

A Comparative Study of the Phonological Awareness of Pre-school Persian Monolingual and Turkish-Persian Bilingual Children

Moussa Ahmadian

Dept. of English Language and Literature, Faculty of Humanities, Arak University, Iran

Leila Bahrami

Dept. of English Language and Literature, Faculty of Humanities, Arak University, Iran

Seyyedeh-Mahsa Amini

Dept. of English Language and Literature, Faculty of Humanities, Arak University, Iran

Abstract—Phonological awareness refers to the ability to conjecture and maneuver the phonemic segments of speech. Given the weight of phonological awareness in budding literacy skills, it is vital to focus more on its possible differences among pre-school children to plan for training programs in kindergartens. To this end, two groups of 30 Turkish-Persian bilingual and Persian monolingual pre-school children were chosen to explore whether pre-school bilinguals have any advantage over the monolinguals in terms of phonological awareness. In doing so, Soleymani and Dastjerdi's Phonological Awareness Test (2002) was used. The independent samples t-tests revealed the advantage of pre-school Turkish-Persian over Persian monolingual children in some aspects of phonological awareness. The findings of the study may have implications for language education.

Index Terms—metalinguistic awareness, phonological awareness, bilingual children, literacy, phoneme

I. INTRODUCTION

The term “metalinguistic awareness”, according to Bialystok (1988), can be referred to as the knowledge, the ability, and the awareness in language development. Nagy and Anderson (1998) also define metalinguistic awareness as the ability to manipulate linguistic units and to reflect on structural properties of language. A topic of studies regarding metalinguistic awareness has been children's awareness of phonological units.

Phonological awareness, that is, the ability to manipulate and reflect on sound units (Bialystok 2001, 2002), is one of the four general types of metalinguistic ability which develops separately from and later than basic speaking and listening skills (Tunmer & Herriman, 1984; Tunmer, Herriman, & Nesdale, 1988). Tunmer and Herriman (1984) define phonological awareness as the ability to reflect on and manipulate the phonemic segments of speech. Phonological awareness can be measured by many different tasks such as recognition of rhyme, sound-to-word matching, isolating single sounds from words, blending, deleting phonemes, and other even more complex manipulations, like children's secret languages (Savin, 1972; Mann, 1991, as cited in Stahl & Murray, 1994).

The individual ability to attend the phonological or sound structure of language has been shown to be closely related to the development of literacy and may foster acquisition of literacy skills particularly reading skills (Bradley & Bryant, 1983; Bryant & Goswami, 1987). Decoding in the early grades is critically important for children. Evidence show that children who do not have a successful start in learning to read cannot become proficient readers (Frances, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1996; Stewart, 2004) since knowledge of grapheme-phoneme correspondences is closely related to the acquisition of basic reading skills (Backman, Bruck, Hebert, & Seidenberg, 1984; Manis & Morrison, 1985). As Stanovich (1986) points out, even small differences in reading ability at early ages often develop into very large differences in literacy skills and academic achievement. Given the importance of phonological awareness in developing literacy skills, it is crucial to pay further attention to its possible differences among preschool children to plan for training programs in kindergartens.

Vygotsky (1962) proposed that one of the factors that may facilitate children's metalinguistic development is bilingualism (See also Clark, 1978; Slobin, 1978). Since then, research has explored this idea. According to Bialystok, Majumder, and Martin (2003), the results of the studies have been mixed, but the majority of studies have reported an advantage for bilingual children (Bialystok et al., 2003). If such an advantage could be found for phonological awareness, it would contribute to deeper understanding of metalinguistic ability, early literacy, and bilingual influences on cognitive development.

II. REVIEW OF THE RELATED LITERATURE

To date, the comparison of the phonological awareness between bilingual and monolingual children has been a subject of a number of studies. Several studies (Bialystok, 2001; Bialystok, 2002; Verhoeven, 2007, for example) show that the phonological processing of bilingual children is different from that of monolingual children and that bilingual children are assumed to develop higher levels of phonological awareness. Research has also shown the bilingual advantages over monolinguals in different tasks regarding phonological awareness (Rubin & Turner, 1989; Yelland et al., 1993; Campbell & Sais, 1995). However, null and even negative bilingual effects have also been reported (Chiappe & Siegel, 1999; Bialystok et al., 2003)

Rubin and Turner (1989) compared the phonological awareness of English-speaking first-grade children in English programs to those in French immersion programs. The results showed that minimally bilingual children in the immersion group performed better than children in the English program.

