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PHONOLOGICAL FLUENCY AMONGST ADOLESCENT LOW LITERACY SECOND LANGUAGE LEARNERS

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ABSTRACT: There is a long-standing belief that teaching vocabulary in semantic sets to second language learners aids later language acquisition. This paper reports a study of how adolescents with English as an Other Language with low levels of literacy in English organise words. 45 young learners aged 16-19 from an inner-city further education college participated in the study: 15 ESOL low literacy learners, 15 ESOL learners and 15 as a non-ESOL control group. They were tested on phonological verbal fluency tasks and, contrary to expectations, the ESOL group with literacy needs outperformed the ESOL group. This suggests that effortful learning of letters and sounds may produce deeper processing. On the other hand, there was evidence of semantic interference in output, suggesting learning words in semantic sets might not always be optimal for learners with low literacy.

KEYWORDS: EAL; literacy; adolescent verbal fluency

1. INTRODUCTION

Learners who are able to decode alphabetic scripts differ from those with low levels of literacy, not just in phonological awareness but also in phonological processing; speech perception and listening strategies may be more challenging for the latter (Morais et al., 1989; Reis & Castro-Caldas, 1997). Cultural, economic and educational factors influence performance in phonological fluency tasks, as do differences in access to implicit and

1. I would like to thank Chloë Marshall, UCL- Institute of Education, London, for originally suggesting this study and advice on conducting the verbal fluency tasks.

explicit learning strategies (Rosselli et al., 2009; Reis & Castro-Caldas, 1997). Drawing on Craik & Lockhart's levels of processing in linking new words in second language acquisition and cognitive processes, Ellis and Beaton (1993) argue that implicit and explicit mechanisms for vocabulary acquisition are applied by second language learners. These include implicit recognition of words, which involves identifying their perceptual aspects as sound and logographic features, the explicit frequency of exposure to words and the development of motor knowledge through practice in the reproduction of the sounds of new words. Exposure to print aids new word-learning but, when that language is in a different script or where there is a limited literacy home environment, second language acquisition becomes an even greater challenge. Learners who have literacy have already acquired metalinguistic knowledge and gained access to explicit learning, such as phonological strategies, as well as implicit learning, which may rely on semantic strategies (Tarone et al., 2009; Reis & Castro-Caldas, 1997). Learners who must also learn English using a different writing system or who have limited literacy in their own languages face the additional challenge of establishing sound-letter associations when learning new words and their spellings. If there is limited experience of formal education, they will often lack the explicit learning strategies needed for phonological processing.

This paper presents a study of verbal fluency in adolescents who are ESOL learners with low levels of literacy. Verbal fluency tasks assess phonological and semantic fluency by looking at how people are able to retrieve words from memory. They are considered measures of cognitive flexibility that reflect access to and retrieval from memory stores, and executive function, which controls inhibition and working memory. Phonemic fluency is related to executive function and is more taxing on working memory. It continues to mature through childhood and adolescence whereas semantic fluency can reach maturation by age 12 (Charchat-Fichman, et al., 2011; Koren et.al, 2005). The number of words produced and speed of word output and accuracy are taken into consideration together with the ways in which a person might organise words into lexical categories and switch between categories or generate sub-categories of words. Storage of words in semantic categories has provided evidence that the mental lexicon makes use of semantic organisation, which has influenced second language vocabulary teaching that focuses on lexical or semantic sets. The teaching of vocabulary in semantic sets, it is argued, reflects the natural organisation of words in the brain making them subsequently easier to retrieve from memory (Channell, 1981; McCarthy, 1990; Grandy, 1992; Aitchison, 1996). However, there is also conflicting research that indicates that learning words in semantic sets is more taxing for learners, in particular lower level learners, and word retrieval of items takes longer (Nation, 2000; Erten and Tekin, 2008; Lázaro Ibarrola & Hidalgo Gordo, 2014; Altarriba & Mathis, 1997; Finkbeiner & Nicol, 2003).

Verbal fluency tasks have also been used in studies of bilingual and monolingual subjects to measure vocabulary across languages and determine whether bilinguals are adversely affected by competing languages and reduced word range (Bialystok et al., 2008). Performance on phonological fluency measures is typically weaker than on semantic fluency measures, which tend to reflect vocabulary size, and is also influenced by levels of education because of the links between phonological awareness and reading ability, and the ability to segment speech sounds (Charchat-Fichman et al., 2011; Morais et al., 1989; Ratcliff et al., 1998). One of the most commonly used phonological fluency tasks uses the letters F, A, and S because they are high frequency initial letters in English words and they represent easy phonemes. A difficulty with this measure is

that a focus on letters has implications for participants with literacy barriers and it may be more useful to focus on phonemes instead to allow for lower education levels of participants and to avoid interference from other letters (Koren et al., 2005; Ratcliff et al., 1998). By focusing on sound, rather than letter, it could be assumed that education levels would not have a significant effect on phonological performance.

