The Bilingual Experience

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Abstract

The purpose of the present study was to provide an in-depth review of the existing literature pertaining to the study of bilingualism in three major avenues of study in psychological research. First, I discussed the cognitive benefits and deficits of being bilingual. Second, I considered the relationship between development and bilingualism. Finally, I turned to personality research to unpack the conflicting relationship that bilingualism and biculturalism have with personality. Ultimately, although there are a lot of compelling findings across these three areas of research, this analysis revealed some gaps and areas for possible future research.

Key words: biculturalism, bilingualism, executive functioning
Introduction

Have you ever noticed how hard it can be to perform adequately when rules are constantly changing? Or how hard it is to avoid getting distracted by all the information being presented around you? What would you say if there was a way you could make that easier? What if there was a portion of the population that didn’t find it so hard to adapt to changing rules or to tune out unimportant information? Have you ever considered the possibility that knowing more languages or belonging to more than one culture can alter your personality? Or that being bilingual can change the way your brain ages?

“In 1922, in Tractus Logico-Philosophicus” the philosopher Ludwig Wittgenstein wrote, “The limit of my language mean the limits of my world.” The words that we have at our disposal affect what we see- and the more words there are, the better our perception. When we learn to speak a different language, we learn to see a bigger world” (Konnikova, 2017). There was a time when being bilingual was considered a disadvantage. People believed that speaking multiple languages was useless and thought it affected individuals’ IQ negatively. This thought dominated the main stream for years. However, in recent years this notion has become increasingly thought of as more ridiculous. Bilingualism, which is marked by an individual who speaks two languages fluently, and biculturalism, which is a term prescribed to an individual who has internalized two different cultural frameworks, (Nguyen & Benet Martinez, 2007) have become increasingly more common as the world has become progressively interconnected. As a result, research in these areas has become more and more common. Interest in the area grew as the number of people who fit this category grew.
Speaking multiple languages has advantages across the board. These exist at the simple level of having the ability to communicate with more people and travel with relative ease to the complex level where the brains of bilingual individuals function differently and personality is shaped differently. Being bicultural also carries a set of advantages from the simple fact that you understand two cultures fully. There was a time when bilingualism and biculturalism weren’t the norm or even mildly common but instead quite rare in the population. However, that is not the case in today’s world.

Half of the world’s population, if not more, is bilingual. 35% of the population of Canada, 50% of Europe and 20% of the US is bilingual (Being Bilingual: Surprising Statistics). In the modern world for many individuals, multilingualism is the norm rather than the exception even in those places where we believe monolingual individuals are more common it is likely that many individuals are bilingual. For example, there are sixty-nine spoken languages in Kenya including the two official languages, Kiswahili and English (Being Bilingual: Surprising Statistics). Often these individuals who are bilingual are also bicultural and there is a large amount of the population who is just bicultural meaning that they are not bilingual. 12% of the US population is foreign born, 33% is nonwhite, and 19% speak a language other than English at home (Nguyen & Benet Martinez, 2007).

Bilingualism comes in its simplest definition by speaking two languages fluently but how different individuals get to that point can vary. As bilingualism becomes more common so do different ways of achieving bilingualism. Some individuals become bilingual by speaking one language in their home and another in their surrounding community, while others learn one language at home/general community and a second language at school. Some individuals are bilingual because of cultural heritage. For example, an individual who
speaks both Spanish and English, Spanish because they are Mexican and English because they grew up somewhere in the United States. An individual in this situation would have learned both languages as a young child. Other individuals become bilingual by taking a second language in school either early in life or later, while some learn out of necessity for their work later in life. Becoming bilingual can happen at any point in someone’s life. The intriguing question lies in teasing out the differences when figuring out how learning a second language changes an individual depending on when in their lives, it was gained.

Researchers ask questions addressing a wide variety of topics. They tackle questions of personality to those of cognition, development, education or instruction. They ask about the cognitive benefits and deficits of fluently knowing more than one language. They also consider how bicultural identity affects personality traits and so many other questions surrounding bicultural and bilingual individuals. They consider the different ways in which language knowledge affects an individual’s personality in the various languages they speak. Researchers analyze the possibility that bilingual children develop differently than monolingual children.

The present study aims to provide a review of the current literature pertaining to three specific aspects of the study of bilingual and/or bicultural individuals, these facets being personality, cognition, and development. More specifically, the focus in the personality section is on the personality changes that arise in individuals who are bilingual and/or bicultural. The cognition section focuses on the cognitive benefits that arise from being bilingual specifically with respect to the executing functioning skills. And finally, in the section on development focusing on the advantages and disadvantages in cognitive abilities
pertaining to aging, the differences that exist depending on the age in which you acquired a
second language, and vocabulary differences throughout the lifespan.

