Bilingualism across the Lifespan: Opportunities and Challenges for Cognitive Research in a Global Society

Section 1: What Every Cognitive Psychologist Needs to Know about Bilingualism

Chapter 3: Diversity of Bilingual Circumstances and Implications for Language and Cognition

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Abstract

Bilingual populations provide a rich source of information processing knowledge that has been used to shape our understanding of language learning, understanding, and general communication. However, much of the present literature focusing on bilingual individuals is faced with sample specificities that can limit generalizability. It is well acknowledged that the bilingual experience can be heavily influenced by individual and group differences including geography, age of acquisition, learning environment, and cultural upbringing. The heterogeneous mix of characteristics that can classify one as a bilingual can result in complex patterns of empirical findings, often leading to conflicting results regarding a ‘bilingual advantage.’ The growing interest in multi-language processing research is accompanied by the need to consider appropriate research approaches. The present chapter examines a variety of commonly cited demographic and learning variables within the literature. Topics include selecting appropriate experimental participants and comparison groups, as well as task and protocol development. A compilation of suggestions for researchers to enhance our understanding of results obtained from bilingual populations is presented, and findings are applicable to a variety of fields, including but not limited to, linguistics, cognition, education, and law.
I. Introduction

Globalization has increased the prevalence and necessity of learning and using languages beyond a first language (L1). As such, the frequency of bilingualism, or individuals fluent in two languages, is becoming more and more common. From a scientific standpoint, it is important to understand the potential differences that may exist in the psychological functioning of this continuously growing population (see e.g., Bialystok, Craik, Green, & Gollan, 2009). Nevertheless, the presence of these differences may be heavily influenced by research methodology and the diversity of the bilingual population under consideration.

There have been many reports of bilingual advantages in the literature (see Adesope, Lavin, Thompson, & Ungerleider, 2010 for the first topical meta-analysis with children; see Hilchey & Klein, 2011 for a meta-analysis with adults). A bilingual advantage is said to have occurred when an individual fluent in two languages is faster or more accurate in responding to a cognitive task than individuals with knowledge of only a single language (i.e., monolinguals). This advantage has been seen across a variety of tasks involving mental flexibility (Prior & MacWhinney, 2010), novel word learning (Kaushanskaya & Marian, 2009), and attentional conflict management (Costa, Hernández, & Sebastián-Gallés, 2008).

However, there exists a divide within the current literature as to the presence of a true bilingual advantage. The increasing number of un-replicated and non-converging results of bilingual research and the consequent calling into question of the bilingual advantage cannot be ignored (Paap, 2018; see Lehtonen, Soveri, Laine, Järvenpää, de Bruin, & Antfolk, 2018 for a
recent meta-analysis). Therefore, the need to explore the merits of this debate exists. What are the causes of this discrepancy within the linguistic literature? This overarching issue is examined in depth in Bialystok 2020 (Chapter 2, this volume). In the present chapter, a facet of this question will be explored regarding characteristics about the samples from which second language research is derived. More specifically, what are some characteristics that must be attended to when selecting groups of individuals to study? How does language processing vary across bilingual populations with different qualities and experiences? The aim of the current chapter is to address some potential considerations of bilingual samples when conducting research on language.

The evidence discussed in this chapter will reveal that appropriate thought must expand beyond the simple distinctions of comparing monolinguals to bilinguals, or even comparing a bilinguals’ first language to their second language. The research found in the present literature indicates that it is inappropriate to haphazardly distinguish any two groups of bilinguals as suitable comparisons. A diversity of factors that must be considered when drawing associations between bilingual groups include, but are not limited to the following: Language-learning motivation, demographic factors, context of second language learning, and degree of contact with one’s known languages. If these underlying variables are not accounted for, the potential for masking differences across groups can occur. Thus, this chapter, in conjunction with the entirety of this volume, will explore variables that must be considered within context-specific populations of bilinguals.

II. Considerations of the bilingual population
Who is considered a bilingual individual? As is true with all research topics, it is important that appropriate comparison groups be created in order to draw accurate conclusions regarding the influence of linguistic knowledge. However, how a researcher may choose to operationally define “bilingualism” can greatly vary. For example, individuals identifying themselves through self-report measures may not all hold equivalent understandings for what level of expertise or length of linguistic practice with each language is necessary to merit the “bilingual” moniker. Furthermore, a person who once spoke a language, but has since forgotten it in place of a more frequently encountered language, may or may not adhere to a bilingual identity.