Yelland et al. (1993) studied English children who had limited exposure to Italian at the early stages of bilingualism in kindergarten and Grade 1. Children made judgments of the sound structure of words by determining whether simple pictures depicted an object that had a long name or a short name. For bilinguals, they found an initial advantage that disappeared by the end of Grade 1. Further, the bilinguals showed an advantage over monolinguals in word recognition in Grade 1.

In a longitudinal study from kindergarten to first grade, Bruck and Genesee (1995) compared monolingual English-speaking children with children attending French schools on a variety of tasks. They conclude that bilingualism has selective rather than universal effects on the development of phonological awareness.

Campbell and Sais (1995) compared 5-year-old bilingual and monolingual children on several phonological tasks, namely, detecting a mismatch in the initial sound of a set of words, detecting a mismatch in meaning, deleting morphemes from words, and identifying letters. Bilingual children showed advantage over the monolinguals on the first three tasks but the two groups were the same on the letter identification task.

In another study, Chiappe and Siegel (1999) used phoneme deletion and substitution tasks. The results of their study revealed no significant difference between English-speaking monolingual children and Punjabi–English bilingual children.

Mumtaz and Humphreys (2001) tested the phonological awareness skills of bilingual Urdu–English and monolingual English 7-year-old children. They found that bilingual children had superior phonological awareness compared to monolingual ones.

However, according to Yopp (1988), performance on some measures of phonological awareness such as those which were used in the reviewed studies (e.g. odd-one-out, deletion, substitution, phoneme-reversal, and letter identification tasks) may place heavy demands on working memory and may be influenced by, or depend on skills that are acquired as a result of learning to read; thus, affecting the results of the studies. In addition, as Bialystok et al. (2003) point out, in order to show that there is a bilingual advantage in the development of phonological awareness, the generality of the claim needs to be assured. In other words, when identifying the effects of bilingualism on phonological awareness all kinds of issues such as language-specific effects, participants' variables, and task variations must be addressed. For instance, if bilinguals who speak different languages perform differently from each other, the source of variation may be language-specific and not bilingualism or if different tasks produce between group differences, it cannot be concluded that there is necessarily an advantage to being bilingual but rather that there is an interaction between bilingualism and specific tasks.

For such reasons, Bialystok et al. (2003) attempted to limit the generalizability of claims which relate bilingualism to the development of phonological awareness by isolating the role of bilingualism in children's development of phonological awareness through cross-sectional designs which examined monolingual and bilingual children at three points in literacy acquisition between kindergarten and Grade 2. The first study showed that monolingual and bilingual children performed equally on a complex task requiring phoneme substitution. The second study indicated the same results and also demonstrated a significant role for the language of literacy instruction. The third study showed that Spanish–English bilinguals performed better than English-speaking monolinguals on a phoneme segmentation task, but Chinese–English bilinguals performed worse. Other measures of phonological awareness did not differ among the three groups. Only a phoneme segmentation task was able to separate the groups, but no general facilitation of bilingualism was found.

Finally, Canbay (2011) compared a pre-school Turkish–English bilingual child, an age-matched monolingual Turkish child, and a monolingual English child in terms of phonological awareness. Word recognition task based on initial phoneme identification was used to test the phonological awareness of children. The results revealed that the bilingual child had an advantage over his/her monolingual peers. A problem with this study is that in order to assess the phonological awareness of bilingual and monolingual pre-school children only one kind of task, word recognition through the initial phoneme, was used. Another problem is the limited number of participants, that is, only one in each group.

As the review of literature reveals, research on the effect of bilingualism on phonological awareness has yielded mixed results so far. The research findings appear to be influenced by the nature of the languages being studied, the participants' variables, and the types of the tasks (Bialystok et al., 2003). Variations in the tasks, procedures, and materials used to measure phonological awareness have resulted in differing estimates of the level of phonological awareness in children at different ages (Tunmer & Rohl, 1991). In addition, according to Soleymani and Dastjerdi (2005), most phonological awareness tests such as Bruce's (1964), North and Parker's (1993), Shirazi's (1996), Bernnan and Ireson's (1997), and

Kashani's (1997) are inappropriate for preschool children since they impose extraneous operations and require some skills that depend on or are influenced by the reading skills. Consequently, it seems that further research is required in order to make more specific predictions about any advantage of bilingualism in phonological awareness since no consensus has been reached yet.