**Literature Review**

**Cognition, Development and Brain Structure**

In my experience, bilingualism is thought to be an advantage, something to covet and
strive for that makes you special, however until recently research surrounding this area was
somewhat rare because it was not important to much of the population. However, as
bilingualism has become progressively more common so has the research on bilingual
individuals. In cognitive psychology, there is a robust body of research concerning the topic
of bilingual individuals and executive functioning. Researchers wanted to know whether
bilingualism was an actual advantage or if it could be a disadvantage. Most the research has
focused on the cognitive benefits, specifically those pertaining to executive functioning, of
being bilingual. However, there is a smaller literature that analyzes cortical activity as well as
grey matter density but this part of the literature is much less extensive or even studied in
comparison to that which exists on cognitive benefits.

There are many ways to keep our brains constantly working but learning other
languages changes the way our brain functions allowing our executive functioning skills to
flourish from a younger stage and persist through a longer period in our life.

The development of the executive-function system, located in the prefrontal cortex, is
the most crucial cognitive achievement in early childhood. Children gradually master the
ability to control attention, inhibit distraction, monitor sets of stimuli, expand working
memory, and shift between tasks. Study after study has shown that being multi-lingual
provides a serious advantage in executive functioning throughout the lifespan. Children who are multi-lingual develop better executive functioning skills overall and maintain these for longer periods of time when compared to monolingual children.

One of the leading psychologists in this research is Ellen Bialystok who has dedicated a great deal of her career to this endeavor. She conducts her research within the framework of representations. “The framework identifies changes in mental representation that lead to an increasingly metalinguistic and literate use of language by children. These representational changes are attributed to the development of two processing components. The first, analysis, is the ability to represent increasingly explicit and abstract structures; the second, control, is the ability to selectively attend to specific aspects of a representation, particularly in misleading situations. Together, these two processes enable children to move from simple conversation to intentional language use involved in reading (Bialystok, 1988a) and metalinguistic problem solving. (Bialystok, 1986)” (Bialystok, 1999) Then moving from that to analyze the different ways in which being bilingual affect these two processing components.

Studies conducted by Bialystok show that children who learn more languages from an earlier stage in life (often defined as before the age of 5) can perform better on tasks involving executive functioning skills (Bialystok, 1999, Bialystok et. al. 2004, Bialystok, Craik and Luk, 2012). Bilingual individuals can ignore distracting information with relative ease when compared to monolingual individuals. They can switch from one rule to the next without hesitation while monolingual individuals have a lot more trouble making this shift from one rule to the next. For example, children who are bilingual can receive multiple forms of information and adjust as necessary. On a dimensional change card sort task 4 to 5-year-
old children who knew multiple languages where able to switch between different
instructions for sorting with incredible ease in comparison to monolingual children who
rarely accomplished the task indicating further development in skills involving executive
functioning (Bialystok, 1999).

Another study conducted by Bialystok showed that children who spoke more than one
language were less affected by incongruent information meaning that they were able to
ignore unimportant information in favor of information that was needed to perform the task
at hand (Bialystok et. al. 2004). The task in this study was a Simon Task. Participants were
told to press the left shift key when they saw a blue square and the right shift key when they
saw a red square. Throughout the task red and blue squares would show up on either side of
the screen. In some trials the side on which the colored square showed up and the key which
needed to be pressed were the same meaning that the red square showed up on the right side
of the screen. However, there were also trials were these were incongruent meaning that the
square would show up on the opposite side of the screen (Bialystok et. al. 2004). In both
studies, Bialystok found evidence of some cognitive benefits involving executive functioning
skills particularly those pertaining to distracting or incongruent information.

In both situations, they found that both monolingual and bilingual children could
perform the task however bilingual children were much faster and more adept at sorting
distraction or incongruent information. They did not find or say that monolingual individuals
are unable to switch between rules or have necessarily poor executive functioning skills
instead it is more that every individual, in general, should develop their cognitive abilities to
a “normal” point. That is where most monolingual individuals lie in what is considered
average but for bilingual the average is higher. They show a statistically significant
advantage in these skills that are particular to executive functioning.

Bialystok, Craik and Luk (2012) conducted a meta-analysis of previous work
involving the bilingual advantage in executive functioning. In doing so they found several
trends including: bilingual individuals have a cognitive advantage in inhibition, selection,
switching, attentional sustainment, working memory, representation and retrieval. From this
information gathered through the meta-analysis hypothesized that these trends point to a
mental flexibility present in bilingual individuals where they are able to adapt to ongoing
changes and process information efficiently and adaptively better than monolingual
individuals.

Researchers Stoco and Prat (2014) conducted a study were participants were asked to
perform a Rapid Instructed Task Learning Paradigm which requires the participants to
behave and adapt to situations where the rules change. They hypothesized that bilingual
individuals would have an advantage due to their ability to be flexible, which stems from
their preexisting ability to switch between languages. They found that bilingual participants
were much quicker in performing the task and could switch between rules with relative ease
while monolingual participants were slower and had more trouble adapting to the changing
rules.

