The relationship between bilingualism and the cognitive development of bilingual children.

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The relationship between bilingualism and its effects on childrens cognitive development has been the centre of long running and often emotional debate by educationalists, psychologists, sociologists and bilingual communities alike.

Until the early 1960's bilingualism was widely believed to have detrimental effects on children's cognitive development, and it was not until the landmark research of Peal and Lambert in 1962 that a turning point was reached in the way that bilingualism and its relationship to cognition was viewed. Their work drew attention to the fact that the sampling methods of previous research had been lacking in accuracy and had created biases against bilingual children, for example, not taking into account such vital factors as socio-economic class, age, gender, school history etc.. Also the tests which the children had been made to undergo tended to compare only one of the bilingual's languages with the verbal skills of monolinguals and did not consider the children's total linguistic proficiency.

Peal and Lambert set out in their research expecting to pinpoint a bilingual deficit in their subjects. However their findings were the quite to the contrary, "They found that bilinguals scored more highly than monolinguals in both verbal and non-verbal measurements of intelligence. The authors argued that the former had a more diversified structure of intelligence and greater mental flexibility, and that therefore the cognitive functioning of bilinguals benefitted from their bicultural experience, and from positive transfer between languages." Hoffman (1991: 123)

Although in retrospect this research of Peal and Lambert has been found to contain a number of flaws, it did however speak of bilingualism and its relationship to cognitive development in *positive* terms, and thus had a profound impact on subsequent studies in this field, which had previously, for numerous reasons been overwhelmingly negative.

The term cognitive development itself is open to wide interpretation and this too is the centre of debate, however for the purposes of this essay I shall refer to some of the components of cognition, they are general intellectual and linguistic skills such as verbal and non-verbal I.Q., divergent thinking, academic performance and metalinguistic awareness.

KEY WORDS: *Cognitive development Metalinguistic awareness Bilingualism detrimental/positive effects intellectual skills divergent thinking*

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In recent years a number of cognitive advantages have been reported in relation to bilinguals. Some researchers have reported higher levels of linguistic skill in bilingual children when compared to their monolingual counterparts. Positive results have also been recorded referring to the connection of bilingualism to general intellectual skills and divergent thinking, whilst numerous studies have also produced evidence that bilingualism promotes an analytic orientation to linguistic and perceptual structures and increases the individual's sensitivity to feedback cues.

I shall now refer to some of the research in which a positive relationship between bilingualism and these cognitive functions have been pinpointed. Firstly with regard to metalinguistic awareness and linguistic skills, according to Dopke, McNamara and Quinn, "Metalinguistic awareness is tested by means of tasks which require the subject to differentiate between form and meaning. During ordinary conversations, attention is focussed on meaning. Focussing on the form of the linguistic information instead of the meaning involves the deliberate control of linguistic processes." (1991: 38)

The most widely used test of metalinguistic awareness is Piaget's (1929) sun/moon test. In this test children are asked whether it would be possible to call the sun 'moon', and which time of day it would be if that 'moon' was up in the sky. It had been suggested that bilingual children should be able to agree to this exchange of labels and predict the ensuing consequences at an earlier age than monolingual children. Subsequent studies by Ianco-Worrall (1972) and Ben-Zeev (1977) found that to be the case.

In tests of metalinguistic ability where children had to make choices according to semantic or phonetic criteria, Ianco-Worrall found a significant difference between monolinguals and bilinguals. The bilingual subjects linked words by their semantic criteria whereas monolinguals chose word relations according to their sound. She also found that monolingual children were much more likely to feel that the names of objects were not interchangeable. Among older children she discovered that both monolinguals and bilinguals tended more towards semantic relations rather than phonetic, thus inferring that compared to their monolingual counterparts, young bilingual children were at a more advanced stage of metalinguistic awareness, that is, a further developed ability in their consciousness of language forms and properties.

Ben-Zeev's study of Hebrew-English and Spanish-English children yielded similar positive results in word association and word substitution. She inferred that "bilinguals showed greater cognitive flexibility and were capable of more complex analytical strategies in their approach to language operations." Hoffman (1991: 125.) It has been noted however that in Ben-Zeev's study, the advantage was greater for the middle-class subjects than for the working-class subjects - a factor that seems to appear in a lot of bilingual research.

The results of several other studies are consistent with the hypothesis that bilingualism can increase the children's ability to analyse linguistic input.

"These findings that bilinguals often display a more analytic orientation to language than unilingual children are consistent with the views of Vygotsky, who argued that being able to express the same thought in different languages will enable the children to see his language as one particular system among many, to view it's phenomena under more general categories, and this leads to awareness of his linguistic operations." Lambert and Tucker, 1972 (in Cummins and Swain, 1986: 13)

Lambert and Tucker, in their studies of a French immersion programme in Canada, also suggested that for children as participants in immersion programmes also, along with the development of increasingly high level bilingual skills, they are likely to practise a form of 'incipient contrastive linguistics', by comparing the syntax and vocabulary of both languages.

