The Standardization of the Concepts About Print Into Greek

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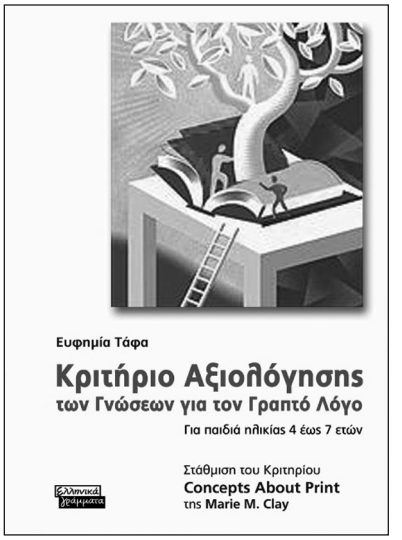
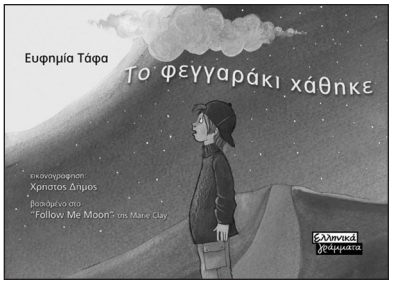
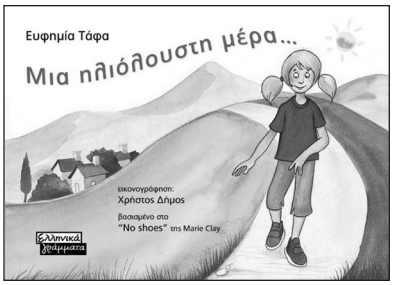
ABSTRACT

The purpose of this study was to translate and standardize Concepts About Print (C.A.P.) into Greek, and to assess its psychometric properties. Particularly, this study evaluated the reliability and validity of the Greek version of C.A.P., and item difficulty and discrimination index and examined whether there were differences between boys and girls and between children who attended schools in Athens, Attica and the rest of Greece. The study found that the reliability value of C.A.P in Greek is high and acceptable for this type of task, showing that it is a reliable tool that Greek teachers can use to reliably measure 4-to-7-year-old children's knowledge of print.







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INTRODUCTION

Continuous evaluation of young children's reading development in preschool and the first grades of primary school is absolutely essential for successful implementation of early reading programs (Nutbrown, 1999). Teachers should be constantly aware of what children already know about the concepts and conventions of print, what children have yet to learn, and which children need extra help (Clay, 2005; Tafa, 2001).

However, evaluating young children's literacy is a rather difficult and tricky procedure. Some assessment tools, especially those that involve "pencil and paper" are not always appropriate for young children (Morrow, 2005). Equally inappropriate are those tools that demand children's attention on a task for a long period of time (Georgousis, 1995). For young children, assessment tools should focus on the curriculum and instructional goals and be based on observing their engagement in authentic classroom reading activities (Cooper & Kiger, 2005; IRA & NAEYC, 1998; Morrow, 2005; Nutbrown 1997; Owocki & Goodman, 2002; Vukelich & Christie, 2004).

An authentic tool designed to help teachers observe young children's growing recognition of the conventions and rules of print is Marie Clay's (2005) Concepts About Print (C.A.P.) observational task. It is an individually administered assessment task that is widely used with young children in many countries. As the teacher reads the test booklet to the child, he finds out what the child is attending to in the print, the processes the child controls, and discovers the reading behaviors which need to be taught (Goodman, 1981). Particularly, C.A.P. assesses children's understanding of print concepts such as book orientation, that print and not the picture carries the message, print direction, letter and word concepts, line and word sequence, letter order within a word, and the meaning of punctuation marks.

The knowledge of the conventions and concepts of print is a very important milestone on a young child's literacy journey, and mastery of this knowledge is essential to the development of reading proficiency (Clay, 1991). For learning how to read and write, young children should understand that pictures are different from text and that print carries the message. They should learn that books are read from left to right and from top to the bottom, that alphabet letters have names and represent sounds, that words are separated by spaces, and that print corresponds to speech, word by word.

However, when coming to school, all children neither have the same amount of knowledge nor learn at the same rate. There are children who, perhaps due to the exposure to print, know more of the concepts about print than others, while there are children who have little knowledge of them. There are also children who need extra help to grasp this knowledge. In other words, as Clay (2000) clearly states: "children bring different amounts of prior knowledge to the new challenges that the school provides" (p. 19). It is important for

teachers to know where each child is starting from in his or her understanding of print concepts and they should be well prepared to teach each child to become knowledgeable about these essential concepts. Teachers need tools that reliably and validly separate those who know and those who do not know and identify children who need more teacher attention.