Verbal output is not just measured by the number of words produced within a set time (typically one minute), but also by clustering and switching. Troyer et al. (1997) highlight the 'multifactorial' aspect of fluency and the operation of different brain regions in different fluency tasks evident in clustering and switching. Clustering is the production of words in temporal spurts that relate to a particular category or subcategory and are defined as two or more related words adjacent to one another, for instance, *sling, slug, slap* (initial two letters the same), or semantic, *Argentina, Antarctica*. Clusters provide an insight into how vocabulary is organised and in terms of cognitive function, involve accessing words in the memory store. Switching is the shift from a clustered word to a non-clustered word or a word from a different category for example a change in second letter: *sling-slug-slap-snow* or semantic category: *Argentina-Antarctica-apple*. In terms of cognitive function, switching involves strategic search processes and cognitive flexibility in the shift between subcategories. However, it has been suggested that single words may represent not just the absence of a cluster but also a retrieval failure - that is, the inability to locate other words within a particular category (Abwender et al., 2001).

While studies have looked at the levels of literacy and formal education on verbal fluency tasks, very few have looked at performance in another language. There is some acceptance that bilinguals may have greater cognitive flexibility, but the cognitive demands of lexical search and retrieval processes for bilingual learners has not been established because studies have tended to focus on verbal fluency in the subject's first language with a focus on adults or children.

2. RESEARCH QUESTIONS

This study aimed at answering the following research questions:

> How do EAL learners with low levels of literacy respond to phonological fluency tasks?
> How does this differ from EAL learners who already have developed literacy?
> What does this imply for the organisation of the lexicon in their additional language?

All the ESOL subjects in this study were at elementary level in English and had arrived in the United Kingdom within the previous three years (see Appendix). For some of the learners, this was their first experience of being in a formal educational setting and learning how to write. The low-literacy learners were compared with ESOL learners with established literacy skills, alongside a control group of native English speakers in order to see how they responded to verbal fluency tasks and what this might imply for organisation of the lexicon in their additional language. Participants were assessed with standard verbal fluency tests: 'F', 'A' and 'S'. The use of letters, rather than sounds, was to try and see what differences in performance in their L2 there might be between low-literacy learners who had benefited from some literacy-focused teaching and their peers.

It was expected that all the ESOL subjects would perform weakly in the phonological fluency tasks for all categories in comparison with the non-ESOL group and that the ESOL with literacy needs group would perform weakest, producing a greater number of errors for F and S. All the ESOL learners were producing words in the target language, which they would have acquired within a shorter time and so, unlike younger children learning language for the first time, were learning the speech-sounds and the semantic referents simultaneously. Because word production has been associated with the use of cognitive strategies of switching and clustering (Kosmidis et al., 2004), this study also analysed clusters and switching to try to see if any particular cognitive strategies were evident. Clusters are two or more words that appear in sequence and belong to a shared category. It was expected that the ESOL with literacy needs group would produce fewer clusters and switches than the ESOL group.

3. METHOD

Three groups of learners totalling 45, aged 16-19, from an inner-city further education college undertook phonological fluency tests. The groups were ESOL, ESOL with literacy needs (ESOL Lit) and a control group of non-ESOL students. The ESOL with literacy needs were learners who were in specialist ESOL literacy classes or who were in mainstream ESOL classes but had been identified as having literacy needs or a literacy profile by their tutors and receiving additional learner support in class. The non-ESOL group was selected on the recommendations of their tutors in order to rule out learners for whom English was not their first language or who had a recognised learning difficulty; only native English speakers or bilingual learners were chosen for this group. Of the bilingual learners, those with a native-English speaking parent and who had English as a main language in their home were selected, as were those who had another language at home but received formal education in a country where English is the *lingua franca*.

