

An analysis of the major problems faced by researchers in the investigation of the relationship between bilingualism and cognitive development

バイリンガリズムと認知能力の発達の関係を探る研究の問題点

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The relationship between bilingualism and cognitive development remains a contentious issue for both educators and parents. In the context of promoting any form of bilingual education, a major concern exists as to whether bilingualism is advantageous or disadvantageous in the development of a child's cognitive processes. This paper analyzes the problems faced by researchers in measuring the effects of bilingualism on cognitive development, especially in the areas of divergent thinking, concept formation and meta-linguistic awareness. Research in the early part of the twentieth century tended to produce negative or, at least neutral results. Since the 1960s, however, research has produced more positive and encouraging results and this paper analyses some of the main reasons for this shift. This paper argues that further research based on a wider multidisciplinary approach is necessary if models are to be developed to accurately explain the relationship between bilingualism and cognitive development.

バイリンガリズムと認知能力の発達の関係は教育者にとっても、子供を持つ親にとっても議論の多い分野である。バイリンガル教育を促進しようという動きの中で、果たして二つの言語を使うことが子供の認知能力の発達に有利に働くのか、不利になるのかのという疑問がある。本稿では、二つの言語を使うことが認知能力の発達にどのような影響をあたえるかを測定する時に研究者が直面する問題点、特に発想の転換、概念の形成、メタ言語の認識等の分野でバイリンガリズムがどのような影響を与えるのかを測定する時に直面する問題を扱う。20世紀初期にはバイリンガリズムは害がある、あるいは特にプラスの面がないとされてきた。1960年代に入って、バイリンガリズムの良い点を強調した研究が数々発表された。本稿では、バイリンガリズムに対する研究の方向転換がどのような原因で起こったのかを探る。又、バイリンガリズムと認知能力の発達の関係を解明するにはもっと学際的な研究が行われなければならないことを論じる。

Given that bilingualism has been with us in some form or other for over five thousand years (Genesee, 1987, p. 1) and that in the world today “for many communities bilingualism is a normal requirement for daily communication (Hoffman, 1991, p. 3)”, the “justification of establishing bilingualism must rest, at least in part, on the conviction that the child will benefit cognitively from being bilingual (Hoffman, 1991, p.120)” may appear to be expressing a redundant plea. Far from being redundant, however, Hoffman’s statement highlights how contentious the relationship between bilingualism and cognitive development remains as focus for research. Even though there may indeed be a ‘chicken and egg’ relationship between the two (Baker, 1993, p. 128), during the long history of debate over this issue the emphasis has tended to be on producing results that show the effects bilingualism has on cognitive development rather than on cognitive ability enhancing language learning. In the context of bilingual education, this shift in emphasis reflects a major concern at all levels of society, from parents and teachers through to education administrators and policy makers; is bilingualism advantageous or disadvantageous in the development of a child’s cognitive processes?

From the outset researchers have faced overwhelming difficulties. Against a background of trying to determine a definition of bilingualism itself (“There is little consensus as to the exact meaning of the term bilingualism (Cummins and, Swain, 1986, p. 3).”), researchers have had to devise methodologies that could measure the effects it has on bilinguals. To what extent is a person bilingual? How do you actually test intelligence? Who should be tested? How important are cultural and social factors and the individual’s attitude to bilingualism itself?

Most of the research carried out before the 1960s produced negative, or at least neutral, results. The belief that ‘two-into-one-can’t-go’ or, more formally, the ‘balance and balloon’ theories of bilingualism were, and still “are held intuitively by many people” (Baker, 1993, p. 132). The type of testing did little to dispel such beliefs. Saer’s research in Wales in the 1920s indicated that bilinguals were indeed behind monolinguals in terms of intelligence. These results are, however, open to question. The main method of research by Saer was the IQ test. IQ tests only measure a small part of what may be termed “intelligence” and have also been criticized on the grounds that they are culturally biased because “so many items are designed to meet socialization norms of the culturally dominant group (Ovando and, Collier, 1987, p. 224).” The bilinguals tested in this study were also at a disadvantage as they were tested in their weaker language. This proved to be a recurring area of contention during the twentieth century. Macnamara was criticized for using the same language bias in his study of Irish primary school children in 1966 (Cummins and, Swain, 1986, p. 9). Baetons Beardsmore highlights adherence to this methodological flaw when he states, “No one would seriously consider testing a monoglot by

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means of a foreign language for intelligence measures (Baertons Beardsmore, 1986, p. 111).” Research in the early part of the twentieth century also tended to pay little attention to the classification of bilinguals used in the research groups (for example, to what degree were they bilingual?) and very often generalizations were extrapolated from small and inadequate samples (Baker, 1993, p. 110).”

Peal and Lambert’s research in 1962 is often cited as a turning point leading to a shift in attitudes towards the relationship between bilingualism and cognitive development. This is not only because their research showed that there were positive effects of bilingualism on cognitive functioning, but also because of the actual methods used to reach their conclusions. Though still employing IQ tests, Peal and Lambert also looked at other areas of mental activity, focusing especially on non-verbal intelligence and concept formation. A major difference from any previous research was that the study group used contained balanced bilinguals from the same socioeconomic background. The results of this research seemed to indicate that bilinguals displayed greater mental flexibility and had the ability to form concepts more readily than monolinguals and therefore “ the cognitive functioning of bilinguals benefited from their bicultural experience and from positive transfer between languages (Hoffman, 1991, p. 123)”

These conclusions, however, are still open to criticism. Even with a research group composed of balanced bilinguals, the problem arises as to whether balanced bilinguals from the same socioeconomic group are representative of all bilinguals. Furthermore, Peal and Lambert recognized themselves that a central problem still remains. Even if there is a measurable correlation between bilingualism and cognitive development, it is difficult to determine which occurs first. It should be noted, however, that more recent studies do tend to support Peal and Lambert’s initial findings and suggest, “that bilingualism is more likely to be the cause of increased cognitive abilities than the reverse (Baker, 1993, p. 128).”

