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# Do bilingual children have an advantage in the development of literacy skills over monolingual children?

**Eleanor Hughes**

## 1. Introduction

In our globalising world the use of two or more languages on a regular basis is a necessary and increasingly common phenomenon. Consequently, the number of children brought up and educated in a bilingual environment is rising, providing a rich area for linguistic study (Grosjean, 1982). However, this large body of research is far from coherent and findings fail to produce a uniform view of bilingualism as beneficial or detrimental to child literacy development. One of the main reasons for this inconsistency is that the multidimensional circumstances in which someone becomes bilingual prevent us from identifying a uniform, mutually exclusive group labelled 'bilingual children' as referenced in this essay question. The age and manner of acquisition, proficiency level in each language, domains of language use and socio-economic and cultural contexts are just a few variables to consider when investigating bilingualism (Wei, 2006).

In the same way, literacy development involves a range of different cognitive processes including oral proficiency, vocabulary knowledge and print awareness. The development of these skills within children is therefore a reliable predictor of literacy. In order to provide an insight into the influence of bilingualism I have chosen to focus on just one area key to literacy development: metalinguistic awareness. This is partly due to word and time constraints, but equally due to the richly diverse nature of the skill itself. The fact that metalinguistic awareness is related to different aspects of literacy in different ways provides a wide scope to investigate where bilingualism provides an advantage in development (Francis, 1999).

Broadly speaking, metalinguistic awareness is the ability to reflect upon and manipulate features of language, treating it as an object itself rather than just using it communicate. Tunmer, Herriman and Nesdale (1988) prove this to be fundamental in the development of reading and writing, as children need to explicitly learn the rules which govern language in order to successfully use it. For example, to read or spell the word *dog*, children must learn to separate the word from its referent, know how phonemes represent graphemes, and to understand how print works to represent those correspondences.

Studies into metalinguistic awareness were one of the first research areas to dispute the belief that bilingualism was a disadvantageous experience for children (Cummins, 1978). An early study by Ben-Zeev (1977) suggested that far from inducing cognitive deficits, through exposure to two languages bilingual children are encouraged be vigilant about language; through discriminating and understanding differences and similarities awareness of linguistic features is accelerated. Indeed, there is a growing body of research suggesting bilingual children have an advantage in at least some areas of the development of metalinguistic awareness (Campbell & Sais, 199; Davidson, Raschke & Pervez, 2010; Galambos & Goldin-Meadow, 1990). However, Bialystok (2001) points out that it is 'not

logically imperative' that bilingual children gain an advantage in this area as learning two languages may conversely lead to uncertainty and confusion about linguistic structure (p. 168). Thus, though learning to read in two languages offers increased opportunities for metalinguistic awareness, it also places increased metalinguistic demands on the bilingual child.

This essay provides a comparative review of existing research to determine whether bilingualism facilitates an advantage in the development of metalinguistic awareness, or conversely under what circumstances increased metalinguistic demands may inhibit it. Where an advantage is found, I will aim to assess to what extent it is significant in relation to monolinguals, and to discern what variables may influence its effect.

## 2. Discussion

Metalinguistic awareness is not one unified construct and there is little consensus on how it may be measured. It is therefore useful to separate sub-categories for investigation. Tunmer et al. (1988) propose four aspects of awareness correspondent to the comprehension of a sentence: phoneme, word, syntactic and pragmatic (Appendix 1). They found that phonological and syntactic knowledge play the most important role in learning to read (p. 136). In addition to this Bialystok's 'Framework for Research' (2002) implicates concepts of print in the development of writing skills. Taking both studies into account, in order to provide an analysis of skills involved in both reading and writing account I have isolated studies for comparison which focus on three key areas of metalinguistic awareness: syntactic awareness, phonological awareness and concepts of print.

### 2.1 Syntactic Awareness

Syntactic awareness refers to the ability to attend to and manipulate the grammatical structure of language; it is a skill which facilitates literacy as readers may use knowledge of syntactical structures to infer the meaning of unfamiliar words. Ben-Zeev (1977) hypothesised that because bilingual children experience mutual interference between two languages they develop a more precocious awareness of language-specific rules as they have to discern and separate them to use both languages effectively.