All ESOL learners were mostly recent arrivals in the UK, some within the previous six months and some unaccompanied. They were chosen according to the English language levels from their college initial and diagnostic assessments. It was necessary to accept only learners previously assessed as being at Entry Level 2 speaking and listening so that they would be able to follow instructions and understand the nature of the research project; this also aimed to address the question of variable performance when evaluating L2 output as it was not possible to control for prior learning of English for the ESOL groups (Kempler et al., 1998). All the participants in the ESOL sample reported having studied some English alongside their regular studies before arrival in the UK, and both ESOL groups had participants with uneven attendance in college due to travel to home countries, work or carer commitments. In the ESOL-only sample, 15 learners (7 male, 8 female) aged 16-19 (mean age 17.2) were selected where they had been in full-time education in their home or other countries from an early age (varying from 4-6 years old); their first languages were French, Italian, Spanish, Romanian, Portuguese and Polish.

The ESOL with literacy needs group (ESOL Lit) was selected from initial college writing assessments that were assessed as pre-entry or Entry Level 1. The low-literacy group comprised 15 learners aged 17-19 (mean age 18.2) with no or limited formal

education in their own language and learners who use a different alphabetic writing system (Arabic, Farsi, Pashto and Dari). The learners who had limited education had either never attended school or had attended only until the end of primary school. They came from Somalia, Afghanistan, Albania, Eritrea, Guinea and Angola and reflected the predominantly male make-up of young low-literacy learners who often travel to the UK unaccompanied. They included learners who had already spent up to three years in the college learning English.

The non-ESOL learners (11 male, 4 female, mean age 18.2) were those who had English as a first language and were drawn from three departments in the college. They had all been in continuous formal education from the ages of either 4 or 5. They included one bilingual (Greek and English) and two who had received early education in Jamaica.

All learners were initially given a Wide Range Achievement Test blue word-recognition reading task followed by a spelling task to establish literacy levels in English. In order to see whether there were differences in organising words between the two ESOL groups, the phonological task used the letters F, A, S which, while sharing other letter and sound phonemes (/f/ and /s/) may reveal issues in phonological awareness in second language learning for learners with literacy issues. It was expected that the ESOL low-literacy group would have greater difficulties in this task and rely on sound, rather than initial letter, in producing words. Participants were given a practice instruction: *You have one minute to say as many words as you can beginning with the letter 'T'.* Instructions for each task were then given: *You have one minute to say as many words as you can beginning with the letter 'F',* and so on.

Categories for errors for the results included repeats, unclear responses, wrong words where a word was included that had a different letter such as 'girlfriend' for 'F'or where there was L1 interference. Phoneme error was added to determine whether participants were confusing the sounds for 'F' with other letters that share the phoneme /f/ (examples being *photograph, phone*) and 'S' (examples being *CD, psychology*). Personal names were also included as a separate error because it frequently arose and for some ESOL learners, recourse to names from their native language would have avoided the search and retrieval mechanisms in English. Clusters were identified as phonemic where two or more words were generated in sequence with the same initial two letters (*spicy, spinach*), differed by a vowel (*sat, sit)*, rhymed (*flight, fright*), or shared a semantic category (*artist, actor, architect*). Following Raskin et al.'s (1992) approach semantic clusters were also identified in order to investigate whether ESOL learners employed semantic organisation as a strategy for organising lexical items, even when they were focusing on initial letters.

4. RESULTS

The results for mean correct scores are presented below followed by results for clusters, switches and error types. Correct scores were calculated excluding repeated words, unclear responses, wrong words, phoneme error and personal names.