C.A.P. has been found to be a reliable and valid tool for assessing young children's knowledge about print. Clay (2005) reports reliability coefficients varied from 0.73 (test-retest, Perkins, 1978 in Clay, 2005, p. 160) to 0.95 (split-half, Clay, 1966) and from 0.78 (Cronbach alpha, Pinnell, McCarrier & Button, 1990 in Clay, 2005, p.160) to 0.87 (Cronbach alpha, Gilmore, 1998 in Clay, 2005, p. 160). Clay also reports similar results from a study in which 282 Spanish-speaking children were assessed with the Spanish version of the task twice during the school year (autumn and spring); Cronbach's alpha reliability coefficient was 0.69 and 0.82 respectively (Escamilla, 1992 in Clay, 2005, p. 162).

As far as validity is concerned, Clay (2005) reports concurrent validity of C.A.P. with a word reading task of 0.79, based on correlations for 100 6-year-old New Zealand children in 1966. She also reports C.A.P.'s predictive validity from a longitudinal study. Eighty three 6-year old English-speaking children were assessed with C.A.P. at the age of 6, and with the Schonell R1 and Fieldhouse Reading Test at the ages of 7 and 8 respectively. C.A.P. predicted quite well the performance of the children in Schonell R1 (r = 0.73 at the age of 7 and r = 0.64 at the age of 8) and in the Fieldhouse Reading Test (r = 0.69 at the age of 7 and r = 0.70 at the age of 8).

In addition, Clay (2005) reports results from a study in which the New Zealand Ministry of Education included C.A.P. in an observation survey conducted among school entrants, and correlated the total score on C.A.P. with four subscores. The analysis for C.A.P.'s construct validity showed that correlations of the whole score with part was high for knowing how to read (r = 0.93), for concepts about print (r = 0.84) and for punctuation (r = 0.68), but was low for attention to the letters and word sequences (r = 0.33).

Moreover, C.A.P. concurrent and construct validity have been examined by Day and Day (1979, 1991). The researchers calculated the C.A.P. concurrent validity by correlating the C.A.P. scores of 60 English-speaking preschool children with their scores in the Written Language Awareness Test (Taylor & Blum, 1980 in Day & Day 1991), in the Test of Early Reading Ability (Reid, Hresko & Hammill, 1981 in Day & Day, 1991) and in the Linguistic Awareness in Reading Readiness Test (Downing, Ayers & Schaefer, 1983 in Day & Day, 1991). Results showed that concurrent validity ranged from 0.53 to 0.65 (Day & Day, 1991). As far as construct validity is concerned, the same researchers (Day & Day, 1979) used C.A.P. raw scores of 50 children who were tested on four successive occasions—three times in kindergarten, and

once in first grade of primary school—and applied factor analysis for each test administration. As the researchers themselves argued, although methodology problems prevented them from obtaining reliable results, all factor analyses showed that almost all C.A.P. items (see Appendix) loaded onto four factors. Only items 1 and 18 did not load onto any one factor. Researchers classified all items (including items 1 and 18) in four patterns, which they called: (a) Book-orientation concepts (items 1, 2, 11), (b) Print-direction concepts (items 3, 4, 5, 6, 7, 9, 16), (c) Letter-word concepts (items 8, 19, 21, 22, 23, 24), and, (d) Advanced-print concepts (items 10, 12, 13, 14, 15, 17, 18, and 20).

C.A.P. observational task has been designed to assess English-speaking children. However, it has been translated into many languages such as French (Bourque, 2001), Spanish (Escamilla, Andrade, Basurro, & Ruiz, 1996), Portuguese (Alves, Aguiar, Castro & Bairrao, 2004), German, Hebrew, Danish, Irish, Slovak, and Maori (Clay, 1989; Rodríguez, Hobsbaum, & Bourque, 2003) and seems to work fairly well. It has also been modified in Braille for blind children (Tompkins & McGee, 1984). In other words, C.A.P.'s long application has shown that it validly and reliably measures not only English-speaking children's knowledge of print, but also that of children who speak other languages.