Peal and Lambert’s research methodology was, nevertheless, important as it influenced later researchers to move away from only IQ testing toward a more multi-disciplinary approach to studying the relationship between bilingualism and cognitive development. Ianco-Worrall’s study of English-Afrikaans bilinguals (1972) and Cummins’ research with Irish-English bilinguals and Ukrainian-English bilinguals (1978) are examples of more multi-disciplinary approaches. Both concluded that bilingual children were at a more advanced stage of meta-linguistic awareness than monolingual children in that “they had a greater ability in their consciousness of language forms and properties (Hoffman, 1991, p. 125).”

Baker defines divergent thinkers as those who “prefer to provide a variety of answers, all of which can be valid (Baker, 1993, p. 118).” Within this context of cognitive development, the

research of Torrence et al (1970), Scott (1973), and Carringer (1974) resulted in evidence showing that bilinguals exhibit a greater degree in divergent thinking than monolinguals when given the same tests (Cummins and, Swain, 1986, p. 16).” Significantly, such cognitive ability would put bilinguals at a disadvantage in a traditional IQ test where the participant is restricted to finding only one correct answer to a question.

Even though many of the studies in the 1960s and 1970s showed positive findings, there still remained shortcomings in the methods of research being used. A major problem common to these studies was the “lack of adequate controls for possible background differences between bilingual and monolingual groups (Cummins and, Swain, 1986, p. 16).” Research from the 1970s onward began to analyze what these ‘background differences’ could be and how important they were in explaining many of the seemingly contradictory results which research to this point had produced.

A major trend in research, which started in the 1970s, was for researchers to consider the importance of socio-linguistic factors when studying the effects of bilingualism on cognitive development. Researchers began to realize that it was how society and the speakers themselves viewed the ‘other language’, be it the majority or minority language within that society, which was important in the motivation to adopt that language. Lambert (1990) puts forward the hypothesis that many of the studies which have shown positive results, have involved bilinguals who view the two languages they use as having ‘social value and respect’ or whose L1 was dominant and in no danger of being replaced by L2. He termed this notion “additive bilingualism.” In contrast, studies which produced negative results were often associated with bilinguals whose L1 was in danger of being replaced by a more prestigious L2 and, therefore, these bilinguals felt that they were being forced to put aside their ethnic languages. Lambert refers to this notion as “subtractive bilingualism.”

In a further development to this analysis, Cummins (1976) and Toukomaa and Skutnabb-Kangas (1977) put forward similar theories centering on the idea that “there may be threshold levels of linguistic competence which a bilingual child must attain, both in order to avoid cognitive disadvantages and allow the potentially beneficial aspects of becoming bilingual to influence his cognitive functioning (Cummins and, Swain, 1986, p. 18).” Research now indicated that before any positive effects of bilingualism could occur, a certain level of proficiency in both languages had to be attained. “Studies have found that bilinguals with sufficient proficiency in L1 and L2 have cognitive advantages over monolinguals on measures of cognitive flexibility, linguistic and meta-linguistic abilities, concept formation, divergent thinking skills, creativity and diversity (Ovando and, Collier, 1987, p. 243).” This ‘Thresholds Theory’ has gained support in recent

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years but there still remains the problem of defining exactly the language competency thresholds a child must pass through to gain any positive advantages from being bilingual.

Although the period since Peal and Lambert's research has been one of more optimism when attempting to analyze the relationship between bilingualism and cognitive development, opinions remain very much divided or, at least, non committal. Baker probably best sums up the present situation of research in this area when he succinctly states, " While there is insufficient evidence to satisfy the skeptic, the evidence that currently exists does lead in the direction of bilinguals having some cognitive advantages over monolinguals (Baker, 1993, p. 129)."

In conclusion, from research results available to date, it would appear that areas of cognitive functioning such as divergent thinking, concept formation and metalinguistic awareness are enhanced by bilingualism. However, such benefits only seem to occur where socioeconomic, cultural and political influences provide bilinguals with positive support and motivation. Furthermore, any research which has shown the advantages of bilingualism on cognitive development has arisen only where the groups tested were balanced bilinguals in situations that promoted additive bilingualism. In many countries, however, there exist conditions where socioeconomic, cultural and political forces, which already promote a subtractive form of bilingualism, are still reluctant to accept research results which promote the positive effects of bilingualism on cognitive development. The task continuously faced by researchers in this field remains daunting. Not only are they expected to provide concrete results to show that bilingualism has positive effects on cognitive development, but also that this relationship does not have negative effects on bilinguals. The complexity of the subject matter itself, and the issues that have been raised out of the research carried out thus far, indicate that a continued multi-disciplinary approach is necessary to develop models that can more accurately explain the relationship between bilingualism and cognitive development.

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