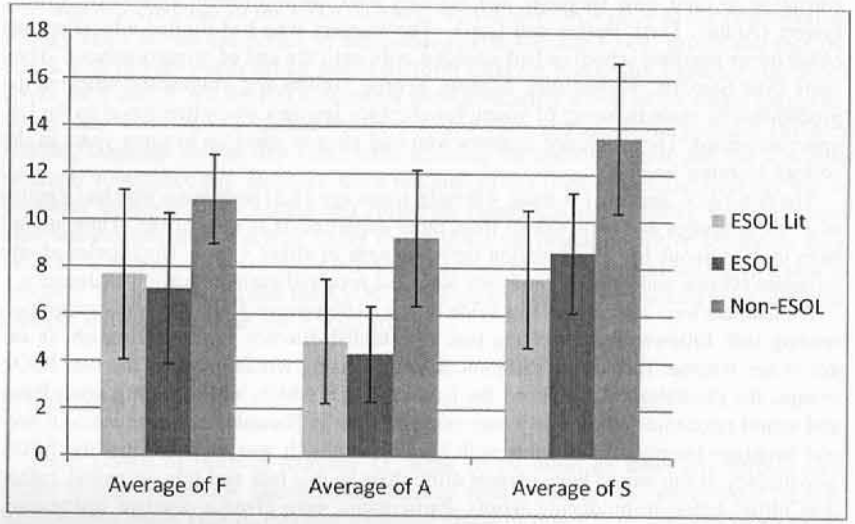

Figure 1: Mean Correct Scores of Phonological Fluency Tasks; n=45

A 3 (category: F, A, S) x 3 (group: ESOL Lit, ESOL, Non-ESOL) ANOVA revealed significant effects of category, $F(2, 84) = 33.107$, $p < .001$, partial $\eta^2 = 0.441$, and of group $F(1, 42) = 19.983$, $p < .001$, partial $\eta^2 = 0.488$. A set of pairwise comparisons for the different groups revealed significant effects of category and group, with Non-ESOL, as expected, producing a greater number of responses to the phonological categories than ESOL Lit and ESOL groups. Further pairwise comparison tests were carried out in order to determine interaction within the groups for the different phonological categories and for ESOL Lit there were significantly more responses than ESOL for 'F' $p<.001$.

An ANOVA undertaken to determine whether there was an effect of school within the ESOL lit group revealed lower F statistics, but there was no change to the effects of category or group: 3 (category: F, A, S) x 3 (group: ESOL Lit, ESOL, Non-ESOL) revealed significant effects of category, $F(2, 76) = 29.745$, $p < .001$, partial $\eta^2 = 0.439$, and of group $F(1,38) = 18.671$, $p < .001$, partial $\eta^2 = 0.496$.

The following tables present results for errors, clusters and switches.

	'F'		'A'		'S'	
	M	(SD)	M	(SD)	M	(SD)
Total output	8.93	(4.11)	6.47	(2.64)	8.60	(3.14)
Correct	7.67	(3.74)	4.87	(2.72)	7.53	(3.02)
Repeats	0.40	(0.63)	0.20	(0.20)	0.07	(0.26)
Unclear	0.07	(0.26)	0.07	(0.26)	0	(0)
Wrong	0.40	(0.74)	0.80	(0.68)	0.13	(0.35)
Phoneme	0.20	(0.41)	n.d.	n.d.	0.40	(0.74)
Personal name	0.20	(0.56)	0.60	(1.24)	0.33	(0.72)
Clusters	1.40	(1.06)	0.73	(0.96)	1.20	(0.86)
Cluster size	1.84	(1.04)	1.13	(1.30)	2.13	(1.49)
Switches	6.07	(3.26)	4.27	(1.53)	5.73	(2.37)

Table 1: ESOL Lit Error Type, Clusters and Switches

	'F'		'A'		'S'	
	M	(SD)	M	(SD)	M	(SD)
Total output	8.07	(3.13)	6.07	(2.76)	9.47	(2.39)
Correct	7.07	(3.31)	4.33	(2.09)	8.67	(2.64)
Repeats	0.07	(0.26)	0.20	(0.56)	0.07	(0.26)
Unclear	0.00	(0)	0.07	(0.26)	0.13	(0.52)
Wrong	0.13	(0.35)	0.73	(1.03)	0.27	(0.46)
Phoneme	0.20	(0.41)	n.d.	n.d.	0.07	(0.26)
Personal name	0.60	(0.99)	0.73	(1.58)	0.33	(0.82)
Clusters	1.20	(1.01)	0.60	(0.63)	1.93	(1.28)
Cluster size	1.77	(1.35)	1.13	(1.13)	1.94	(0.57)
Switches	5.40	(2.56)	4.07	(2.52)	6.27	(2.02)

Table 2: ESOL Error Type, Clusters and Switches

	'F'		'A'		'S'	
	M	(SD)	M	(SD)	M	(SD)
Total output	11.67	(1.91)	9.93	(2.43)	14.67	(3.18)
Correct	10.87	(1.96)	9.27	(2.99)	13.53	(3.31)
Repeats	0.33	(0.82)	0.27	(0.59)	0.20	(0.41)
Unclear	0.00	(0)	0.00	(0)	0.00	(0)
Wrong	0.00	(0)	0.13	(0.35)	0.00	(0)
Phoneme	0.27	(0.46)	n.d.	n.d.	0.00	(0)
Personal name	0.27	(0.80)	0.27	(0.80)	0.80	(1.01)
Clusters	2.47	(0.99)	2.07	(1.28)	2.80	(1.78)
Cluster size	2.54	(0.95)	1.88	(0.84)	2.25	(0.86)
Switches	7.27	(1.94)	6.40	(2.32)	9.33	(2.16)