As such, this study aimed at comparing the preschool Turkish-Persian bilingual children and Persian monolingual children in terms of phonological awareness to explore whether there is any difference between bilingual and monolingual children.

III. THE STUDY

A. *Research Question and Hypothesis*

Based on what mentioned before, the research attempts to find answer to the following question:

-- Do Turkish-Persian bilingual preschool children demonstrate any advantages in phonological awareness over their Persian monolingual peers?

To provide more objective answer to the above question, the following hypothesis was constructed to be tested out:

-- Turkish-Persian bilingual pre-school children demonstrate no advantages in phonological awareness over their Persian monolingual peers.

B. *Participants*

The participants of this study were 30 Persian monolingual and 30 Turkish-Persian bilingual pre-school children from different kindergartens in Iran. In order to make a sound comparison and also to control any possible effects of gender and age on the results of the study, only 5-6 year old female participants were chosen based on availability sampling. Furthermore, the participants' records in the kindergartens were examined carefully to make certain that they matched in terms of general intelligence, family background, and socioeconomic status and also to ensure that there were not any cases of impairment or hearing loss among children.

C. *Instrumentation*

In order to assess the phonological awareness of bilingual and monolingual pre-school children in this study, Soleymani and Dastjerdi's Phonological Awareness Test (2002) was used (see Appendix A). This is a visual test containing 10 subtests each of which assesses one area of phonological awareness, namely, syllable segmentation, alliteration recognition, rhyme recognition, phoneme combination, recognition of words with the same initial phoneme, recognition of words with the same final phoneme, phoneme segmentation, final phoneme naming and deletion, middle phoneme deletion, and initial phoneme naming and deletion. Each subtest consists of 10 items. Each item contains a number of pictures depending on the purpose of the subtest (Appendix A).

Validity and Reliability of the test have been confirmed by Soleymani and Dastjerdi (2005). Reliability is reported 0.84 to 0.96 for the subscales of the test. Validity of the test was estimated through calculating correlation coefficients between the test scores and other standard tests and the coefficients 0.56 and 0.60 were obtained (Soleymani & Dastjerdi, 2005).

This test shows a number of advantages over other available ones: First, it is less boring and more comprehensible for preschool children and also does not require reading skills because of being visual. Second, it covers almost all areas of phonological awareness. Third, it is arranged based on age groups and has clear manual for administration and scoring (Soleymani & Dastjerdi, 2005).

D. *Procedure*

As Carroll (2008) states, phonological awareness is not an all-or-nothing event; that is, there is a sequence in the development of phonological awareness: an awareness of syllables, onsets, and rhymes typically develops before an awareness of phonemes (Goswami & Bryant, 1990). Soleymani and Dastjerdi (2002, 2005) also mention that for different age groups, specific subtests are more appropriate. According to the authors, ANOVA and Tukey test confirm the ability of the test to differentiate between age groups. Therefore, based on the test manual, for the participants' age group, i.e., 5-6 years old, only subtests 2, 3, 4, 5, and 6 are applicable (Appendix A provides examples of items in each subtest):

Subtest 2: alliteration recognition: The child shows two pictures which have the same initial syllable.

Subtest 3: rhyme recognition: The child shows two pictures which rhyme the same.

Subtest 4: phoneme combination: The examiner says each phoneme separately for each picture; the child shows the matching pictures.

Subtest 5: recognition of words with the same initial phoneme: The child shows two pictures with the same initial phoneme.

Subtest 6: recognition of words with the same final phoneme: The child shows two pictures with the same final phoneme.

For each subtest, first, each participant was guided through guiding pictures, then s/he took the main test. For each individual, taking the test took about 30 minutes. The participants' performance was later recorded on the test score sheet; each correct item added 1 mark to the individual's total score. Then, the total score and the score of each subtest were determined for each group. Recorded data were then analyzed by means of SPSS16. Independent samples t-tests were

used to compare the two groups in terms of their phonological awareness.

IV. RESULTS

The purpose of the study was to compare the phonological awareness of pre-school Turkish-Persian bilingual with that of Persian monolingual children. Independent samples t-tests were used to analyze the data taken from Turkish-Persian bilingual and Persian monolingual pre-school groups. The SPSS software used for analyzing independent samples t-tests produced a pair of tables: one table in which group statistics is displayed that compares the means, standard deviation, and standard error of the mean of each group in a particular subtest and the other table in which the variances and mean scores of two independent groups in each subtests are compared. For the ease of comparison in the tables, the subtests of alliteration recognition, rhyme recognition, phoneme combination, recognition of words with the same initial phoneme, and recognition of words with the same final phoneme from Soleymani and Dastjerdi's Phonological Awareness Test (2002) were labeled 2, 3, 4, 5, and 6, respectively. Tables 1 and 2 present the results of the data analysis.