Sia and Dewaele (2006) collected demographic data with the intention of understanding what factors qualify an individual to self-report that they are bilingual. Age of acquisition and self-perceived proficiency of a second language seem to be two important variables that interact when individuals classify themselves (see also Martin, Kazanas, & Altarriba, 2018). Younger individuals who feel proficient without actively studying their second language are more likely to classify themselves as bilinguals than individuals currently studying the language (Sia & Dewaele, 2006). The act of engaging in formal study of a second language seems to be a self-indication that mastery of the skill has not yet occurred. In addition, the identity of “bilingual” is more closely linked to a fluency of verbal communication skills than those of written skills. In addition, a person is more likely to self-identify as bilingual if they had recently lived in an environment dominated by the second language. Overall, it is necessary for researchers in the field to consider the characteristics of the individuals they are sampling, and the implications of the chosen participant identification process.
While the basic definition to qualify as a bilingual includes the knowledge of two languages, the proficiency level that must be achieved in each language is often left ambiguous. Language knowledge can be divided into two major categories: academic (knowledge of proper grammar, syntax, spelling, etc.) and conversational (ability to use the language in daily life). It is not always the case that one is equally fluent in both aspects of a language (Montrul, 2011). An individual using a first language that was learned from birth by engaging directly with those who speak the language will often display better conversational and oral production skills than when engaging in a second language (L2). The latter, particularly when the L2 was learned in an academic setting, often produces higher knowledge skills in formal, written tasks.

From this understanding, the place and age of language learning has an influence on gaining the identity of “bilingual.” When a language is picked up through interactions with one’s home community, the bilingual is referred to as a heritage language learner (see Valdés, 2001). Heritage language learners are typically from minority language speaking homes located in an area that is dominated by a different language, such as English. To this end, the heritage language is often not formally taught to the learner, but rather the language can be spoken or understood by the bilingual through implicit learning.

Wright, Taylor, and Macarthur (2000) examined the influence of individuals learning a second language vicariously from their community versus in a formal education setting. Children living in Canada's Eastern Arctic, a geographically isolated area with strong Inuit traditions, but ever-increasing intrusions of the country’s mainstream English and French languages, attend classes in schools that embrace the native Inuit culture. However, many schools allow parents to enroll their children in a classroom that conducts instruction in the language of their choosing,
either the heritage language of Inuttitut, or a dominant language of English or French. The authors tested a sample of students from each classroom type on their general, academic, and conversational language skills at the beginning and end of the first three years of schooling. The findings indicated that all groups of children entered their schooling with equal proficiency levels of the heritage language (Inuttitut). However, over time, those in the Inuttitut program maintained significantly better conversational proficiency in the heritage language than students in a second-language program. This difference was even greater for knowledge of academic Inuttitut, including skills of formal grammar, syntax, and writing. The finding that students studying in a particular language become better at that language than students not receiving formal instruction in that language is not surprising. However, Inuit children showed lower levels of academic language proficiency in the heritage language when instructed in a dominant second-language (English or French) as compared to mixed-heritage children (English L1). The authors concluded that second-language instruction has a greater negative impact on a heritage language for children that speak a minority language as compared to those with a socially dominant first language. The ability to use one’s first or second language can be heavily influenced by the usage context of each language during language development.

In addition to the context of use, the frequency of language use warrants attention given its influence on bilingual proficiency. The amount of exposure to a language has been linked to the skills one has to both understand information and effectively express oneself in a given language. In a study of bilingual children in a German-speaking city of Switzerland with a large immigrant population (Keller, Troesch, & Grob, 2015), measures of receptive (understanding) and expressive (production) second-language competence were collected over four consecutive
years. The majority of children studied were at the beginning stages of learning their second language and were grouped according to their L1 abilities (as determined by parental questionnaires). Those who had the most contact with the dominant first language had the smallest gap between their ability to understand and express themselves using both languages. As the amount of exposure to each language increased, so did the size of the receptive-expressive gap. In particular, this gap was driven by higher scores for receptive competence than expressive competence. In other words, it is easier for young children to acquire the ability to understand a new language before they are able to express themselves using that language. The authors concluded that the existence of this gap is a normative phenomenon for new language learners, as individuals have had more exposure with their already known first language. The need to consider how bilinguals interact with their languages, and the extent to which they are exposed to each language, can influence the underlying processes of L2 comprehension.