Ben-Zeev (1977) compared two groups of Hebrew-English bilinguals aged 4-5 and 6-8 with a group of Hebrew and group of English monolinguals. A number of tests were done, including symbol substitution tasks which replaced one meaningful word with another, requiring a child to violate grammatical and structural rules in order to answer correctly. For example, if 'Macaroni' is substituted for 'I' the child was asked to interpret 'I am warm' to provide the answer 'Macaroni am warm.' Bilinguals were significantly superior at this, demonstrating the ability to set aside the fact the meaning of the sentence is wrong in order to attend to strict syntactical rules relevant to that language. This study was well-controlled and a preliminary Berko-Gleason (1958) test (which requires children to use the word 'wug' grammatically in different sentences) showed that all groups had similar grasps of ordinary grammatical paradigms, discrediting the argument that bilingual children performed better at this task because they had not yet learnt the syntactical rules of language.

Ben-Zeev's findings show that the bilingual experience facilitates a special flexibility in being able to process syntax separately to semantics. Monolingual children could not answer correctly and processed meaning in collusion with syntax; in contrast the bilingual children were able to treat words as isolated units, and change syntax accordingly, demonstrating a higher awareness of the arbitrariness of language and a willingness to manipulate syntactical structures. However, this study did not explicitly attend to what the children knew about the syntactical structures they used. It only infers that bilingual children are more equipped to recognise syntax and treat it separately to semantics.

A study which attended to the specific demands and extent of accelerated syntactic processing more closely is that of Galambos and Goldin-Meadow (1990) who carried out a study with 32 Spanish, 32 English monolinguals and 32 Spanish/English bilinguals through Pre-Kindergarten (4.5-5.5), Kindergarten (5.6-6.5) and Grade 1 (6.6-8.0). The prototypical syntactic awareness task asks a child to make a judgement about whether a grammatical construct is correct or incorrect. They modified this as children were presented with 15 ungrammatical and 15 grammatically correct sentences and asked to *identify*, *correct* and *explain* the incorrect sentences and scored accordingly. These tasks reflect the 'continuum from implicit to explicit knowledge', providing an insight into how far bilingualism may promote syntactic awareness on different levels (p. 5).

At all ages, bilingual children were able to identify more grammatical errors than monolinguals. This confirms Ben-Zeev's findings that children are more syntactically aware, but whereas Ben-Zeev asked children to ignore or violate syntax, Galambos and Goldin-Meadow proved an advantage in the ability to explicitly recognise it. These findings indicate that bilingual children have a greater ability to attend to the form of language.

However, the study found that bilingual children were not necessarily better at explaining errors in syntax than monolingual children. In order to further investigate this we may look to a recent study by Davidson, Raschke and Pervez (2010) comparing Urdu-English bilingual and English monolingual children between 3-4 and 5-6. This took a similar form to Galambos and Goldin-Meadow's study as children were asked to detect grammatically correct and incorrect sentences. The results are comparable as Davidson et al. found 5-6-year-old bilinguals significantly outperformed monolinguals in their ability to recognise incorrect sentences, as shown in the table in Appendix 2. However, the results show very little difference in the ability to detect grammatically correct sentences. Furthermore, there were no differences in the ability to explain why a sentence was incorrect; across both groups only 20% of the children were able to provide any type of coherent explanation based on grammatical concepts, most commonly justifying their answer because 'it doesn't sound right' (p. 73).

These studies show that bilingualism does enhance syntactic awareness but only at the level of detection. Whilst bilingual children may excel at identifying incorrect grammatical constructions, they do not necessarily hold advantage over their monolingual counterparts when it comes to explicitly processing syntax. When it comes to the development of literacy, though they initially have a head-start as they are more than ordinarily aware of syntax and can recognise irregularities, they are no more likely to be able to abstract the rules underlying syntactical structures than monolingual children.

Interestingly, in a study of narrative production and recall comparing 120 Spanish-English bilinguals and 120 English monolinguals aged 7-8 and 10-11, Pearson (2002) found that though bilingual children performed worse than monolinguals in the accuracy and lexicon when producing English stories, likely due to the vocabulary deficit bilingual children suffer in the language to which they are least exposed (Poulin-Dubois et al., 2013), they were similarly matched in the ability to structure narratives and use complex syntax. Moreover, the ability to structure a story in one language predicted the same ability in the other language. It may be suggested, then, that an innate awareness of structure and syntactical strategies developed in the early stages of literacy are enhanced and applied cross-linguistically as explicit language instruction takes place in the later stages of literacy.

