. Sometimes members of this group are considered monolinguals when in reality they have some knowledge of a second language. This heritage language loss is likely tolead to cultural loss and an inability to communicate well with grandparents and older members of the family,resulting in a loss of identity and cultural connection. This final group can sometimes be mistakenly considered as monolinguals when in fact they have some bilingual capabilities which have deteriorated due to lack of usage[37].

New Methods of Assessment

In the past few years,a few language researchers havevoiced their concern about the inconsistency in classifying bilinguals in this body of research[23, 38]. This is not

surprising sincethose who make an attempt to assess the language history or proficiency of their bilingual participants can clearly see the differences in this group. Regardless of the best recruitment efforts to find participants with similar backgrounds;no two bilinguals have same language background and capabilities, unless they havebeen raised in the same household, attended the same school, have the same friends, and more importantly have similar attitudes about preserving their languages. This observation has been reported by other publications trying to tease out the factors that setbilinguals apart [32].

Whatthen can be done to better understand and define bilinguality?Recently,psychometric methods have been adopted to try to provide a more accurate understanding of the phenomenon and underpinnings of bilinguality. These psychometric techniques try to determine if language proficiency is associated with a number of factors including language history and daily usage of language. More specifically, botha graph network model and a factor analytical approach has been used by Kalamala and her colleagues to look at intercorrelations across a range of language attributes. These include variables that include age of second language acquisition, self-rated proficiency and vocabulary, andmeasures of language mixing and code-switching. Sucha multifaced data analytic approach is one way to incorporate individual differences. It can provide a more nuanced view of bilinguals; theirsimilarities, differences, attitudes, and efforts to preserve their languages[39]. Based on the findings coming out of these psychometric research approaches, bilinguality is far from existing in a static state. Instead, it is a dynamic system that at a given time is determined by many factors, including history of language acquisition, proficiency, self-perception of language skills, and daily usage[40]. This type of multidimensional approach also can address concepts such as language mixing, as well as thedecay and loss of a heritage language among second generation bilinguals when their environment is not supportive of their heritage language preservation.

On the other hand, even these types of multi-dimensional models of assessment of bilinguality are not without their limitations. According to the authors of the study (Kalamala, et.al), their participants from two data bases (N=171 and N=112) had a mean age of 24 years old, and 214 participants from a total of 283 were females. All came from Poland, acquiring Polish as their first language and all started learning English before or during elementary school, and continuedlearning English during high school. Other commonalities among the participantswerethe reported regular daily usage of their second language (English). In this study all of the participantswere unbalanced bilinguals. This homogenous participant pool, although perhaps ideal for some language studies,may not be optimal for producing a framework on what characteristics are important to examine in the assessment of bilinguals with diverse language backgrounds and abilities [40].

Additionally, according to the authors of this study the only objective measures that were adopted among the different variables evaluated, were vocabulary and semantic

tests of L2 (English language). The other variables, such as age and order of acquisition, daily usage of L2, and language switching,wereself-reported byparticipants, making them not as reliable as other, more objective measures. Overall, although this psychometric research approach represents an important contribution and path forward, on its own, itdoes not providea final answer to the question of what is most important in devising a definition of bilinguality.

Future Directions andRecommendations:

Up to this point, the potential challengesinrecruiting bilingual participants have been discussed,as well as some of the recent efforts to provide researchers with guidelines to help them avoid making erroneous assumptions about participants' backgrounds, and their presumed language proficiency.Clearly though, the complex problem of trying to classify bilingual participants is unlikely to have a simple solution. Moreover, researchers in this field are often limited by the linguistic and cultural composition of potential research participants in their immediate geographical area. Still there are some practical, concrete actions that researchers can take to have a better understanding of the bilinguals who participate in their language studies.