1. Differences in proficiency among bilinguals

Bilinguals have been found to have differences in exposure to each of their own languages, but also between groups of individuals that have learned a second language under different contexts. For example, Otheguy and Zentella (2012) found differences in pronoun usage between Spanish-English bilinguals who had newly immigrated to New York City and immigrants raised in New York. The more exposure that an immigrant had to the structure of the local language (English), the more similar their L2 speaking patterns became to the native language speakers. In other words, native Spanish speakers that had been living longer in an English dominated society tended to adapt patterns of pronoun use in their L1 (Spanish) that matched those of their L2 (English). In addition, when analyzing pronoun use by generation, all immigrant groups
(regardless of time spent in New York), showed less pronoun use than the locally raised bilinguals. The increased use of pronouns reflected a pattern of speech closer to the English language, as compared to the Spanish language. Even within groups of bilinguals living in the same area, there appeared to be differences in how language is used. These differences, which can be based on the length of time and contact that one has with the area’s dominant language, can influence the speaking patterns within the native language.

These conclusions converge on previous research on language aptitude and L1 grammar usage in well-educated Spanish-Swedish bilinguals (Bylund, 2009). When asked to identify grammatically improper sentences, all highly-proficient L2 speakers were able to perform equally well regardless of when they learned Swedish. However, speakers with a below-average language aptitude demonstrated a major influence of daily L1 use. For bilinguals who have poor grammar skills, the more contact they have with the language, the better they will do. However, for those who know and understand the language’s grammar rules, attrition (i.e., language loss over time) is a reduced concern. However, further research should be completed to understand the boundaries to maintain aptitude when contact with a language decreases. For example, does language interface play a role in maintaining proper fluency?

The amount of interaction that a person has with a language during childhood is linked to the degree of native-like fluency in speech that the individual will acquire as an adult. Au, Knightly, Jun, and Oh (2002) surveyed American college students in California who were enrolled in a Spanish class. When the amount of time that the students had overheard a language being spoken as a child was compared to their current proficiency levels, age of exposure heavily suggested an influence on accent acquisition, but not knowledge of proper language techniques. Informally
overhearing Spanish spoken by native speakers as a child helped the adult learners to produce a native-like accent and spoken patterns. Those that were not exposed to Spanish until after age fourteen did not acquire the same phonology production. However, neither accuracy nor speed of identifying accurate grammar, nor measures of morphosyntax were influenced by prior oral experience. Both an individual who begins learning a language through exposure during childhood and an individual who does not begin lessons until adulthood can become competent bilinguals. However, waiting until adulthood to expose oneself to a language can severely dampen the ability to acquire a native-like accent.

Further support for the important influence of language exposure comes from data using event-related fMRI—a technique used to map active brain regions by tracking blood flow in the brain. Participants included young adults of Korean origin who were adopted by French parents during childhood and who only had explicit knowledge of the French language. When compared to French monolinguals, the adopted individuals performed similarly both in behavior and in brain activation when asked to identify if a word was presented in the Korean language, to identify the meaning of a Korean word, or when identifying spoken Korean word fragments. However, the native French speakers showed greater activation when listening to their native French language as compared to the French adopted individuals, whose native language was Korean. It appears that the same brain regions are activated upon mastery of a language, regardless if the language was the first one acquired as an infant or secondary as a young child.

Across studies, it appears that both age of exposure to a language and the learning context play an important role in language acquisition (see also Isurin & Seidel, 2015). Language learners who received their lessons informally through direct contact with native speakers tend to
use more colloquial wording while those who received formal language education may develop unique speech patterns. For the purposes of research, context of language learning and age of first exposure to the language are important considerations in understanding how a bilingual will communicate in their respective languages. If researchers are interested in using tasks involving oral production of a language, attention to the presence of accents and speech patterns is relevant. These differences highlight the value of making the effort to understand the linguistic background of the individuals being sampled.

2. Language knowledge versus language use

Support for the need to differentiate between a bilingual’s language knowledge and frequency of language use was reported by deBruin, Bak, and Della Sala (2015) when examining the effects of actively using more than one language in daily life on cognitive processing. Adults over 60 who were born and raised in the Hebrides, a group of islands located in the Western part of Scotland, and who were bilinguals currently in the practice of using both of their languages (Gaelic and English) on a regular basis were compared to bilinguals who tended to speak only in one of their two languages. Both groups were also compared to English monolingual adults from the same area. All participants completed tasks that required them to suppress irrelevant information (i.e., Simon arrow task). A task requiring participants to switch attentional focus between trials was also completed (i.e., task-switching paradigm). These skills are particularly relevant in the lives of bilingual individuals. When conversing in any given language, knowledge of any additional known languages needs to be suppressed. This need for language monitoring is less pertinent during communication with monolinguals, who have no additional languages to suppress. Overall, bilinguals performed as well as monolinguals on both tasks of executive
control. However, active bilinguals, but not inactive bilinguals, showed an advantage over monolingual individuals such that they were able to more effectively switch attentional focus when instructions changed between trials. Because of the inconsistent findings of a bilingual advantage when separating the bilingual group by current practice with both languages, this study supports the notion that bilinguals cannot be treated as a single homogenous group. Instead, there is a need to thoroughly identify individuals not only by their knowledge of languages, but also by other factors such as their practice within each language.