TABLE 1
GROUP STATISTICS

Subtests	Groups	N	Mean	Std. Deviation	Std. Error Mean
2	Turkish-Persian	30	8.40	1.070	.195
	Persian monolingual	30	8.23	.728	.133
3	Turkish-Persian	30	8.40	.675	.123
	Persian monolingual	30	8.27	.785	.143
4	Turkish-Persian	30	9.93	.254	.046
	Persian monolingual	30	9.47	.571	.104
5	Turkish-Persian	30	9.47	.571	.104
	Persian monolingual	30	9.30	.535	.098
6	Turkish-Persian	30	8.37	.556	.102
	Persian monolingual	30	8.17	.699	.128

Table 1 compares the performances of 30 Turkish-Persian bilinguals and 30 Persian monolingual pre-school children in the phonological awareness subtests. This table shows that every mean score of Turkish-Persian bilingual group is greater than that of the Persian monolingual group in each subtest of phonological awareness. More accurately, the bilingual group's mean scores in all the phonological awareness subtests are greater than the mean scores of the monolingual group.

In order to measure whether the differences in the means of the two groups are significant and to test out the research hypothesis, the statistical analyses of independent samples t-tests are required. Table 2, which is the tabular form of statistical analyses of independent samples t-tests, compares the equality of the variances and mean scores of the two independent groups to reveal the significance of their differences.

TABLE 2
INDEPENDENT SAMPLES TESTS: COMPARISONS OF THE EQUALITY OF VARIANCES AND MEAN SCORES

Subtests		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
2	Equal variances assumed	6.882	.011	.705	58	.483	.167	.236	-.306	.640
	Equal variances not assumed			.705	51.109	.484	.167	.236	-.308	.641
3	Equal variances assumed	.217	.643	.706	58	.483	.133	.189	-.245	.512
	Equal variances not assumed			.706	56.720	.483	.133	.189	-.245	.512
4	Equal variances assumed	62.283	.000	4.089	58	.000	.467	.114	.238	.695
	Equal variances not assumed			4.089	40.009	.000	.467	.114	.236	.697
5	Equal variances assumed	1.432	.236	1.166	58	.248	.167	.143	-.119	.453
	Equal variances not assumed			1.166	57.751	.248	.167	.143	-.119	.453
6	Equal variances assumed	.337	.564	1.227	58	.225	.200	.163	-.126	.526
	Equal variances not assumed			1.227	55.210	.225	.200	.163	-.127	.527

In Table 2, regarding Levene's test, the observed p-value for the second subtest is .011 ($p < 0.05$), so we can reject the null of Levene's test and conclude that the variance in phonological awareness of Turkish-Persian bilinguals is

significantly different from that of Persian monolingual pre-school children. The observed p-values for the third, fifth, and sixth subtests are .643, .236, and .564 ($p > 0.05$), respectively; therefore, the variances in phonological awareness of Turkish-Persian bilinguals are not significantly different from that of Persian monolingual pre-school children. In the fourth subtest, $p < 0.001$ shows the significant difference between Turkish-Persian and Persian pre-school children in phonological awareness.

Just the p-value of t-test in the fourth phonological awareness subtest is less than $\alpha = 0.05$ ($p < 0.05$) and the p-values of t-test in the phonological awareness subtests of 2, 3, 5, and 6 are $p > 0.05$; thus, there is statistically significant difference between the two means only in the fourth phonological awareness subtest.

V. DISCUSSION

The results of the analysis revealed that Turkish-Persian preschool children outperformed in phonological awareness subtests of 2 and 4. Subtest 2 relates to the alliteration recognition in which the child is showed two pictures, which have the same initial syllable. Subtest 4 deals with the phoneme combination test, in which the examiner says each phoneme separately for each picture then the child shows the matching picture. The performance of the two groups was not statistically significant in the subtests of rhyme recognition (3), recognition of words with the same initial phoneme (5), and recognition of words with the same final phoneme (6); hence, the participants performed approximately indistinguishable in these three subtests of phonological awareness. The possible explanation for the difference in the performance of the two groups may be the linguistic background knowledge of bilingual participants who can comprehend and produce at least two languages.