Another study conducted by Poarch and van Hell (2012) focused on bilingual, and
trilingual individuals as well as second language learners and monolinguals. They found that
when performing the Simon Task bilingual and trilingual individuals (individuals who
learned language before age of 5) bilingual and trilingual individuals outperformed, on
inhibitory control, both monolingual individuals and second language learners. However, the
advantage between bilingual/trilingual individual and second language learners was smaller. This indicated to the researchers that the bilingual advantage is enhanced by learning at an earlier stage in an individual’s life. However, it is still possible that there is an advantage for second language learners.

In sum, there seems to be a trend in studies that suggests that individuals who are bilingual present with an advantage in executive functioning skills. Researchers seem to continually find evidence to support this statement. However, they tend to hypothesize that it’s more specific than simply general preparedness in executive functioning but rather that these advantages stem from a mental flexibility present in these bilingual individuals. They further propose that this flexibility stems from the ability to switch between languages which in turn gives them the ability to, for example, switch between rules more easily than individuals who do not have to switch all the time between languages because they only speak one (Bialystok, Craik and Luk, 2012. Stoco and Prat, 2014).

It is important to note that in these studies researchers often did not address the issue of possible confounding variables. While they matched participants on fluency, and age they did not account for other variables that could affect the development of an individual’s executive functioning skills. However, most researchers did notice that on the different tasks the bilingual individuals only outperformed the monolingual individuals when the tasks involved sorting incongruent information indicating some relationship between the ability to sort two separate languages and the ability to sort between different rules or incongruent information.

As I previously mentioned there are many ways that the brain can be kept busy and constantly working to better itself. However there seems to be nothing more advantageous
for that effect than learning more than one language. Above, I discussed the cognitive benefits present in individuals who are bilingual. In the case of executive functioning skills bilinguals outperform monolingual individuals almost every time. Importantly, researchers have begun to try to establish just how prevalent and enduring this advantage really is. They have begun to ask questions not necessarily pertaining to the nature of these cognitive benefits and deficits but rather they ask when do they show up, until when to they last and if they are dependent on when an individual learns a second language.

Studies in development try to find connections between cognition and the way in which individuals develop throughout the life span whether it be pertaining to advantages or disadvantages in this area. In general, the minimal research that attempts to examine these intersections shows that individuals who are bilingual show an enhanced ability to maintain the cognitive benefits discussed above for an extended period in their lives.

Bialystok, Craik, Klein, and Viswanathan (2004) conducted three consecutive studies the purpose of which was to add to the literature on the cognitive benefits of bilingualism with the added twist of age. Their research question was whether the already established bilingual advantage persists throughout the lifespan and whether it helps lessen the negative effects aging has on cognition. Between the three studies they had individuals that ranged from 30 to 88 years old. About half of the participants were monolingual while the other half were bilingual. Participants in each of the three studies were asked to perform a Simon Task to test for the Simon effect. The Simon effect refers to the finding by J.R. Simon that showed that participant have better response times and are equally more accurate when the stimulus and response are in at least a similar location. These studies found that generally bilingual individuals performed better on the Simon task regardless of age. However, when age was
analyzed they found that bilingual individuals were able to avoid the increase in errors that are typical with ascending age when compared to their monolingual counterparts. It is important to note that eventually monolingual and bilingual individuals do converge meaning that the bilingual advantage only exists until a certain point. It is not exactly clear when the bilingual advantage begins to decline but it eventually does. However, cognitive abilities in bilingual individuals seem, according to these studies, to persist longer than those already lesser cognitive abilities of monolingual individuals.

Another study using a Simon Task specifically looked at bilingual individuals’ abilities related to inhibitory control depending on age rather than executive functioning skills in general. Inhibitory control is defined as the ability to perform and sort through between relevant and irrelevant information. In other words, it is an individual’s ability to pay more attention to the relevant information even when distracting or irrelevant information is presented. They found support for the results discussed above with one caveat. They found that older bilingual individuals were more efficient than older monolingual individuals but only when the task was relatively simple (Salvatierra & Rosselli, 2011).