The need for consistency across comparison groups extends beyond characteristics of the individuals being studied themselves. Potential complexities or uniqueness of the populations can be dampened by ill-informed research techniques (see Paap, Johnson, & Sawi, 2015). Slavkov (2018) recently completed an analysis of the language background profiling practices at 96 public schools across the three largest English-speaking provinces in Canada. Canada is an intriguing area for studying bilingualism as the country has two official languages (English and French), a steady influx of immigrants, and many aboriginal communities. The linguistic variety present has helped to produce a concept of bilingualism as a cultural norm, as opposed to an exception reserved for select individuals.

Although there is rich linguistic variation among individuals, Slavkov (2018) reported a general lack of linguistic complexity being assessed in the schools’ forms. For example, although seven school boards in Ontario province included at least five language-related questions on their student registration forms, this was not true of any school in the province of Alberta. Furthermore, the possibility for a student to be identified as having more than one first language was largely unavailable. The author emphasizes the need for linguistic surveys to allow for the
complete, and sometimes complex, understanding of individuals’ language skills to be portrayed. This approach includes considering both an individual’s history (e.g., age and context of acquisition) and current ability (speaking, reading, and writing skills) with each known language.

A lack of standardized understanding for what it means to be bilingual has resulted in a large variation of operationalized definitions of bilingualism. When it comes to research with bilingual populations, it is critical to create a precise definition of bilingualism so that appropriate individuals are vetted and recruited for samples that are comparable with each other.

3. **Demographic influences**

Cultural background is another factor driving differences within bilingual populations. Differences in general cognitive functioning have been found to be affected by socio-economic status (SES). In some regions, bilingualism is associated with higher SES than monolingualism because these individuals have the means and opportunities to become bilingual (Ryan, 2013). However, in other regions, bilingual populations tend to be associated with lower SES. This pattern tends to be attributed to cultural and linguistic factors, such as immigration status for speakers of a minority language (see more on societal influences in the next section).

Overall, children in higher SES classes tend to show advantages in attentional control as compared to those in relatively lower classes, regardless of how many languages the children have mastered (Morton & Harper, 2007). Findings such as this indicate that any bilingual advantage may be exacerbated by demographic factors such as culture and social status that are creating differences in learning environments, as opposed to outcomes caused by language fluency itself.
What component of being bilingual is affecting cognitive thought? Moreover, how is this relative difference in cognition separate from socio-economic status? As previously discussed, deBruin, Bak, and Della Sala (2015) identified attentional switching advantages in active bilingual adults, as compared to monolingual adults. Both groups of individuals were from the same isolated islands resulting in a largely homogenous population with similar education and economic levels. Therefore, by continuing to use more than one language in daily life, individuals have a better ability to process and separate multiple pieces of information simultaneously, which could be viewed as separate from social economic status.

When investigating the presence of a bilingual advantage in low socio-economic populations, Engel de Abreu, Cruz-Santos, Tourinho, Martin, and Bialystok (2012) compared Portuguese-Luxembourgish bilingual children from low-income immigrant families in Luxembourg to same status monolingual children from Portugal, all with the same first language (Portuguese). The children completed tasks to measure their executive functioning abilities as demonstrated through abstract reasoning and working memory (Raven’s, Odd-One-Out, and Dot Matrix) and control through selective attention and interference suppression (Flanker and Sky Search), as well as general measures of vocabulary competence. All children were able to name more words in Portuguese (L1) than in Luxembourgish (L2, for bilingual group), but the monolingual children outperformed the bilingual children within the Portuguese vocabulary measures. Even though there was a difference in L1 performance, no differences were found in accuracy for the tasks of executive functioning. However, bilingual children were faster than monolingual children in both tasks of control. The authors concluded that, although there are no group differences in representation, a bilingual advantage exists for tasks of cognitive control.
(but see Paap & Liu, 2014 for further considerations). As demonstrated by this study, the simultaneous use of more than one language in daily life can allow for greater mental flexibility when faced with conflicting information that has the potential to misguide attention. Interestingly, this increased processing speed in bilinguals did not alter response accuracy as compared to monolinguals, even though the group had lower linguistic scores in their primary language. In some cases, the benefits of bilingualism extend beyond the linguistic sphere and can affect broader functioning regardless of socio-economic status. Yet, it is important to mind the undeniable confounds that the opportunities and lifestyles typical of various SES classes can have on one’s ability to train and expand various cognitive skills.