The findings of the present study are in the same line with the findings of Bialystok (2001; 2002), and Verhoeven (2007) and indicate that the phonological processing of bilingual children is different from that of monolingual children and the bilingual children are presumed to build up higher levels of phonological awareness. The present study may confirm their findings that bilingual children take advantage of higher levels of phonological awareness regarding the alliteration recognition and phoneme combination in comparison with their monolingual counterparts.

Findings of the present study support the results of some previous studies (Rubin & Turner, 1989; Bruck & Genesee, 1995; Campbell & Sais, 1995; Canbay, 2011), which have compared phonological awareness in monolinguals and bilinguals and reported the superiority of bilinguals over monolinguals concerning phonological awareness. It seems literally acceptable that bilingualism may smooth the progress of children's metalinguistic development especially their phonological awareness (Vygotsky, 1962; Clark, 1978; Slobin, 1978).

However, the results of the present study are contrary to the findings of Chiappe and Siegel (1999) and Bialystok et al. (2003). Chiappe and Siegel (1999) divulged no significant difference in phonological awareness between English-speaking monolingual children and Punjabi-English bilingual children. The possible explanation for such differences in the findings can be due to the differences in the contexts of these studies, the instruments and tasks used to obtain data, and the nature and kind of the bilingual language of the participants (i.e. Chinese, French, Turkish, or Hindi as the second language of the bilingual group may be influential in the findings of previous studies). Bialystok et al. (2003) reported negative effects of bilingualism on phonological awareness and concluded that different groups of children assessed by different tasks could demonstrate no clear and consistent effect of bilingualism on the acquisition of phonological awareness.

Although the present study showed the advantage of pre-school bilinguals over monolinguals concerning phonological awareness, it should not be overestimated because pre-school bilingual children revealed more phonological awareness than their monolingual counterparts only in the alliteration recognition and phoneme combination subtests and approximately all the participants performed equally in the other phonological awareness subtests. It is assumed that bilinguals process language in higher levels than monolinguals (Bialystok, 2001; 2002; Verhoeven, 2007) that can be mentioned as one of the reasons for the differences in the phonological awareness of them.

Phonological awareness is a complex process that may be influenced by various elements; for instance, the use of different tests or tasks, or the similarities and differences between the two languages may affect participants' phonological processing in the language being studied (Tunmer & Rohl, 1991). Since the outcomes of the studies conducted on phonological awareness of bilinguals and monolinguals have been muddled up, as Bialystok et al. (2003) indicate, the generalizability of claims relating bilingualism to the development of phonological awareness needs to be limited and literacy instruction needs to be more individualized depending on linguistic background. However, further research is called for to examine more varied groups of pre-school children to screen more variables that sway phonological processing.

VI. CONCLUSIONS AND IMPLICATIONS

The literature on phonological awareness (Bradley & Bryant, 1985; Lundberg, Frost, & Petersen, 1988; Stewart, 2004) suggests that phonological awareness plays a strong role in the development of literacy skills and even small differences in phonological awareness skills may lead to great difficulties in later reading and writing development. As Tunmer & Rohl (1991) state, phonological awareness training can help the development of subsequent reading and spelling skills when it is given in kindergarten before reading and writing instruction begins. Since the findings of this study revealed

the advantage of Turkish-Persian bilingual pre-school children over their Persian monolingual counterparts in some aspects of phonological awareness such as alliteration recognition and phoneme combination, phonological awareness training should be an integral part of preschool programs for monolinguals in order to prepare them for achieving higher levels of phonological processing to be able to sharpen their literacy skills.

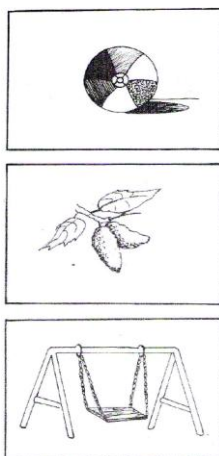
The findings of the study may have implications for children/language learners, parents, teachers, teacher trainers, teacher training programs, and task designers. The findings make children/language learners and their parents more familiar with the factors that can influence the phonological success. The individual's capability to concentrate on the phonological or sound structure of language has been revealed to be directly pertinent to the escalation of literacy and may promote acquisition of literacy skills and academic achievement (Bradley & Bryant, 1983; Stanovich, 1986; Bryant & Goswami, 1987); hence, by knowing children's phonological abilities and disabilities, teachers, teacher trainers, task designers, and teacher training programs can find ways of preparing students for achieving higher levels of phonological processing. By having more phonologically aware children, the probability of having successful language learners will be enhanced.