In both studies researchers found support for the idea that bilingual individuals show a marked advantage when it comes to retaining executing functioning skills for a longer period in life. However, it is important to note that these are only two studies using a very specific type of task. They do begin to point to a possible pattern that must be further investigated in the future (Salvatierra & Rosselli, 2011. Bialystok et. al. 2004). Bilingualism seems to be at least somewhat associated with the ability to maintain executive functioning for longer in life when compared to monolingual individuals.
Before moving on to the deficits associated with being bilingual it is important to make note of the fact that the studies conducted on the benefits of being bilingual often focus on the same languages which gives rise to the question of whether the phenomenon is specific to certain languages or if it is replicable across other languages. Researchers Carlson and Meltzoff (2008) addressed that very question by examining Spanish-English bilinguals (a relatively unstudied group). The examined native bilinguals, English monolinguals, and children enrolled in second language immersion programs. Results showed two major findings. Native bilinguals outperformed both other groups on task indicating that the advantage is present across different languages and showing that there is an advantage to learning a second language in very early childhood as supposed to in school later.

There seems to be an emerging trend suggesting that most of the benefits of being bilingual are concentrated in the enhancement of executive functioning skills, however there is some existing literature that suggests that bilingualism can also enhance creative abilities. The research in this area has shown some conflicting results. The empirical research tends to show that bilingual individuals are more creative however in practical settings there seems to be no indication that that holds true (Khakurin, 2007). A study conducted by Kharkhurin (2007) found that bilingual individuals are not necessarily more creative however they have some better groundwork laid for divergent thinking which is integral to being creative. By nature of having enhanced cognitive abilities bilingual individual aren’t necessarily more creative but they have a better foundation for being creative than their monolingual counterparts by virtue of being better at thinking differently (Kharkhurin, Reber, & Tilei, 2005).
The bilingual cognitive performance advantage is well studied and considered robust. There is little doubt that there in fact exists an advantage in executive functioning that stems from being bilinguals. However, there is some evidence that supports the idea that there are also some disadvantages to learning two or more languages fluently. Researchers have articulated some of the differences that exist between bilingual and monolingual individuals when it comes to lexical access and retrieval.

To name a few of these differences. Several researchers have shown that bilingual individuals have longer reaction times than monolinguals on lexical decision tasks (Bijeljac Babic, Biardeau & Grainger, 1997; Ransdell & Fischler, 1987). Bilinguals performing picture naming tasks take longer periods of time to respond (Gollan, Fennema-Notestine, Montoya & Jernigan, 2007; Gollan, Montoya, Fennema-Notestine & Morris, 2005; Roberts, Garcia, Desrochers & Hernandez, 2002). When asked to perform verbal fluency tests bilingual individuals are unable to produce as many words when compared to their monolingual counterparts (Gollan, Montoya & Werner, 2002; Rosselli, Ardila, Araujo, Weekes, Caracciolo, Padilla & Ostrosky-Solis, 2000). They also make more errors when asked to perform any of the afore-mentioned tasks in a faster version (Bialystok, Craik & Luk, 2008). Finally, they experience the tip-of-the-tongue phenomenon more regularly than any monolingual individual (Gollan & Acenas, 2004; Gollan & Silverberg, 2001). While I recognize that these are skills related to executive functioning that difference lies in that the disadvantage only presents itself when bilingual individuals are presented with tasks specific to vocabulary. Any other task involving executive functioning skills would show an advantage on the part of the bilingual individual with one notable exception: vocabulary.
The study conducted by Bialystok, Craik and Luk (2008) compared monolingual and bilingual individuals in their performance on picture naming and verbal fluency tasks. When asked to employ working memory skills or general executive functioning skills in a short-term spatial recall task bilingual individuals, as expected from copious amounts of previous literature, outperformed monolingual individuals. However, these tests showed that when performing the naming and verbal fluency tasks bilingual individual performed poorly. They hypothesized that this finding stemmed from a smaller vocabulary size on the part of bilingual individuals. Further, they point to this possibly meaning that bilingual individuals are much less efficient at lexical retrieval in comparison to monolingual individuals.

Additionally, these findings remain regardless of whether the individual is speaking in their first or second language which point to the idea that this deficit is not a function of less fluency in one language versus the other but rather a function of knowing more languages that makes lexical retrieval more difficult (Ivanova & Costa, 2008).

Within this research of lexical deficiency, researchers became curious as to how this is mediated by age. To reiterate, research has in a nutshell shown that bilingual individuals show a deficit in their lexical/vocabulary retrieval skills such that when put in situations where this function is necessary monolingual individuals outperform bilingual individuals (Bialystok et. al. 2008). The research on this topic in developmental psychology aims to take these findings one step further relating them to age. Researchers want to investigate whether this lexical disadvantage is present only in childhood, only in adulthood or if it is persistent throughout the entire lifespan of a bilingual individual.

To investigate this afore-mentioned relationship between age and these deficits in vocabulary Ellen Bialystok along with several other researchers conducted a series of studies
over a period of seven years. These studies had the same general procedure. Participants completed the Peabody Picture Vocabulary Test III (PPVT), a test which is untimed and tests for verbal ability and aptitude. “The task requires [participants] to point to one of four pictures that best represents a word spoken by the experimenter. The items become increasingly difficult and detailed tables convert children's raw scores to standard scores based on their age. The test has been standardized on an American sample ranging in age from 3 to 89 years old and has a reported population mean of 100 and a standard deviation of 15” (Bialystok et. al. 2010).