Economic status can also influence how a language is learned. Individuals who learn a language as a native, heritage speaker may gain colloquial nuances that an individual privileged to learn a second language in a formal classroom setting might not acquire. For example, heritage speakers of Brazilian Portuguese have been shown to display a deficit in knowledge of formal grammar structure as compared to comparable social status English advanced adult learners of L2 Portuguese (Rothman, 2007). In colloquial dialects of Portuguese, the presence of inflected infinitives (grammatical endings added to words to provide a verb with a subject) has drastically decreased. Heritage speakers tend to learn their language vicariously by picking up communication skills from others in their surroundings (Valdés, 2001). Those learning in a classroom education setting are trained with formal linguistic skills, including use of the inflected infinitives that may not always be present within the conversational realm. The lack of knowledge for proper infinitive use by heritage speakers, but not adult second language learners, may be due to the lack of formal literacy training in the target language (Rothman, 2007).
Although classroom lessons allow learners to display an understanding for the language that is lacking in heritage learners, its existence in daily conversation does not match that of a native speaker. Thus, differences can exist between speakers of the same language based upon how and why the language was acquired, such that new language learners do not obtain the same linguistic features as heritage learners and native speakers.

4. Societal pressures of language learning

Motivation for learning a new language can be derived from societal pressures (see Peirce, 1995 for a discussion on motivation and investment regarding second language acquisition). This desire or pressure to acquire multiple languages may or may not be associated with SES. In some areas of the world, it is common for bilingualism to be an expected identity among citizens. This expectation may arise because the area has more than one official language, thus it is encouraged to speak in multiple tongues (Micaud, 1974). Bilingualism may also be an expected norm in areas heavily populated by immigrants who have settled in a country with a dominant language that is different from their homeland (Achugar & Pessoa, 2009). For example, many students from Mexico (a Spanish-speaking country) attend university in the state of Texas in the United States (an English-speaking country), thus creating communities where Spanish is encouraged to be spoken within the community. Still, others may seek to expand their language skills for the sake of increasing their knowledge and cultural worldviews. By valuing the use of multiple languages, bilingualism is appreciated by many and, sometimes, it is preferred over monolingualism.

Other societal pressures can stem from situations in which bilingualism is considered an exception to the norm. Is being in the minority through bilingualism beneficial or costly, in a
given society? This can depend on the reasons for being placed in this circumstance (see Dewaele, 2015). One group, deemed “elite bilinguals,” are typically those from families in the middle or upper classes who are in a position to financially support the education needed to learn an additional language. This education can include supplemental schooling or immersion programs in a foreign country. By consciously and actively deciding to pursue a second language, the linguistic knowledge learned can open the world to more in-depth world travel, business exchanges, and cultural appreciation. In this case, bilingualism is a sign of elevated opportunity and educational status.

In some communities, learning a second language can be used as a means to transition into a new environment and integrate one’s natural culture with that of the local culture. At times, speaking in a foreign tongue can be viewed as a threat to the new country’s national identity and is unwelcome. These circumstances can lead to instances of conflicting identities within bilinguals if the use of each language is associated with different values—pressures that relate to being in a new society (Ramírez-Esparza, Gosling, Benet-Martínez, Potter, & Pennebaker, 2006). In a cross-sectional study on Chinese/Korean-English bilinguals, the source of contact with the L1 varied by age group and decreased over time (Jia, Chen, Kim, Chan, & Jeung, 2014). For immigrant children, the majority of contact with the native language came from within the home, largely through interactions with parents and siblings. When children enter school, the proportion of contact with the L1 drastically decreases and the dominant English language replaces it in frequency. The longer that children (aged 5-18 years in this study) were immersed in the dominant language, the greater their skills in the L2 became while subsequently diminishing L1 performance. As school-aged children gain language skills through
both informal contact with peers and formal education, the parents of immigrant children can also enhance their L2 proficiency as the language is increasingly brought into the household (Bridges & Hoff, 2014).