### 2.2 Phonological Awareness

Phonological awareness is the ability to reflect upon the sound units of words, a skill Bialystok, Majumder and Martin (2003) suggest is 'centrally implicated' in the development of literacy (p. 27). In the process of learning to read, especially in alphabetic scripts, it is

integral that children learn how sounds correspond to the structure of words, a phenomenon called the 'alphabetic principle' (Byrne & Fielding-Barnsley, 1989). In bilingual children it may be that this skill is heightened due to their need to discern two different sound systems by attending carefully to different forms of speech.

Bruck and Genesee (1995) conducted a study on 91 English children becoming bilingual in French education and 72 English monolinguals. They carried out a battery of tests correspondent to the hierarchy of phonological units, from syllables to onset-rime units to phonemes. The study therefore provided an insight into the phonological awareness of the children in general, whilst also pinpointing specific units of which one group may be more than ordinarily aware.

Tests of onset-rime awareness took two formats; in the first the experimenter told the child two non-words and the child was asked to repeat the word without the first part (e.g., say /cat/ without the /c/) In the second test the child heard two non-words and was asked whether they sounded the same; this was tested with a range of different consonant and vowel combinations (e.g., /rest/ and /best/ sound the same, do /rag/ and /rap/ sound the same?) Appendix 3 shows that bilingual children outperformed monolingual children in this task in Kindergarten, aged 4-5. However, this was the only task in which bilingual children showed a significant advantage. The study was also conducted on children in Grade 1 aged 8-9, and Appendix 3 shows that by this age there was no significant difference in any task. In fact, in tests which assessed phoneme awareness monolingual children fared significantly better. This, it may be argued, is down to the salience of the phoneme in English.

In order to discern whether it is the effects of the specific language or bilingualism which facilitates early phonological awareness it is useful to compare a study by Chen et al. (2004) comparing Cantonese-Mandarin bilinguals and Mandarin monolinguals, languages radically different to that of the previous study. Their experiment into onset-rime awareness showed that bilingual children outperformed monolingual children in the second grade; however, advantage disappeared by the fourth grade. Both of these studies suggest that whilst bilingualism does provide children with a heightened awareness of onset-rime phonological units initially, this advantage is short-lived.

Though it may be determined that bilingualism does initially provide bilingual children with an advantage in some areas of phonological awareness, it has also been shown that this is dependent on the specific phonological structure of languages, and how these interact in the bilingual experience (Bialystok, Luk & Kwan, 2005). For instance, in Bruck and Genesee's study the bilingual children had higher syllable segmentation scores, which may be attributed to the salience of the syllable in French. Similarly, Chen et al. (2004) found Cantonese-Mandarin bilingual children had a higher rime and tone awareness in both languages than Mandarin monolinguals, corresponding to the fact that Cantonese has more complicated tone and rime systems.

Loizou and Stuart (2005) discuss this in their research into phonological awareness in monolingual and bilingual Greek and English 5-year-olds. They carried out a number of phonological awareness tests in two groups of 16 bilinguals (English-Greek and Greek-English) and compared them to two groups of 18 monolinguals (English and Greek). As shown in the table in Appendix 5, they found that consistent with the other studies presented, when comparing metalinguistic awareness in English the bilingual children held an advantage. However, the Greek-English bilinguals held no advantage and in fact monolingual Greek children performed slightly better. Greek is phonologically simpler than English in terms of both syllable structure and consonant clusters. Due to this English-Greek bilinguals find it easier to complete phonological tasks in Greek because their first language is more phonologically complex. Greek-English bilinguals, however, struggle at these tasks in English as their first language does not facilitate the phonological awareness required.

Furthermore, they found that exposure to more phonologically complex language may in fact impair the development of phonological awareness in Greek bilingual children, as where differences were found between bilingual Greek-English and monolingual Greek children these were in favour of the monolingual group. Loizou and Stuart therefore proposed that the *bilingual enhancement effect* depends on the relative phonological complexity of the two languages to which the bilingual child has been exposed.

These studies show that whilst bilingual children generally have an advantage in phonological awareness in initial stages of literacy, this is not significant, and once explicit literacy instruction has begun they are generally matched to monolinguals. Furthermore, it may be found that specific characteristics of language systems foster the development of different aspects of phonological awareness which may be applied cross-linguistically in bilingual children. However, where a child is learning a language which is more phonologically complex than their initial language, this may have a detrimental effect on the development of phonological awareness overall.