One of the studies performed throughout this seven-year period focused specifically on children aged three to ten. As mentioned above these participants were asked to complete the PPVT-III and scores were analyzed. In the case of this study Bialystok, Luk, Peets and Yang were able to discover several findings. However, the most salient finding was that children who were monolingual outperformed children who were bilingual (Bialystok et al. 2010). In other words, they found that children who were bilingual showed a disadvantage in this task indicating a deficit in lexical functioning.

Not long after that study was published Bialystok and Luk took the data from those seven years and they aggregated and analyzed the results of twenty of those previous studies to assess the varying lexical abilities in bilingual individuals across age groups. In total the studies come to have 1,605 participants from the ages of seventeen to eighty-nine. Once again, the composite scores showed that monolingual individuals outperform their bilingual counterparts on vocabulary related tests regardless of age (Bialystok & Luk. 2011).

If you take all of this information it comes out to participants that range from three years old, very early childhood, to eighty-nine years old, late adulthood. This is a sample that
comes out to be completely representative of an average lifespan. Bialystok and some of her colleagues summarized, based on the results regarding children and those regarding adults, that the vocabulary deficit present in bilingual individuals was present throughout their entire lifespan. Their findings support the idea that the lexical deficit present in bilingual individuals is a function of their bilingualism rather than a function of other factors such as age.

While evidence supporting the existence of cognitive benefits and deficits of being bilingual, specifically those involving executive functioning skills, are incredibly robust and well-studied the structural changes in the brain are not as understood or quite as uniform in the findings. There is existing literature on this topic. However, in contrast to the findings on executive functioning skills, which are similar across the board, the findings regarding the effects on brain structures are more varied across studies. The major difference is that researchers focusing on the brain itself have focused on different aspects rather than focusing on whether one finding can be repeated.

Bialystok, Craik and Luk (2012) found that several areas of a bilingual brain were activated. They saw activation of the dorsolateral/prefrontal cortex. They were also able to see activation of the Broca’s area, the left frontal area, the bilateral frontal regions, the bilateral precentral area, the bilateral caudate, the midline pre-supplementary areas, and the bilateral temporal regions.

Perani et. al (1999) conducted a study with both individuals who showed high proficiency in two languages and individuals who showed low proficiency. They asked the participants to listen to stories in both languages and then checked cortical activity. They found that individuals who were in the low proficiency group showed different patterns of
cortical activation depending on which language they were listening to while individuals in the high proficiency group showed the same pattern of activation regardless of the language they were listening to at the time. They found cortical activation in the left hemisphere in the temporal pole, the superior temporal sulcus, middle temporal gyrus and hippocampal structures.

Another study aimed to analyze differences in grey matter density. To test this they recruited 25 monolinguals, 25 early bilinguals and 25 late bilinguals, late (10-15) and early (before 5) denoting when in life the participant acquired a second language. They found that grey-matter density in the inferior parietal cortex was greater in bilingual participants than monolingual participants. This phenomenon was found to be much greater and significant in the left hemisphere. They also found it to be a trend in the right hemisphere though the data was not significant. They also found a negative correlation between grey matter density and age of acquisition such that the older you were when you acquired to the second language the less likely you were to have greater grey matter density therefore there seems to be a relationship between grey matter density and age at which language is acquired (Mechelli et. al, 2004).

Another area of study in the developmental literature is the study of the relationship between age of acquisition and cortical activation in the brain. Studies in this area suggest that when participants have low proficiency in their second language they show varying of cortical activity depending on the language they are employing whereas individuals who are highly proficient in both languages show no difference in cortical activity (Perani et. al. 1998).
There is much less research regarding the effects of bilingualism on brain structure than there is concerning the behavioral effects of being bilingual. Additionally, even the research that is available to us is not uniform and seems to point in many different directions from different areas of cortical activation to varying grey matter densities. Both could be true but few studies have taken on the task of replicating these findings meaning that they have little to no reliability which is an extremely important aspect of psychological research to establish some cohesive norm.

**Bilingualism, Biculturalism and Personality**

Another avenue of research that has emerged as a result of the growing interest in bilingual and/or bicultural individuals is the study of personality. More specifically the research in this area focuses on how personality traits in a bilingual and/or bicultural individual might shift depending on which language or culture they are employing in the moment. The literature on this subject has shown conflicting results. In a nutshell, there are two main competing trains of thought. Before continuing to discuss another section of research in the study of bilingual individuals it is important to explain what it means to be bilingual vs. what it means to be bicultural and how these are operationalized in studies.