Again, societal pressures and the ways in which the environment shapes language use and linguistic expectations play a significant role in language learning. It appears that how bilinguals interact with language is heavily influential on the minority language, but not the majority language. It is unclear what precisely causes the discrepancy of proficiency between languages. Possible explanations include the relative absence of heritage language speakers in the community and a lack of contact with the L1 outside the immediate family. Regardless of why the differences occur, it is clear that the label of “bilingual” is not stagnant. Rather, the defining qualities of bilingualism are influenced by time, context, and the acceptance of foreign languages by the greater society.

Whether a bilingual attains this identity by choice or necessity, there remain repercussions for how the languages are used and how each language is understood. When a second language is learned to supplement an L1, the individual becomes an “additive bilingual” (Swain & Lapkin, 1991). In this case, the knowledge from previously known languages is used to help understand the language being acquired. Ideally, there is equal fluency of all known languages such that there is no disruption of proficiency in the L1 by adding an L2. On the contrary, when a second language is learned with the intention of replacing an L1, a “subtractive bilingual” is created (Wright et al., 2000). In subtractive bilingualism, the acquisition of a new language tarnishes the fluency of the previously known language. This often occurs in contexts where there is a large gap in societal dominance between the first and second languages (see
Isurin, 2000). The inequality in contact and value for maintaining proficiency in both languages can result in the loss of the L1. Unfortunately, subtractive bilingualism can effectively reduce a bilingual to near monolingual status.

In the context of research, it is not enough to allow an identification of “bilingual” to assume homogenous groups of individuals when designing a study. The articles reviewed in this section highlight the potential complexities and variations that exist within and between bilingual individuals. Gathering sufficient background information about potential participants is becoming a necessary step of recruitment, to include data on social economic status, contexts of language exposure, current contact with each language, and purpose(s) for acquiring each language.

III. Acquiring a second language

1. Enjoyment for learning

Learning a new language can occur at any age during the lifespan, across many contexts, and for various reasons. What one’s motivation is for embarking on the task of learning can influence how effectively one acquires and maintains the skill (Dörnyei, 2000). In a recent survey of middle school and high school students’ opinions on language learning, a link between enjoyment and value for language learning was established (Ger & Bahar, 2018). The students surveyed attended pseudo-immersion programs in Bosnia and Herzegovina with curriculums that designated seventy percent of lessons to be taught in English, a second language. The schools’ purpose was to teach the required academic content while simultaneously engaging the young learners with a foreign language.
Across multiple schools, a general pattern emerged such that enjoyment for learning a new language was related to a benefit for acquiring the second language. Those who did not indicate a liking for their education system tended to also have negative opinions for second language learning. These findings converge on Yanguas (2010) who found a link between motivation and attitudes towards the community of the language being learned. Immigrant Spanish heritage language speakers taking a Spanish college course in the United States who valued individuals that spoke their native language tended to also have a stronger motivation to improve their Spanish skills. While it cannot be explicitly established what caused the favorable ratings for second language learning, it seems that establishing a positive sense of value for foreign language acquisition may enhance the desire to engage in the learning process and ease of becoming bilingual.

2. Practice and maintenance

Just as it is important to understanding how the various methods of acquisition can influence language learning, a lack of practice with a language can also change a bilingual’s linguistic knowledge. In fact, immigrants who moved to a country with a new dominant language can, over time, show some levels of attrition in their L1 so that their grammatical understanding is comparable to that of adolescents in the final stages of language acquisition (Keijzer, 2010). Although this attrition may be subtle and may not disable bilinguals from effectively using their languages, it does provide an interesting demonstration as to the malleability of linguistic skills. As would be expected with any other acquired expertise, a lack of practice and exposure to a language can diminish one’s knowledge of proper linguistic techniques. In the context of research, this concept highlights an important consideration when establishing both the criteria
for qualifying as a bilingual individual, as well as when identifying appropriate individuals for comparison. It is clear that the age of the individual or number of years since becoming proficient, alone, are not sufficient for equating individuals on their bilingual abilities.

IV. Developing appropriate research protocols

To return to the opening topic of concern—why conclusions regarding research using bilingual populations often exhibit discrepancies—the literature reviewed provides a possible source of insight. Specifically, the individuals making up the population of bilinguals cannot be assumed equivalent on all aspects. These differences in acquisition, use, maintenance, and perceived value of a second language can create subgroups within the population that interact uniquely with their languages. Furthermore, differences in experience and cognitive development make it difficult to equate bilingual populations to monolinguals in the same region regarding non-linguistic characteristics. Yet, the extant literature routinely draws conclusions by comparing samples with differing characteristics. The limitations inherent in studying a highly individualized experience, such as language learning, are acknowledged. In an effort to advance the utility of research derived from bilingual populations, a number of common sources of variation to contemplate are provided below.