Table 3: Non-ESOL Error Type, Clusters and Switches

Clusters were categorised where two or more words belonging to a particular category were grouped sequentially. A 3 (Category: F, A, S) x 3 (group: ESOL Lit, ESOL, Non-ESOL) ANOVA was carried out to determine significance between category and group for mean total number of clusters, mean cluster size and number of switches. There were significant effects of category for mean cluster size: $F(2, 84) = 8.072$, $p < .001$, partial η^2 0.161, mean cluster size: $F(2, 84) = 6.715$, $p < 0.002$, partial $\eta^2 = 0.138$ and switches, $F(2, 84) = 17.485$, $p < .001$, partial $\eta^2 = 0.294$. There were also significant effects of group for total number of clusters, $F(2, 42) = 24.630$, $p < .001$, partial $\eta^2 = 0.395$, mean cluster size $F(2, 42) = 3.472$, $p < .040$, partial $\eta^2 = 0.214$; and switches $F(2, 42) = 8,285$, $p < .001$, partial $\eta^2 = 0.283$.

In order to test for the effects of school, a repeat ANOVA was carried out with the four school participants removed from the ESOL Lit group (n=11) and revealed for total number of clusters, category: $F(2, 76) = 7.618$, $p < .001$, partial $\eta^2 = 0.167$, and for group, $F(2, 38) = 12,172$, $p < .001$, partial $\eta^2 = 0.390$. Mean cluster size: category- $F(2, 76) = 6.702$, $p < .002$, partial $\eta^2 = 0.150$ and for group – $F(2, 38) = 3.726$, $p < .033$, partial $\eta^2 = 0.164$. Switches: category – $F(2, 76) = 14.621$, $p < .001$, partial $\eta^2 = 0.278$, and for group, $F(2, 38) = 8.400$, $p < .001$, partial $\eta^2 = 0.307$.

In terms of total number of clusters, ESOL produced 39 phonemic clusters and 16 semantic clusters whereas ESOL Lit produced 38 phonemic clusters and 10 semantic clusters. (Non-ESOL produced 82 phonemic, 18 semantic. In order to investigate the differences between the three groups in terms of cluster sizes and types of clusters, *t*-tests were conducted on the following variables: Mean total number of clusters, mean cluster size, semantic clusters, switch and error type. There was only one vowel change (*some, same*) cluster in the whole cohort produced by one ESOL learner so this cluster was not analysed. As expected, there were significant differences between the two ESOL groups and the Non-ESOL group for all categories in total number of clusters. Surprisingly, there were no significant differences in any of the cluster variables measured between ESOL Lit and ESOL. Total output were significantly highly correlated, except for Non-ESOL in '*S*', $r = .382$, $p < .160$.

5. DISCUSSION

Contrary to expectations of a poor performance across all the phonological tasks, ESOL Lit scored higher than the ESOL group in the letter 'F', and was only marginally lower in 'A'. This contradicts the view that disadvantages in phonological awareness yield a poorer performance in phonological tasks. It could also reflect the benefits of explicit and effortful learning whereby ESOL learners focus more on letter-sound associations and pronunciation when learning new words. Learners with low levels of literacy may need to be more effortful in learning the letter-sound associations of the English alphabet when learning to read and write, particularly if it is their first experience of acquiring literacy. They may therefore be engaging in the sorts of explicit learning strategies for developing phonological awareness, to which Reis and Castro-Caldas (1997) refer. In a literacy specialism class where there will be an emphasis on phonics teaching and teaching letter sets, /f/ is taught early alongside its letter associations 'f' and 'ph'. Differences between the ESOL Lit and Non-ESOL learners for 'F' are also interesting, and may reflect the greater difficulty Non-ESOL learners have with this phoneme producing a greater number of errors (for example *phone, phenomenal*).

In terms of errors, ESOL made significantly more errors than the ESOL Lit group, with a frequent reliance on L1 interference and personal names. For example one ESOL learner produced eight responses for the category 'A', of which six were personal names found in his native language. He produced three responses out of eight in the category 'S', which also included two Spanish cities. This greater number of errors in the ESOL group may indicate difficulties associated with competing literacies and control of inhibition when accessing words in English.

This study looked at semantic and phonemic clustering in the phonological fluency tasks. In terms of the scoring for total clusters, where there were overlaps, phonemic clusters were favoured. For instance, in one response: *apple, apricot* were classified as a phonemic cluster sharing the same initial two letters, rather than a food cluster. The two items were then counted separately as a semantic cluster in follow-up analysis in order to investigate whether students made use of semantic clustering in organising vocabulary. In terms of phonological clusters, vowel change was only used by one ESOL learner. This was included in the overall cluster count but not analysed as a cluster category.