Over the years, the connection between bilingualism and intelligence has probably been the most emotional and controversial areas of contention - the problem being once again of the nature of testing methods used in the past, and social and political influences. Fundamentally, the use of verbal tests in measurements of intelligence among groups using different languages has been sharply criticised. As Baetens Beardsmore comments that, whilst no-one one would seriously consider testing a monoglot by means of a foreign language for intelligence measures, many bilinguals have in the past been subjected to tests in their weaker language, which subsequently led to false conclusions about their intellectual capabilities. Also gross over generalisations have occurred about certain minority groups and their intellectual capacities related to their being bilingual, without regard to important factors such as the quality of their education, their socio-economic situation etc.

As Baetens Beardsmore (1986: 92) says, "It is not sufficient to assume that, because a bilingual has received all his education in a given language which differs from the home language, this compensates for not taking into account the potential compartionalisation of language behaviour." According to Cummins and Swain (1986), the problem of bilingual children being misdiagnosed through I.Q. testing is still a problem in today's schools. They mention that;

"psychologists often assume that because an E.S.L. student's L2 face to face communicative skills appear adequate, they are therefore no longer handicapped in a verbal I.Q. test by their E.S.L. background. In other words, it is assumed that the language proficiency required for L2 face to face communication is no different from that required for performance on a L2 cognitive /academic task. This assumption leads directly to the conclusion that poor performance on a L2 verbal I.Q. test is a function of deficient cognitive abilities" (p.140)

Despite the many shortfalls of the I.Q. testing of bilinguals, both past and present, a great amount of research has, in more recent years, with increasing attention to testing criteria and content, produced positive results in favour of bilingual children when compared to their monolingual counterparts. Peal and Lambert (1962) reported that in their study of French-English 10 year old bilinguals in Canada, that when compared to monolingual children matched for SES, sex and age,

the bilinguals showed a higher level of both verbal and non-verbal intelligence. Cummins and Gulutsan (1974) also reported significantly higher results in favour of bilinguals.

Liedke and Nielson, (1968) also in studies of French-English bilinguals in Canada reported that bilinguals surpassed their monolingual counterparts on measures of concept formation. They then hypothesized that "the bilingual child is exposed to a wider range of experiences due to the greater amount of social interaction involved in learning two languages as compared to one." Cummins and Swain (1986: 15). It was also noted by Bain that in the early primary years, when tested on rule discovery tasks bilingual pupils far surpassed their monolingual peers, however he noted that by grade six, the differences were not significant.

Numerous studies of bilinguals on tasks of divergent thinking have also produced positive results. In studies where they have been compared to monolinguals, bilingual children have consistently been shown to perform superior to monolinguals on tasks of divergent thinking. These studies include the work of Ianco-Worrall 1972; Scott 1973; Cummins and Gulutsan 1974; and Ben-Zeev 1977, to mention just a few.

The most common tasks for testing ability are along the lines of, "Think of X and tell me how many things you can do with it," - open-ended problems. Scott (1973) and Landry (1974) claimed that divergent thinking increased with age, however as both had studied in depth bilingual subjects from immersion programmes, it may be the case that it was the degree of bilingualism, rather than the age that produced the cognitive advantage of the bilinguals.

In more recent studies, Kessler and Quinn (1987) focussed on bilingual and monolingual children who were learning within an inquiry-based science programme - in which the children were encouraged to formulate scientific hypothesis in a problem -solving setting. The children's written hypotheses were then analysed, and it was found that not only did the bilingual children outperform the monolinguals in the quality of hypotheses, they also outperformed them on both semantic and syntactic measures also. This was perceived to be an indication of enhanced linguistic and cognitive creativity directly related to their bilingual language proficiency.

"Explanations offered for this phenomenon draw on the cognitive flexibility needed by the bilingual child in order to overcome negative transfer between the languages. Torrance et al (1970) hypothesise that the tension resulting from the competition of new and old associations facilitates originality in thinking and plays important roles in scientific and artistic breakthroughs." (Dopke et al 1991: 43)

The significance of a bilingual's unique access to two cultures arguably enables them a wider range of perspectives and experiences than monolinguals, enhancing their ability to think flexibly. "Their need to switch from one code to another has also been seen as beneficial to flexible thinking, as each language may provide the speaker with distinct perspectives. Although neither of these ideas

can yet be supported by conclusive research evidence, they do suggest an interesting panorama." (Hoffman 1991:126)

Particularly in situations where the child's two languages are nurtured, such as in the case of a family trying to implement a 'one parent one language' system to teach the child two home languages simultaneously, the extra effort of the parents to provide stimulating learning opportunities (such as travel) and learning resources (such as a wide range of books and videos etc.) would potentially be an intellectually stimulating environment, enhancing the child's flexibility in thought.

In spite of the evidence by scholars in the fields of psychology, linguistics and education showing that bilingualism per se does not have any negative effects on childrens linguistic and cognitive development, disproportionately large numbers of bilingual children it would seem, are unsuccessful in school. The aforementioned studies have overwhelmingly come out in favour of bilingualism having many positive cognitive effects, so why, one asks, do so many bilingual children (predominately from L1 minority groups) struggle within their educational setting?