1. Identifying a sample

There is no universal prescription for how to correctly recruit a sample for a research study. When it comes to bilingual populations, there are many methods commonly employed including (but not limited to) self-identification, language proficiency scores, and area of residence. Although there are numerous ways to sample, the complexities that exist between individuals cannot be understood with a single yes/no declaration of bilingualism. As discussed
earlier, it is clear there exists a large amount of variation within bilingual individuals based on their previous experience with their languages and the cultural environment surrounding each language (e.g., Wright et al., 2000).

In a recent examination of survey techniques used to identify bilingual students, Brooks (2016) emphasized the need to allow individuals to personalize their responses to encompass the potential complexities of their linguistic experiences. The interplay between a bilingual’s first and second languages, home language and dominant language, and personal identification with their languages does not always fall into neat categories that can be captured by forced-choice responses. Researchers are encouraged to use question prompts that allow for elaborative responses in order to gain a full and accurate understanding of the bilingual’s abilities and knowledge. For example, probes inquiring about the identification of an individual’s first language do not allow those who grew up learning two languages simultaneously the opportunity to report this experience. Rather, the author suggests the use of open-ended questions when gathering demographic information, such as, “When and how did you learn your languages?” Although the aim of Brooks’ (2016) work was towards literacy educators, the underlying principles are applicable to the research realm, as well.

This issue of variability within the bilingual population extends beyond the matter of identifying appropriate individuals to recruit. When attempting to understand the linguistic knowledge of bilingual individuals, it is necessary to be mindful of the ability to generalize conclusions. As previously discussed, heritage language learners and individuals learning a language through informal interactions tend to have a greater skill set for conversational, verbal forms of language (Keller, Troesch, & Grob, 2015). However, students in a classroom
environment can often develop formal, but non-native-like speech patterns (Au, Knightly, Jun, & Oh, 2002). This speech difference can also be further differentiated if an accent is acquired due to learning the language post-childhood or across differing environments. Although all individuals fluent in a language are likely to be able to communicate effectively using the respective language, how the words and phrases are pronounced and written may differ depending on the age and method of acquisition. For example, when comparing English skills of an individual from the United States and an individual from the United Kingdom, a task such as picture naming may not be sensitive to differences in pronunciation between the two accents. However, a more phonetic task that requires participants to identify similar sounding words may be influenced by dialect differences.

Just as important as who is partaking in a new research study, consideration for who developed a given measure is needed. When normative data are reported, it is reasonable to expect regional differences to exist for all the reasons previously discussed (see Barron & Taguchi, 2019). For example, a study on English language tendencies may find different rates of word frequency, spelling, or pronunciation depending on whether the research was completed in Britain, the United States, or Australia. Similarly, within the Spanish language there exist regional nuances when comparing its use in Spain, Mexico, and Argentina. The evolution of language in societies around the globe has developed a communication system that, even within a language, showcases cultural and regional influences.

This consideration for the nuances within a language could bear importance depending upon the intended purpose for research results. For example, in studies attempting to understand language use among bilinguals in conversational, day-to-day settings versus language use in a
decontextualized academic environment, considerations for how the groups produce verbal language but not written language may be of interest. The nature of how the language is understood by the individual is likely to vary between these settings and could be influenced by the way the language had been encountered. Therefore, it may be necessary to visualize multiple types of language proficiency either as two separate measures or as opponents on a continuum.

Furthermore, consideration should be paid to developing the appropriate testing materials for the ultimate research question of interest. As discussed, not all individuals who identify or are identified as bilingual share the same understanding and knowledge for their languages. Therefore, the use of identical testing materials may not be appropriate for all studies and should be selected with thought to the underlying skills being measured.

Although several considerations in selecting participants for linguistic research have been presented, readers should not be shy about completing studies using bilingual populations. To understand the intricacies and psychological phenomena involved in language acquisition, bilingual populations are a valuable source of knowledge. However, it is important to understand the diversity of this population to avoid haphazardly introducing confounding variables into a research design. By acknowledging important demographic characteristics of the samples of individuals from whom the data are collected, better and more accurate comparisons can be made between groups and across findings. Thus, it is recommended that a transparent report of the samples be provided with consideration given to all relevant linguistic factors, including the aforementioned variables.