Semantic clustering was evident in the output of all three groups for the phonological fluency tasks with Non-ESOL learners, as expected, exhibiting greater accurate lexical retrieval from memory and, as a consequence, inhibitory control in their output. The lack of significant differences between ESOL lit and ESOL for semantic clustering suggests that both groups make use of similar strategies for word retrieval in accessing semantic sets of items, or have a similar range of vocabulary. This would appear to support arguments in favour of teaching in lexical sets as it shows clearly that semantic organisation is used to store second language vocabulary. It may indicate the greater security of certain word families and analysis of the types of semantic clusters would be useful to determine the frequently occurring categories. However there was evidence of semantic interference in the ESOL lit group with three of the participants producing clear errors as a result of semantic clustering (for example *family, friends, girlfriend, boyfriend* for 'F') and two others producing errors that were not part of a cluster, but appeared as trace interference (for example *food, feet, potato* or *animals, Africa, Arabic, elephant)*. For one ESOL Lit learner in particular, there was clear evidence of semantic

interference taking place that persisted throughout her output in all three tasks in her production of country names. This learner produced errors in *A* and *S*. While the /s/ phoneme was identifiable in the country and city names (*Asia* and *Istanbul*) it was not the initial letter. It may be that semantic organisation was hampering the processing of speech sounds for this ESOL Lit student, creating the sort of interference that Finkbeiner and Nikol refer to when spreading activation creates confusion over co-activated similar lexical items (Finkbeiner & Nicol, 2003). Although Finkbeiner and Nicol focus on accuracy of semantic sets, learning new vocabulary in semantic sets has been reported to take longer to process and leads to retrieval failures (Altarriba & Mathis, 1997; Erten & Teken, 2008). These retrieval difficulties are also more evident in lower-level language learners and it has been argued that successful teaching in lexical sets is evident for advanced learners (Nation, 2000). All the ESOL learners in the present study were at Entry Level 2 speaking and listening and both groups showed some semantic clustering. However, the difficulties with retrieval for the learner highlighted above indicate a lack of security in producing words according to initial letters because of semantic clustering, and raise questions about input of new vocabulary for ESOL learners with basic literacy whose phonological awareness is weaker. Semantic interference was not present in any of the errors produced by the ESOL group, which suggests that their greater control in generating semantic clusters according to initial letter could be indicative of a more efficient storage system, perhaps attributable to their already acquired literacy.

What is not always clear with analysis is whether examples of semantic interference with phonological output are questions of spreading activation or issues of continuing development of inhibitory control. A difficulty with investigating verbal fluency with this age group, however, is that even though the brain has nearly matured by adolescence, some aspects of executive function are continuing to develop, such as control of inhibition and processing speed (Blakemore & Choudhury, 2006; Huttenlocher, 2002). It would be worth investigating this further with different age groups. If the greater number of switches indicates greater cognitive flexibility (Troyer et al., 1997), this would appear to be evident with the greater number of switches in the non-ESOL group carrying out the tasks in their first language. This view is supported by the pattern shown by ESOL Lit, who produced a higher count of switches with 'F', consistent with higher scoring for other measures.

6. CONCLUSION

This study sought to look at how EAL learners with low levels of literacy respond to phonological fluency tasks in relation to their peers with developed literacy in order to see how they organised words in English. On a number of measures within the tasks there were no significant differences between the two ESOL groups. The disadvantages in phonological awareness of the low-literacy group did not appear to be explicit, with the ESOL Lit group outperforming the ESOL group in one of the tasks. This suggests that the ESOL Lit group, while disadvantaged through limited experience of formal learning, may in fact gain a more secure understanding in their learning of phonemic items than mainstream ESOL learners. This could be a result of explicit instruction that includes a focus on phonics and letter sets; participants from the ESOL lit group were from a specialist ESOL literacy class or were in receipt of additional literacy support.

It may also be that the difficulties of acquiring literacy in a second language demands effortful learning, and effective encoding of lexical items aids subsequent lexical retrieval.

All groups made some use of semantic organisation, which would appear to support arguments in favour of teaching of new vocabulary in lexical sets in order to reflect how vocabulary is stored in the brain. However for low literacy learners, semantic overload may interfere with processing of letter/sound associations and raises questions for the way in which ESOL basic literacy is taught when considering the cognitive demands and priorities that are faced by the learner.

The examination of the ESOL Lit group would have benefited from the inclusion of participants who had and had not attended school in order to test more effectively for the effects of experience of formal education. Future studies would also benefit from consideration of time spent in ESOL classes, specifically with ESOL literacy-focused teaching, as well as testing for age and gender to examine whether they have an influence on performance in verbal fluency.