Bilingualism as defined by Francois Grosjean, the former Director of the Language and Speech Processing Laboratory at the University of Neuchatel, is marked by an individual who uses two or more languages (or dialects) in their everyday life (2012). In contrast, “biculturalism represent comfort and proficiency with both one’s heritage culture and the culture of the country or region in which one has settled. It is applicable not only to immigrants who have come from other countries, but also to children of immigrant who-
although they are born and raised in the receiving society- are likely deeply embedded in the heritage culture at home with their families. It may also apply to individuals living in ethnic enclaves, where the heritage culture is likely to be maintained across generations, as well as to individuals from visible minority groups, who may be identified as different from the majority ethnic group even if their families have been in the receiving society for multiple generations” (Schwartz & Unger, 2010).

Bilingualism is much more easily defined than biculturalism since it is marked by an individual who is fluent in two languages while biculturalism is a much broader and harder term to define since it could encompass a wide variety of identities and emerge in a variety of different contexts. Bilingualism is relatively simple. There is an easy cut off because you are either fluent in two languages or you are not. You are only considered bilingual if you are fluent in two languages meaning that you can speak, write and understand both languages interchangeably. Bicultural individuals range from immigrants to refugees, ethnic minorities and people in interethnic relationships. Psychologically speaking, it generally refers to individuals who choose to identify or label themselves as such so that their identity reflects their cultural dualism (Nguyen & Benet Martinez, 2007). Therein lies the biggest complication with operationalizing biculturalism. It’s about an individuals’ identity therefore it is harder to define a clear cut off because individuals decide whether they consider themselves bicultural or not. However, researchers tend to define an individual as bicultural when they have internalized two cultures meaning that they are able to fully switch between two separate cultural concepts.

It is important to note that individuals can be both bicultural and bilingual however just because you are bilingual does not mean you are necessarily bicultural and vice versa.
Bilingualism results simply from the acquiring fluency in more than one language while biculturalism results from individuals internalizing more than one cultural meaning system which in turn makes it so that these individuals have different access to different cultural norms (Hung et. al, 2000).

In its inception research on the personalities of bilingual individuals steamed from the idea that individuals who are bicultural show varying personalities traits depending on which culture they are thinking in. They also claim that this can occur through cultural icons or language. Meaning that the personality differences could be a function of language in the sense that language is a tool that helps internalize cultures. In this sense language (or anything that activates the culture) is acting as a catalyst that allows the bicultural individual to switch between different cultural schemas, which is a phenomenon called cultural frame switching.

Cultural frame switching is defined as the ability to move between different cultural meaning systems in response to situational cues (Benet et. al. 2002). This ability to switch between cultures is what allows bicultural individuals to navigate between sometimes conflicting cultures. A study on this ability to switch between cultural frameworks, using Chinese American individuals, found that when presented with culturally meaningful primes the individuals switched from the cultural norms of one culture to the other but not when presented with neutral stimuli (Benet et. al. 2002). This shows that internalizing cultures does allow a bicultural individual to switch between the cultural norms of their varying cultures.

Several studies have found support for the aforementioned claim. One study found that Spanish-English bilingual individuals varied in their scores on the Big Five Inventory depending on the language in which they received it. The researchers in this study
hypothesized that it was due to the participants’ ability to switch between two varying cultural frameworks. The basis for this claim lies in the fact that character traits that were prevalent for each person in each of the languages. In other words, they found that the traits that were prevalent for each language also aligned with cross-cultural differences that would be expected in personality in those cultures (Ramírez-Esparza et. al. 2006).

Another study conducted by Luna, Ringberg, and Peracchio (2008) attempted to tease out whether cultural frame switching is a function of biculturalism or bilingualism. They did this by conducting the study using individuals who were monocultural bilinguals or bicultural bilinguals. In doing this they were also considering the question of whether it is possible that language triggers switching between culturally specific identity frames. They found that the cultural frame switching only occurred in individuals who are both bilingual and bicultural again indicating that the phenomenon occurs when an individual has internalized more than one cultural framework. These findings further point to the possibility that language, though seemingly not the cause of the personality differences, can serve as a catalyst to activate the different cultural norms as well as aid in the internalizing process.

Some researchers believe, based on evidence, that bilingual individuals regardless of whether they are bicultural or monocultural, will report identifying more with varying traits depending on the language in which they are existing in the moment. In other words, individuals who are bilingual will report themselves to be more in line with differing traits depending on which language they are being primed to think in. In this view the language doesn’t enhance cultural frame switching as discussed above but instead is responsible for the phenomenon of varying personality traits regardless of biculturalism. To my knowledge only
one study has tackled this idea of personality being possibly shaped or altered specifically by function of the language that the bilingual individual is using in the moment.