Research on the effects of bilingualism on phonological awareness has capitulated varied results so far (e.g. Chiappe & Siegel, 1999; Bialystok et al., 2003). Furthermore, the research findings seem to be swayed by the nature of the languages being studied and the types of tasks or tests used. Therefore, it comes into sight that further research is needed in order to make more specific predictions about any advantage of bilingualism in phonological awareness since no concurrence has been achieved yet.

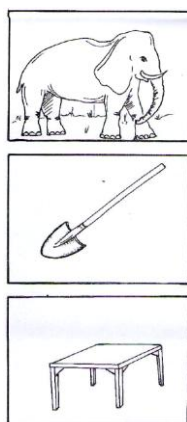
APPENDIX

Samples of the Items in *Soleymani and Dastjerdi Phonological Awareness Test (2002)*

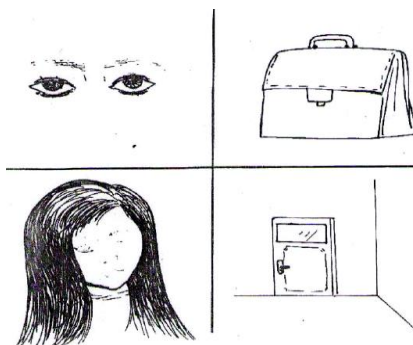
Subtest 2: alliteration recognition: The child shows two pictures which have the same initial syllable.



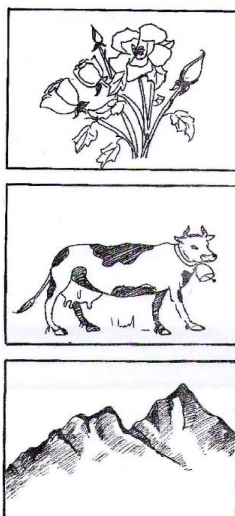
Subtest 3: rhyme recognition: The child shows two pictures which rhyme.



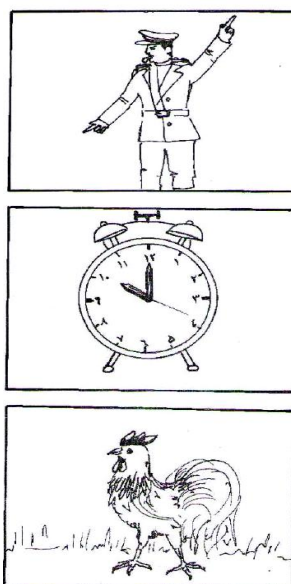
Subtest 4: phoneme combination: The examiner says each phoneme separately for each picture; the child shows the matching picture.



Subtest 5: recognition of words with the same initial phoneme: The child shows two pictures with the same initial phoneme.



Subtest6: recognition of words with the same final phoneme: The child shows two pictures with the same final phoneme.



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Moussa Ahmadian is an associate professor of Department of English Language and Literature, at Arak University, Iran. His fields of interest are Psycholinguistics and Instructed SLA, TEFL, Critical Discourse Analysis, Translation Studies and Literature, on which he has published and presented a number of papers in inter/national journals and conferences. He has also carried out a number of research projects most of them on Translatology (the psycholinguistic aspects of translation), textology (text analysis) and translation. He has supervised more than 40 M.A. theses in the fields of (Applied) Linguistics, Second Language Acquisition and Teaching, Translation and English Literature.

Leila Bahrami is a Ph.D. candidate in TEFL at Arak University, Iran. She is currently a lecturer at University of Applied Science and Technology (UAST), Iran. Her fields of interest are Discourse Analysis, Corpus Linguistics, Second Language Writing, and Young Learners Education. She has published and presented a number of papers in inter/national journals and conferences.

Seyyedeh-Mahsa Amini is a Ph.D. candidate in TEFL at Arak University, Iran. She is a lecturer at Payam-Noor University and University of Applied Science and Technology (UAST), Iran. Her fields of interest are First Language Acquisition, Instructed Second Language Acquisition, Textbook Evaluation, and English for Special Purposes. She has published and presented a number of papers in international journals and conferences. She has also published a book entitled: *Idiom Learning by Cooperative Teaching: From Comprehension to Production* (Saarbrücken, Germany: LAP LAMBERT Academic Publishing GmbH & co. KG., 2012).