If one looks closer at the children in question, their levels of language proficiency and subsequently their academic achievement are undoubtedly affected by the many varied social circumstances surrounding them. Naturally many monolingual children struggle in their academic achievement, and so often this is put down to factors such as their socio-economic status, their home environment etc., yet ironically when a bilingual child has trouble at school his or her being bilingual has often been seen as the cause by teachers. One must say that traditional education systems, and the way that schools worldwide have dealt particularly with migrant education, has also been largely responsible for this phenomenon.

The type of school programme that the bilingual child is exposed to plays a vital role in the effect on the child's academic progress, and cognitive development. Positive results tend to be associated with immersion programmes, whilst negative results have mostly been associated with submersion programmes.

The majority of positive studies have been 'additive', involving bilingual children whose L1 was dominant, prestigious, and not in danger of replacement by the L2. "The resulting form of bilingualism is termed 'additive', in that the bilingual is adding another socially relevant language to his repertoire of skills, at no cost to his L1 competence. Thus the bilingual students in studies which have reported cognitive advantages associated with bilingualism have generally attained a high level of competence in both languages." (Cummins and Swain, 1986:18)

Of the negative studies involving bilingual students, cases where the group's L1 is gradually being replaced by a more prestigious L2, as in the case of migrant children being 'submerged' in an L2 majority classroom were notable. Lambert (1977) termed the resulting form of bilingualism as being 'subtractive', as the child's competence in both languages is likely to reflect some stage in the

subtraction and replacement by the L2, resulting in some bilinguals in studies displaying less than native-like competence in both languages.

A 'threshold hypothesis' was suggested by Cummins 1976, and by Toukomaa and Skutnabb-Kangas 1977, in that a level of competence that bilingual children achieve in their two languages may act as an intervening variable mediating the effects of bilingual learning experiences on cognitive functioning. "One major educational implication of the threshold hypothesis is that if optimal development of minority language children's academic and cognitive potential is a goal, then the school programme must aim to promote an additive form of bilingualism." (Cummins and Swain, 1986:18) The "child must sink or swim" attitude of teachers and policy makers, particularly of the past with regard to migrants, must be totally abandoned. The needs of the child must be pinpointed and catered for in order to develop his or her full potential.

Research has overwhelmingly concluded that bilingualism per se does not have any negative effects on cognition. In fact the opposite increasingly appears to be the case; that high levels of bilingualism have accelerating effects on children's cognitive development. Cummins and Swain (1986) have suggested that when the home language is different from that of the school, and given low status, and where the children come from economically deprived homes, that it would be appropriate to initially educate the child in the child's mother tongue, and upon this foundation, switch the language of instruction later to that of the school language.

On the other hand, where the L1 home language is that of the majority, and where literacy is encouraged in the home, 'additive' bilingualism is said to be best promoted by providing initial instruction in the second language. Thus the potential cognitive and linguistic benefits for children fortunate enough to have access to two languages can be fully fostered.

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バイリンガリズムとバイリンガルの子供に見られる認識発達との関係

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バイリンガリズムと子供たちに見られるその影響の関連については教育者，心理学者，社会学者，バイリンガル社会などの間で長期にわたってしばしば熱い討論のテーマとなってきた。

好ましくないと考察されていたバイリンガリズムとその認識間（cognitive development）の関連性についてターニングポイントともいえる1962年のPeal and Lambertの画期的研究が広まる1960年代初頭まで，バイリンガリズムは子供たちのめざましい発育には有害な影響すらあると広く信じられていた。彼らの発表により，それまでの研究のサンプルとなった方法は正確さに欠けておりバイリンガルチルドレンに対する先入観を産んでいた。－例えば社会，経済的階級，年齢，性別，教育歴といった非常に重要な要素が考慮されていない　－事実が注目を集めたのである。また，子供たちの受けさせられたテストはモノリンガル（1カ国語を話す者たち）の会話能力とバイリンガル言語のうち，たった一つの言語だけを比較する傾向があり，子供たち全体の言語上の実力は考慮しなかったのである。

Cognitive developmentそのものは広い解釈の余地がありこれもまた議論の中心であるがしかしこの論文の目的は，一般的に学識を要し会話力や非会話力，I.Q，相違思考，学業の成績やMetalinguistic認識といった言語学技術である，認識の構成部分のいくつかを探求することである。

近年ではバイリンガルズ（2カ国語を話す者たち）に見受けられる数多くの利点が報告されている。バイリンガル・チルドレンの言語操作能力はモノリンガルの子供に比べ高いという報告を行った研究者たちもおり，バイリンガリズムと一般的学識を必要とする技術や相違思考の関係に関連する肯定的結果も報告されている。

一方でバイリンガリズムは言語学とperceptual構造の分析的適応を促進し子供のそれぞれの感受性をも強めるという証拠も多数の研究により上がっている。

Key words: *Cognitive development　Metalinguistic awareness　Bilingualism*
detrimental/positive effects　intellectual skills　divergent thinking