Documenting linguistic background, age,and order of acquisition:

It should become standard practice for any language study to ask and document the age of acquisition of L2, as well as if it was learned at school, at home from a bilingual parent, or later as a result of travel orsecond language classes. This type of background can be obtained through questionnaires, interviews, or both.When reporting findings for research studies in the field of bilinguality,in addition to listing standard demographic information about participant agesand gender, a minimum additional requirement may be the inclusion of the participants' linguistic backgrounds.

Objective proficiency testing:

Asdescribed earlier,most language studies accept self-reported levels of bilinguality and monolinguality as an accurate measure of participants' language knowledge or language proficiency. Such subjective measures are not accurate or reliable, consequently leading to faulty assumptions and inaccurate data. There are many vocabulary and grammar tests (e.g., the Peabody Picture Vocabulary Test, the MacArthur-Bates Communicative Development Inventory)that are available and can provide a clearer view of the level of second language competency.Furthermore, it has been found that a relatively shortinterview (20-30 minutes) in L2 conducted by a native speaker of L2 is most informative about gauging the true language skills of the participants [20, 21]. Formonolingual participants, a complete language history can determine whether or not an individual is truly monolingual or just unable to converse in L2.

Daily Usage and attitudes about language:

Regardless of level of proficiency and when and how a bilingual learns their second language, their attitudes about their language, and the amount of daily usage can influencetheir performance in language tasks. Therefore, how often, and in what settings a second language is used can be ascertainedfor any balanced or unbalanced bilingual who participates in language research. In addition, if there are any feelings of embarrassmentassociated with using one's heritage language, it is advisablethat investigators recordsuch observations and include it in their analysis. Having a negative attitude about one's heritage language can result in a reluctance tousing that language, leading to gradual language decay.This type of attitude and daily usage can be determined by carefully worded interviews and questionnaires.

Based on availableresearch, we know that the above factors can have an impact on the acquisition and maintenance of a second language.Consequently, it is incumbent of the investigators in this field to design studies which have a clear-eyed view of the nuanced nature of the language skills and linguistic backgroundsof their bilingual participants and make every effort to record these individual differences and include them in their results.

Conclusion

For many decades, the study of bilinguality has become the focus of attention for various groups of researchers includingpsycholinguists, sociolinguists, applied linguistics, neuroscientists, andeven medical practitioners. Different aspects of bilinguality have been examined and evaluated includingsocial, cognitive and identity differences among bilingual and monolinguals, as well as the phenomena of code-switching andcodemixing. Moreover, neuroplastic advantages of being bilingual have been reported in both dementia and stroke-related aphasia patients. Across these different fields of study, bilingual and monolingual participants have often been compared in a manner suggesting that each of the two groups is homogeneous with respect to their language experiences and capabilities.This generalized method of grouping participants has often neglected to consider the within-group differences of both these groups whose linguistic behaviors and abilities are being investigated. The problem is likely rooted in a potential lack of rigor in setting the research criteriaused to determinewho is to be considered bilingualor monolingual.

In the review above, many factors that can impact bilinguality have been discussed. These factors include age and order of acquisition;whether language acquisition is simultaneous, sequential, or late; frequency of current usage of L2;proficiency (self-reported or tested); and attitudesand behaviors that can help determinewhether a heritage language will be maintained.Furthermore, feasible alternatives such as adopting a multifactor approach in classifying and evaluating participants have been examined. Such nuanced approaches in viewing bilinguality,although promising, by themselvesare notthe answer to addressing the challenges in gaining a clearerunderstanding of bilinguals.

There are, however, simple available methods which can provide a better understanding of individual differences among bilinguals. These methods include above mentionedvocabulary testing tools to determine true proficiency(or lack thereof)of the participants.Additionally, researchers are advised to usequestionnaires and interviews to documentparticipants' complete language background. Although acquisition and maintenance of a language occurs in an ever-changing dynamic state, nevertheless, the more information that is collected about bilingualsthe less that is left to chance and the assumptions of researchers.

Disclaimer (Artificial intelligence)

Author hereby declares that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) or text-to-image generators have been used during the writing or editing of this manuscript.

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