WORKS CITED

Abwender, David, Swan, Jeffrey, Bowerman, John & Sean Connolly (2001). "Qualitative Analysis of Verbal Fluency Output: Review and Comparison of Several Scoring Methods". *Assessment* 8: pp. 323-336.

Aitchison, Jean (1996). "Taming the Wilderness: Words in the Mental Lexicon". Eds. Gunilla Anderman and Margaret Rogers.*Words, Words, Words: The Translator and the Language Learner.* Avon, UK: Multilingual Matters. pp. 15-26.

Altarriba, Jeanette & Katherine Mathis (1997). "Conceptual and Lexical Development in Second Language Acquisition". *Journal of Memory and Language* 36: pp. 550-568.

Bialystok, Ellen, Craik, Fergus & Gigi Luk (2008). Lexical Access in Bilinguals: Effects of Vocabulary Size and Executive Control.' *Journal of Neuropsychology* 21: pp. 522-38.

Blakemore, Sarah-Jayne & Suparna Choudhury (2006). "Development of the Adolescent Brain: Implications for Executive Function". *Journal of Child Psychology and Psychiatry* 43(3): pp. 296-312.

Channell, Joanna (1981). "Applying Semantic Theory to Vocabulary Teaching". *ELT Journal* 35: 115-122.

Charchat-Fichman, Helenice, Martins Oliveira, Rosinda, Andreza Morais da Silva (2011). "Performance of Brazilian Children on Phonemic and Semantic Verbal Fluency Tasks". *Dementia and Neuropsychology* 5(2): pp. 78-84.

Craik, Fergus & Robert Lockhart (1972). "Levels of processing: A framework for memory research". *Journal of Verbal Learning and Verbal Behaviour* 11: pp. 671-84.

Ellis, Nick & Alan Beaton (1993). "Factors Affecting the Learning of Foreign Language Vocabulary: Imagery Keyword Mediators and Phonological Short-term Memory." *The Quarterly Journal of Experimental Psychology* 46(3): pp. 533-558.

Erten, İsmail Hakkı and Mustafa Tekin (2008). "Effects on Vocabulary Acquisition of Presenting New Words in Semantic Sets Versus Semantically Unrelated Sets". *System* 36: pp. 407-422.

Finkbeiner, Matthew & Janet Nicol (2003). "Semantic Category Effects in Second Language Word Learning". *Applied Psycholinguistics* 24: pp. 369-383.

Folse, Keith (2004). "Myths About Teaching and Learning Second Language Vocabulary: What Recent Research Says". *TESL Reporter* 37(2): pp. 1-13.

Grandy, Richard (1992). "Semantic Fields, Prototypes and the Lexicon". Eds. Adrienne Lehrer, and Eva Ferer Kittay (eds.) *Frames, Fields and Contrasts: New Essays in Semantic and Lexical Organisation.* New York: Lawrence Erlbaum. pp. 105-120.

Huttenlocher, Peter (2002). *Neural plasticity*. Cambridge, MA: Harvard University Press.

Kavé, Gitit (2005). "Phonemic Fluency, Semantic Fluency, and Difference Scores: Normative Data for Adult Hebrew Speakers". *Journal of Clinical and Experimental Neuropsychology* 27(6): pp. 690-699.

Kempler, Daniel, Teng, Evelyn, Dick, Malcolm, Taussig, Maribel & Deborah Davis (1998). "The Effects of Age, Education, and Ethnicity on Verbal Fluency". *Journal of the International Neuropsychological Society* 4: pp. 531–538.

Koren, Rinat, Kofman, Ora, & Andrea Berger (2005). "Analysis of Word Clustering in Verbal Fluency of School-aged Children". *Archives of Clinical Neuropsychology* 20: pp. 1087-1104.

Kosmidis, Mary, Vlahou, Christina, Paniagiotaki, Panagiota & Grigorios Kiosseoglou (2004). "The Verbal Fluency Task in the Greek Population: Normative Data, Clustering and Switching Strategies". *Journal of the International Neuropsychological Society* 10: pp. 164-72.

Lázaro Ibarrola, Ámparo & María Ángeles Hidalgo Gordo (2015). " Should EFL Teachers Present Vocabulary in Semantically Related Sets?" *Porta Linguarum* 23: pp. 25-40.

McCarthy, Michael (1990). *Vocabulary*. Oxford: Oxford University Press.

Morais, José, Content, Alain, Cary, Luz, Mehler, Jacques & Juan Segui (1989). "Syllabic Segmentation and Literacy". *Language and Cognitive Processes* 4(1): pp. 57-67.