**2.3 Concepts of Print**

Phonological and syntactic awareness are explicit metalinguistic skills and proven effective predictors of literacy. Concepts of print are interdependent with these skills and a higher degree of metalinguistic awareness is correlated with pre-reading print awareness (Tunmer et al., 1988). Though there is a wide range of knowledge encompassed by the term 'concepts of print', including the ability to recognise text conventions, alphabetic knowledge and recognition of registers, there are two basic precepts involved. All writing systems work by using conventional forms as a written representation of spoken language, so when learning to write in any language a child must first realize *that* print represents speech, and then work out the details of *how* print represents speech.

Firstly, understanding the mapping between print and speech requires learning that words are symbolic and therefore hold meaning. Bialystok (1997) conducted a study to assess whether bilingual children would have an advantage in developing an understanding of this symbolic relationship in her 'moving word test', in which a child was explicitly told what a printed word said (e.g., king) and then placed under a picture of that thing. The word was then 'accidently' changed to a different object and the child was asked what the word was; it was then placed in the correct position and the child was asked for a third time what it said. Monolingual children aged 4-5 provided the correct answer only 45% of the time. They had not fully recognised that print is symbolic and the letters are code to what the written word is, instead treating meaning as intrinsic to the word, similar to findings in Ben-Zeev (1977) earlier discussed. In contrast, Chinese-English and French-English bilinguals, as well as Hebrew-English bilinguals in another study (Bialystok, Shenfield & Codd, 2000), correctly reported what was printed under the card in the incorrect position 80% of the time, showing bilingualism facilitates knowledge of print. Children exposed equally to words written in two different ways for one referent realise that it is not the object but the word itself which holds meaning.

Though bilingual children have been established to gain an advantage in an awareness of the general symbolic principle upon which print is based, these advantages are heavily dependent on the characteristics of the script itself, bringing us to the second factor in concepts of print: how print represents speech. In the same way that phonological awareness is dependent on the salience of certain phonological features in that language, the orthographic depth of a language modulates developing concepts of print. In addition to this, bilingual children's developing concepts of print are influenced by the relationship between the two specific scripts they are exposed to.

Mumtaz and Humphrey (2001) demonstrated this by comparing 60 bilingual Urdu-English 7-8-year-olds with a corresponding group of English monolinguals on a battery of tests requiring them to read irregular and regular English words and non-words. They found that bilingual children were significantly better at reading regular and non-words, and attributed this to the fact that Urdu is an orthographically shallow language which has a consistent grapheme-phoneme correspondence. The children who had learnt Urdu therefore had learnt to read relying on phonological processing, a skill which they applied to their reading of English. They were significantly worse at reading irregular English words, however. The monolingual children were better at this as they had a greater awareness of the units of print which as they had learnt that a grapheme or morpheme may have a number of sound correspondences and conversely phonemes may be written in a number of different ways depending on the context. Mumtaz and Humphrey's study highlights the cross-linguistic transfer bilingual children may use when attending to concepts of print. The extent to which this transfer of metalinguistic awareness may facilitate or harm developing concepts of print depends on the specific relationship between the two languages and scripts they have knowledge of.

Rickard Liow and Lau (2005) examined this effect with regards to spelling in English with children in Singapore. All were receiving the same schooling in English, but whilst one group was monolingual, two other groups spoke either Mandarin or Malay at home. Researchers used the 'flap test' to assess how far children rely on phonological or orthographic cues in order to learn to spell, and hypothesised that this would depend on the relative characteristics of the language used at home. The 'flap test' is based on the fact that in the Singapore Standard English, which all the children were learning in school, /t/ in the word /water/ is pronounced /d/. They tested how receptive children were to this by asking children to spell a series of 'flapped' words and control words which actually contained the /d/ sound. They found that monolingual English children combined orthographic awareness with phonological awareness to optimize performance at this task and outperformed their bilingual counterparts. Chinese children were effective at using visual-processing skills to correctly spell control words with /d/, attributed to the fact that Mandarin characters are largely opaque and they have better orthographic awareness. Malay, in contrast, is the most phonetic of the languages and therefore these children relied on their phonological awareness and incorrectly spelt 'flapped' words in English.

However, this study was biased in its findings of a monolingual advantage, as children who spoke English at home were likely to have been exposed to a much more instances of print in English, especially in irregular words, than the other two groups. They may therefore gain advantage in spelling not from better orthographic processing skills fostered by the orthographic depth of English, but rather from having larger sight vocabulary. Though bilinguals may gain an advantage when understanding the symbolic relationship of print, this advantage is heavily moderated by how the scripts of two languages interact and foster different metalinguistic skills which bilingual children then apply to read and write.