2. Recruitment
It is not uncommon for research to be completed using convenience samples, or those that are easily accessible to the researcher. As much research is generated from labs associated with universities, a substantial proportion of data are collected from undergraduate students that may not be generalizable to the larger society (see Etikan, Musa, & Alkassim, 2016). The same is true of the bilingual literature. As previously discussed, socio-economic status can play a role in general cognitive functioning as well as in influencing when and how a second language is taught (Morton & Harper, 2007). If research is primarily carried out with university students, this also means much of the research on bilinguals is likely to describe high functioning middle- to upper-class participants. However, research studies that utilize online recruitment methods may broaden the scope of access to a wider population of bilinguals from more diverse backgrounds (see Evans & Mathur, 2005 for a discussion of strengths and weaknesses with online research). To appropriately compare individuals across samples, collecting relevant demographic and language learning information is imperative, in addition to disclosing recruitment tactics.

3. Determining appropriate comparison groups

After a homogenous sample of bilinguals has been identified, who is the most appropriate sample to use as a comparison group? Some (but not all) questions about bilingualism involve comparing monolingual and bilingual performance to ultimately attribute differences to “bilingualism.” A range of comparison populations have been used throughout the literature to include monolinguals who share a language with the bilinguals, bilinguals with a different L1 or L2, individuals unfamiliar with a to-be-tested language, or language learners at various stages of proficiency. Which group is the most appropriate to use will depend on the specific research
question being explored, taking into consideration the variable of interest, and attempting to hold all others consistent.

However, it is not simply a matter of the characteristics that comprise the comparison group. The specific qualities and skills that the individuals within both the research and comparison groups possess must be considered. As discussed, skill proficiency within a language can take various forms both within and between a bilingual’s languages (e.g., Montrul, 2011). This is also true of monolinguals such that the ability to effectively produce and understand any language can be independent of each other. Assessing for participants’ unique combinations of proficiency can be an important step in establishing appropriate comparison groups.

Additionally, considerations for the non-linguistic characteristics within a sample cannot be assumed to be equivalent. As previously discussed, various demographic factors, including SES and learning motivation, often vary within a region. It is not enough to homogenize individuals who are derived from the same convenience sample (e.g., college students, a particular school system). Rather, it is imperative to gather information about participants’ personalized experiences and abilities in order to gain an appropriate understanding for their language abilities and influences.

V. Conclusions

As discussed throughout this chapter, there are numerous factors that can interact to determine the following: a) how bilinguals acquire their languages, b) whether others will classify a group or individual as bilingual, and c) how groups of identified bilinguals will compare to each other. The answers to these questions may not always be straightforward. However, for meaning to be drawn from linguistic research, it is of utmost importance that
proper care is given to the recruitment of individuals and comparison groups. This will aid in the ability to generalize results to the appropriate populations.

Although there are many considerations for homogenizing the definition of bilingualism, Dewaele and Stavans (2014) present two global measures for determining degree of proficiency across any number of languages known. First, an understanding for the role each language plays in the daily lives of an individual must be known. By gathering information on the frequency of use for each language, the degree of active use can be determined. This approach can help distinguish between individuals who have knowledge of more than one language and are actively practicing them all or may have dormant skills for languages beyond what is dominant in the area. The second component to assess for is self-perceived proficiency in each language. As previously discussed, one’s ability to communicate in a language verbally may not accurately reflect their ability for written communication in that same language. Therefore, both oral and written proficiency measures should be taken to allow for potential complexities and component imbalances within each known language. By summing the scores for each known language, a personalized linguistic score can be generated and used to compare skill levels between individuals.

Regardless of how samples are selected, the inconsistencies within the literature suggest a need to provide sufficient detail as to the characteristics and skills of those being studied. By thoroughly characterizing the bilingual populations at hand and any comparison groups, an understanding for the true influences of second language learning can be discovered. Determining the appropriate level of detail that should be disclosed in a manuscript can be left, in part, to the discretion of the researcher. However, researchers and consumers alike should be
cautioned when making assumptions as to the influence of a variable without having complete and proper information. In addition, the selection of research methodologies needs to be qualified for the appropriate group, according to participants’ background characteristics, as not all tools should be used interchangeably.

The present chapter has posited several variables of consideration that have been shown to play a role in differentiating various populations of bilinguals. Therefore, when carrying out linguistic research, specifically with bilinguals, the characteristics of the samples (and thereby populations) compared must be understood and wholly considered before overall conclusions for the effects of bilingualism can be appreciated.
References