This study was conducted by researchers Veltkamp, Redio, Jacobs, and Conrad (2012). Their study was comprised of 68 individuals who spoke German and Spanish but were late learners meaning that they learned their second language after the age of 12. Some spoke German as their first language while others spoke Spanish as their first language. Each participant was first administered a language proficiency test. Once they had assessed each participants’ ability to navigate both languages with ease and fluently they administered the Neuroticism Extraversion Openness Five Factor Inventory (NEO-FFI), a personality assessment test, in both Spanish and German. They found that both the group who had acquired Spanish first and the group that had learned German first scored higher on extraversion and neuroticism when they were speaking in Spanish rather than German. They also found that both groups were higher on agreeableness when they completed the NEO-FFI in German. Their findings suggest that there is a relationship between second language learning and personality such that the language of use influences which character traits are more salient when taking a personality test such as the NEO-FFI.

These differing claims have yet to be thoroughly investigated indicating that the results on either side are hard to generalize at the moment. However, they do present psychologist with interesting avenues that could be investigated to further elucidate whether these claims are really competing or if they might converge in some way.

**Conclusion**
Topics of popular study in psychology come and go. At one point in history researchers felt a need to study aggression and so study after study was published in regards to this topic and different intersecting topics, at another point they felt the need to study authority and again study after study came out discussing authority and the hot topics of the moment are both bilingualism and biculturalism. Being bicultural and/or being bilingual have become more common and more acceptable in the last three to four decades. As the world has become more connected people are becoming more connected to individuals from different cultures. People meet people from different cultures and learning different languages doesn’t seem as inaccessible or unimportant. Being a part of more than one culture isn’t rare or unheard of. Being bilingual, bicultural or both can be an advantage in your life and more often than not it is. Because of this studying individuals who fit into one or both categories has slowly become not only more popular but also increasingly relevant to the realities of people today. Researchers in the field of psychology want to know exactly what makes bilingual and/or bicultural individuals different than the rest of the population. Do they walk through the world differently than the rest of us? What differences might this lead to in term of cognition, development, personality, and so much more?

The literature review above examined the empirical work done on bicultural and/or bilingual individuals. The present study focused on three major elements: personality, cognition and development. The cognitive benefits and deficits of being bilingual were examined along with the literature on the effects of bilingualism on development in terms of aging and differences throughout the lifespan. Additionally, in the developmental literature lexical retrieval deficits in bilingual individuals were examined in terms of whether this phenomenon is persistent throughout the lifespan. Finally, the effects of bilingualism and
biculturalism on personality were examined in term of how being one, both or the other can shape the way an individuals' personality develops and how it can shift depending on the language or culture being spoken or presented.

There is, overall, a large amount of literature concerning bilingual and/or bicultural individuals. However, it is a relatively new field of study in psychological research meaning that there are still many gaps in the research that have yet to be addressed. There are also areas that have been investigated by one or two studies but because of the nature of psychological research such little evidence makes it hard to claim any sort of pattern without first taking on the task of replicating findings across different studies.

**Gaps and Future Directions**

**Cognition and Development**

In term of the literature concerning executive functioning skills there is one major gap that I would like to see addressed in the future. Currently, the bulk of research assessing the relationship between the advantage in executive functioning skills and bilingualism has established that there is a bilingual advantage (Bialystok et. al. 2004, Bialystok, Craik and Luk, 2012, Stoco and Prat, 2014). However, researchers have made no effort to investigate or even recognize the possibility of a connection between this aforementioned advantage and biculturalism. Conversely, the literature on enhanced creativity discusses that biculturalism has a negative effect on divergent thinking separate to the positive effects of bilingualism on divergent thinking therefore suggesting a distinct difference between the effects of being bicultural and those of being bilingual (Kharkhurin, 2005). Additionally, some of the literature on personality suggests that being bicultural affects the way an individuals’
personality is expressed in a given cultural context (Benet et. al. 2002) while others suggest that this phenomenon occurs as a function of the language being spoken or primed (Veltkamp, Redio, Jacobs, and Conrad, 2012).

Given the literature on creativity and the literature discussed on the existing nuances in personality it would be a logical next step to investigate whether the relationship between the advantage is a result of bilingualism or biculturalism. Another question to consider would be: if bilingualism enhances our bicultural identity then does it in turn enhance cognitive skills. Rather than it being an either/or phenomenon is it possible that bilingualism enhances bicultural identity and those together enhance cognition. In other words, could cognitive benefits be confounded by culture. Further, one could ask if it is possible that the advantage in cognitive skills would vary depending on whether an individual is bicultural, bilingual or both.

In terms of developmental research, the literature is quite small in comparison to that which exist in terms of cognitive benefits and deficits of being bilingual. It seems that there is an interest in exploring the research pertaining to how a bilingual individual might develop differently than a monolingual individual but regardless of that interest the existing literature needs to be more developed. One major gap that needs to be addressed is the relationship between age of acquisition of second language and the apparent advantages and disadvantages of bilingualism.