## 3. Conclusions

In terms of the implications these studies pose, the indeterminacy of results provides no clear answer to whether bilingual children have an advantage in the development of metalinguistic awareness. The lack of coherency in findings reflects the multi-dimensional nature of both bilingualism and metalinguistic awareness. Indeed, taking into account the wide range of circumstances and children who constitute the label 'bilingual', if a study showed a significant advantage for either group methodological processes may be questioned, as it suggests that intelligence, socio-economic background or any of the many environmental variables which effect literacy acquisition were not appropriately matched.

Where a bilingual advantage has been found, in syntactic and phonological awareness, these advantages are relatively small and most effective at the early stages of literacy. As explicit literacy instruction begins, specific language and writing systems play a much larger part in developing metalinguistic awareness.

This discrepancy identifies one of the main failings when considering bilingual development of literacy: these studies focus on children gaining literacy skills in English. Where studies have found the bilingual advantage is language-dependent, as in phonological awareness and concepts of print, this advantage cannot be generalised. If research focussed on acquiring literacy skills applicable to a different language, the results may be radically altered.

In conclusion, each configuration of languages fosters different opportunities for the development of metalinguistic awareness. In turn, the wide variety of skills involved in metalinguistic awareness means that where a bilingual child may struggle where a monolingual child excels, the reverse may be equally applicable. As Bialystok and Herman note, the formulation of a polemical question which compels us to decide whether bilingualism helps or hinders child development is neither necessary nor useful (1999). Instead we must attend to how best to develop metalinguistic awareness as a whole in order to construct a coherent teaching system which combines the needs of both bilingual and monolingual children to create an inclusive, thriving literate society.

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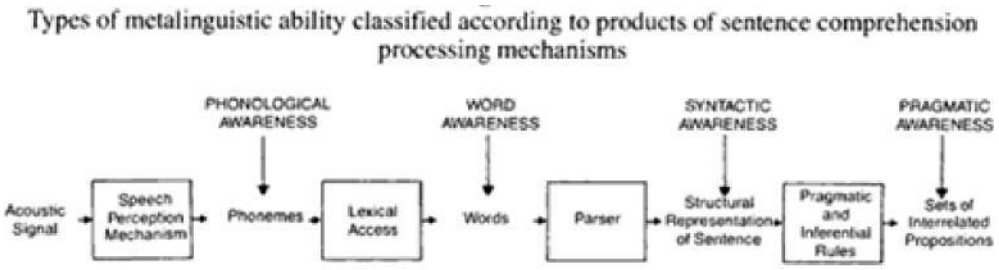
**Appendix 1**

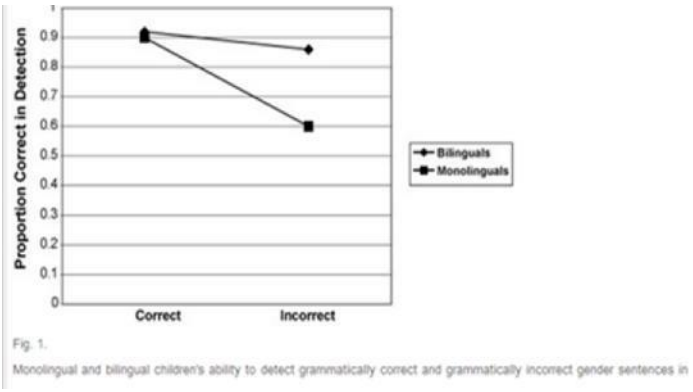
Source: Tunmer, W., Herriman, M. & Nesdale, A. (1988). Metalinguistic abilities and beginning reading. *Reading Research Quarterly* 23(2), p. 135.




Metalinguistic processing model proposed by Tumner, Herriman and Nesdale (1988). Metalinguistic awareness skills are intrinsically linked to the comprehension and production of each part of the sentence.

**Appendix 2**

Source: Davidson, D., Raschke, V. & Pervez, J. (2010). Syntactic Awareness in Young Monolingual and Bilingual (Urdu–English) Children. *Cognitive Development* 25(2), p. 174.




Monolingual and bilingual children's ability to detect grammatically correct and incorrect gender sentences in Davidson, Raschke & Pervez, 2010.