Nation, Paul (1982). "Beginning to Learn Foreign Vocabulary: A Review of the Research". *Regional English Language Centre Journal* 13(1): pp. 14-46.

Nation, Paul (2000). "Learning Vocabulary in Lexical Sets: Dangers and Guidelines." *TESOL Journal* 9: pp. 6-10.

Raskin, Sarah, Sliwinski, Martin, & Joan Borod (1992). "Clustering strategies on tasks of verbal fluency in Parkinson's disease". *Neuropsychologia* 30: pp. 95-99.

Ratcliff, Graham, Ganguli, Mary, Chandra,Vijay, Sharma, Sujatha, Belle, Steven, Seaberg Eric, & Rajesh Pandav (1998). "Effects of literacy and education on measures of word fluency". *Brain and Language* 61: pp. 115-122.

Reis, Alexandra & Alexandre Castro-Caldas (1997). "Illiteracy: A cause of biased cognitive development". *Journal of the International Neuropsychological Society* 3: pp. 444-450.

Rosselli, Monica, Tappen, Ruth, Williams, Christine, Salvatierra, Judy, & Yaron Zoller (2009). "Level of education and category fluency task among Spanish speaking elders: number of words, clustering, and switching strategies". *Aging, Neuropsychology and Cognition* 16: pp. 721-744.

Tarone, Elaine, Bigelow, Martha & Kit Hansen (2009). *Literacy and Second Language Oracy*. Oxford: Oxford University Press.

Troyer, Angela, Moskovitch, Morris & Gordon Winocur (1997). "Clustering and Switching as Two Components of Verbal Fluency: Evidence from Younger and Older Healthy Adults". *Neuropsychology* 11(1): pp. 138-146.

Webb, Stuart (2008). "The Effects of Context on Incidental Vocabulary Learning". *Reading in a Foreign Language* 20(2): pp. 232-245.

Wilkinson, Gary, & Gary Robertson (2006). *Wide Range Achievement Test 4: Professional Manual*. Lutz, FL: Psychological Assessment Resources, Inc.

APPENDIX: LANGUAGE AND EDUCATION BACKGROUND OF PARTICIPANTS

ESOL

N.	Country of origin	Languages written and spoken	Age	Gender	Prior education
1.	Senegal	French, Italian	18	F	14 years Italy
2.	Ivory Coast	French, Italian	16	F	9 years Ivory Coast and Italy
3.	Colombia	Spanish	19	F	10 years Colombia and Spain
4.	Colombia	Spanish	19	F	14 years Colombia and Spain
5.	Russia	Romanian, Russian, Italian	17	M	13 years Romania, Russia and Italy
6.	Italy	Italian	16	F	11 years Italy
7.	Colombia	Spanish	16	F	12 years Colombia and Spain
8.	Portugal	Portuguese	17	F	12 years Portugal
9.	Bolivia	Spanish	16	M	10 years Spain
10.	Poland	Polish	18	M	11 years Poland
11.	Italy	Italian	16	F	10 years Italy
12.	Romania	Romanian and Spanish	18	M	14 years Romania and Spain
13.	Romania	Romanian	18	M	14 years Romania
14.	French	France	18	F	14 years France
15.	Italy	Italian	17	F	11 years Italy

ESOL WITH LITERACY NEEDS

N.	Country	Languages spoken	Age	Gender	Prior education
1.	Afghanistan	Dari*	19	M	10 years Afghanistan
2	Iran	Farsi *	18	M	8 years Iran
3.	Afghanistan	Pashtu, * Dari	18	M	10 years Afghanistan
4.	Iraq	Arabic, * French	19	M	10 years Iraq and Syria
5.	Eritrea	Amharic	18	F	7 years Quran school Sudan
6.	Afghanistan	Pashtu, Dari	18	M	3 years Afghanistan
7.	Somalia	Somali	18	M	2 years Quran school Somalia 1 year Ethiopia
8.	Guinea	French	18	M	6 years Guinea
9.	Somalia	Somali, Arabic	19	F	No school
10.	Afghanistan	Pashtu	19	F	No school in own country London secondary 3 months
11.	Afghanistan	Pashtu, Dari, Farsi	19	M	5 years Afghanistan and Iran
12.	Albania	Albanian	17	M	4 years Albania
13.	Angola	Portuguese, Dutch	19	M	No school in own country 2 years Netherlands
14.	Albania	Albanian	18	M	5 years Albania
15.	Albania	Albanian	17	M	5 years Albania

* Written and spoken