There is some research that supports the claim that native learners show an advantage over second language learners (late learners) in the existence of cognitive benefits (Carlson & Meltzoff, 2008). This literature indicates a relationship between age of acquisition and existence of benefits such that the earlier one learns a second language the more like an
individual is to present enhanced executive functioning abilities. While this one study does address this issue from the point of view of the benefits it is not enough to say it is a trend among the population. First there needs to be more research around the benefits and how they are related to age to rule out the possibility that the previously mentioned study is an outlier. Additionally, the research needs to be extended for the deficits associated with bilingualism. The question of age of acquisition is an important one given that it could affect how we develop programs for second language learning. Given different results the education system could be altered accordingly to enhance the cognitive skills of the currently non-bilingual population.

Answering question such as does the time in which a person begins to learn a second language affect their ability to gain the bilingual advantage in executive functioning or does it affect whether they acquire the lexical deficits could be integral to understanding the bilingual or bicultural experience. Could the lexical deficits be mediated by whether in a persons’ development they learn both languages simultaneously or one first and then the other? Hundreds of questions could arise as researchers delve deeper into this subset of developmental psychology which is why it is important that psychologists continue the path to answering these questions.

Finally, the research mentioned above could suggest that there is a relationship present where biculturalism is important rather than just bilingualism given that it was the native bilinguals who showed the most enhancement benefits (Carlson & Meltzoff, 2008). Similarly, to the research on cognition, the studies on this topic need to address the issue of teasing out whether it is biculturalism, bilingualism or both that gives rise to this advantage.

Personality
One of the biggest gaps in this literature is that the studies investigating personality utilized self-report measures meaning that their assessment was based on how bilingual individuals saw their own personalities rather than observing their behavior. One of the biggest problems with using self-report measures, even those that have been tested for reliability, is something called social desirability bias. This occurs when the survey respondent answers in ways which they deem desirable for others. In other words, responders answer in ways they believe will be viewed favorably by others. One form this can take is over-reporting good behavior or the flipside underreporting bad behaviors. In the case of bicultural individuals, it is possible that participants answer in ways in which they believe they should be based on what is acceptable or common in the culture they are activating in the moment.

Researchers need to couple self-report measures with observable behavior to establish whether this phenomenon of varying personalities is even there to begin with. Additionally, given social desirability bias, if it is there would the self-reported behavior and the observable behavior match up. I would suggest conducting studies where the participant is forced to interact in situations that employ the two different cultural frameworks or ask them to interact in their two different languages. In doing so, the researcher can code for certain character traits to further understand whether the shift in personality is observable or if it is just something individuals think is happening. Another possible way to study this would be to bring friends and family members into the study to see how they see the participant when they interact with them in various languages or various cultural situations.

Once the phenomenon has been established as true, the next logical step would be to investigate how this affects the individuals’ concept of themselves. In other words, does
having varying traits depending on various factors lead to a more fractured or confused self of self or does it instead lead to an individual who is more complex, nuanced and enhanced. Does language help you internalize culture? Furthermore, could the phenomenon of personality changes be a function of whether a bicultural individual speaks both languages that are pertinent to their two cultural backgrounds?

Ultimately, it is important to also investigate the intersections between these different disciplines in psychology. One way to do this could be to study the intersection between personality and development. Meaning that researchers could ask questions relating to how an individuals’ self-identity or self-scheme develop throughout the lifespan in relation to their ability to speak two languages or their ability to exist within more than one culture. Another question could be how does being bilingual affect your identity and how you see yourself throughout your life? Same question could be asked about being bilingual. Another way to connect these disciplines would be to ask about the possible relationship between the structural changes in the brains of bilingual individuals and personality. Researchers could investigate the possibility that there structural changes in the brain of bilingual individual can affect how their personalities develop throughout their lifespan. The possibilities for intersectional research are boundless and should not be ignored.

The current state of the world says to me that we cannot yet abandon these lines of inquiry. Bilingual as well as bicultural individuals are rapidly becoming more and more common to the point of outnumbering monolingual and monocultural individuals. Research in these various disciplines discussed in relation to these individuals could help elucidate ways to enhance the development and cognition of humans in general and that possibility alone should be enough to warrant further research. Understanding how these individuals
walk through the world in relation to these different disciplines could be integral to understanding at least some parts of the human psyche. Bilingualism and Biculturalism are no longer small phenomena. Individuals who place into one or both categories rise by the day and understanding them better could help not only them but also all of us. One example of something that could help all of us is, understanding completely why it is that bilingual individuals have enhanced executive functioning skills that last later in life than those of monolingual individuals could illuminate ways in which we can better our education system to provide modes by which we can enhance the executive functioning skills of all students.

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