**Appendix 3**

Source: Bruck, M. & Genesee, F. (1995). Phonological awareness in young second language learners *Journal of Child Language*, 22: 307–324

TABLE 2. *Kindergarten phonological awareness scores – % correct (standard deviation)*

| Measure | Monolingual ($N = 72$) | Bilingual ($N = 91$) |
|---|---|---|
| Syllable awareness tests | | |
| Syllable counting | 72 (23) | 78 (22) |
| Syllable beginning same | 78 (19) | 81 (17) |
| Syllable end same | 82 (18) | 86 (14) |
| Onset-rime awareness | | |
| Onset deletion | 23 (35) | 38 (41) |
| Cluster onset same | 75 (19) | 84 (19) |
| Singleton onset same | 74 (21) | 80 (16) |
| Rime same | 77 (20) | 83 (14) |
| Phoneme awareness | | |
| First phoneme in cluster same | 72 (21) | 73 (19) |
| Final phoneme same | 69 (18) | 70 (16) |

These results show that Bilingual children performed significantly better in tests of phonological awareness in Kindergarten, aged 4-5 (Bruck & Genesee, 1995).

**Appendix 4**

Source: Bruck, M. & Genesee, F. (1995). Phonological awareness in young second language learners. *Journal of Child Language* 22: 307–324.

TABLE 3. *Grade 1 Phonological awareness scores – % correct (standard deviation)*

| Measure | Monolingual ($N = 60$) | Bilingual ($N = 77$) |
|---|---|---|
| Syllable awareness | | |
| Syllable counting | 78 (23) | 84 (15) |
| Syllable beginning same | 91 (12) | 91 (12) |
| Syllable end same | 93 (9) | 93 (12) |
| Onset-rime awareness | | |
| Deletion | 75 (38) | 82 (30) |
| Cluster onset same | 93 (11) | 94 (10) |
| Singleton onset same | 92 (10) | 91 (13) |
| Rime same | 88 (12) | 90 (10) |
| Phoneme awareness | | |
| First phoneme in cluster same | 90 (14) | 89 (14) |
| Final phoneme same | 87 (13) | 86 (14) |
| Phoneme counting | 71 (15) | 60 (16) |
| 1-phoneme items | 91 (17) | 86 (23) |
| 2-phoneme items | 73 (20) | 73 (20) |
| 3-phoneme items | 77 (26) | 59 (34) |
| 4-phoneme items | 42 (37) | 24 (27) |

The same tests performed on children aged 8-9 show less difference in the performance of monolingual and bilingual awareness.

**Appendix 5**

Source: Loizou, M. & Stuart, M. (2003). Phonological awareness in monolingual and bilingual English and Greek five-year-olds. *Journal of Research in Reading* 26(1): 3–18.

Table 3. Mean scores (standard deviations in parentheses) for each group.

| Task | English first language (on English versions) | | sig. | Greek first language (on Greek versions) | | sig. |
|---|---|---|---|---|---|---|
| | bilingual | monolingual | | bilingual | monolingual | |
| Rhyme oddity (n=12) | 9.56 (2.83) | 8.25 (2.35) | ns | 8.22 (2.46) | 8.11 (3.34) | ns |
| Syllable completion (n=12) | 8.81 (1.11) | 7.44 (3.20) | ns | 9.05 (1.83) | 9.44 (0.85) | ns |
| Cluster onset oddity (n=12) | 10.44 (1.03) | 6.62 (2.45) | $p<0.01$ | 7.72 (2.82) | 8.61 (2.23) | ns |
| Initial phoneme identification (n=22) | 21.56 (1.03) | 17.62 (6.58) | $p<0.05$ | 12.72 (7.27) | 17.17 (7.11) | $p=0.059$ |
| Single phoneme onset oddity (n=12) | 9.50 (1.75) | 6.31 (3.20) | $p<0.01$ | 6.00 (2.30) | 6.50 (2.38) | ns |
| Phoneme elision (n=13) | 9.37 (2.25) | 4.44 (3.36) | $p<0.01$ | 3.78 (2.94) | 5.55 (3.45) | $p=0.051$ |

Liozou and Stuart (2005) show that whilst bilingual children outperform their monolingual counterparts in most tasks of phonological awareness, when it comes to phonemic awareness Greek-English bilingual children are at a disadvantage as due to the demands of metalinguistic processing in a more phonologically complex language they are exposed to more confusion and unable to correctly perform tasks of phoneme elision and identification.