In Greece, there is a lack of such assessment tools for preschool and first-grade children. The curriculum change (Ministerial Decision C1/58 Official Government Gazette, 93/τ. Β'/10-2-1999) and the recent implementation of the new emergent literacy approach in Greek kindergarten (Ministerial Decision C2/21072b Official Government Gazette, 304/τ. Β'/13-3-2003) highlighted the need for the development of age-appropriate literacy assessment tools which will help teachers gather the necessary information so as to determine program objectives, and then organize and apply appropriate literacy activities in their classrooms. C.A.P. seems to be one of these tools. Its items will help Greek kindergarten and first-grade teachers assess what young children know about literacy.

The purpose of this study was to translate and standardize Concepts About Print into Greek, and to assess its psychometric properties. Particularly, this study evaluated the reliability and validity of the Greek version of C.A.P., and the items' difficulty and discrimination index, and examined whether there were differences between boys and girls and between children who attended schools in Athens, Attica,[1] and the rest of Greece.

[1] Attica is the administrative region where Athens, the capital city, is located. Its main characteristic is that it constitutes the most densely populated part of the country.

METHOD

Sample

C.A.P. was administered to a sample of 2,744 Greek children (1,345 boys and 1,399 girls), of which 1,776 attended kindergarten and 968 first grade. All children were native Greek speakers. For the purpose of this study, all kindergartens and primary schools were classified and then divided into two groups. Namely, schools located in the broader area of Attica (Athens), and those that are situated in the rest of Greece. The sample was divided into two groups because according to the National Statistical Service of Greece (2001) the actual population in Greece today is 10,934,097, and 3,894,573 (35.6%) live in the region of Attica. This means that about one-third of the Greek population live in and around Athens. In addition, according to the National Statistical Service of Greece (2005a), in 2004, the total number of kindergartens was 5,600, of which 1,025 (18.30%) were within Attica and 4,575 (81.70%) in the rest of Greece. Moreover, in 2004, the total number of primary schools was 5,493, of which 1,030 (18.75%) were within Attica and 4,463 (81.25%) in the rest of Greece (National Statistical Service of Greece, 2005b). In other words, approximately one fifth of kindergartens and primary schools were situated within Attica. Moreover, according to the same source (National Statistical Service of Greece, 2005c), in the 2004–2005 academic year, 136,960 children attended kindergarten of which 37,869 (27.65%, approximately one-third) attended kindergarten classes within Attica and 99,091 (72.35%) in the rest of Greece. In the same school year (2004-2005) the total number of children who attended first grade was 98,481 of which 30,605 (31.08%, approx. 1/3) attended first grade within Attica and 67,876 (68.92%) in the rest of Greece (National Statistical Service of Greece, 2005d). In other words, approximately one-third of the young Greek learners attended kindergarten and first grade within Attica.

Seventy-five kindergartens and 64 primary schools were selected randomly from all over Greece. Of these 16 (21.33% approx.1/5) kindergartens were within Attica and 59 (78.67%) in the rest of Greece, while 13 (20.31%, approximately one-fifth) primary schools were within Attica and 51 (79.69%) in the rest of Greece. Of the sample of 2,744 children, 1,776 attended kindergarten and 968 attended first grade. Of the 1,776 kindergarteners, 635 (35.75%, approximately one-third) attended kindergartens within Attica and 1,141 (64.24%) in the rest of Greece. Similarly, of the 968 first graders, 308 (31.81%, approximately one-third) attended classes within Attica, while 660 (68.18%) in the rest of Greece. In other words, one third of the sample children attended either kindergarten or first grade within Attica. The use of a selected percentage of children from Attica, as well as from the rest of Greece, provides a representative sample for the purpose of this study.

Table 1. Absolute and Relative Frequencies of the Sample's Chronological Age in Months Per Age Group

Age Group	*f*	%	*M*	Min	Max	*SD*
4–5 years	697	25.40	57.93	52	63	3.27
5–6 years	1079	39.32	69.53	64	75	3.30
6–7 years	968	35.28	81.50	76	89	3.40
Total	2744	100.0	70.80	52	89	9.71

Note: *f* = absolute frequency; % = relative frequency; *M* = mean; Min = minimum; Max = maximum; *SD* = standard deviation

The age of the sample children ranged from 52 months (4 years 4 months) to 89 months (7 years 5 months) (*M* = 70.80, *SD* = 9.71). According to Tables 1 and 2, 697 (25.4%) children (343 boys and 354 girls) were 52 to 63[2] months of age, (*M* = 57.93, *SD* = 3.27) and were in the first of the 2 years of kindergarten, 1,079 (39.32%) (536 boys and 543 girls) were 64 to 75 months (*M* = 69.53), *SD* = 3.30) and were in the second and last year of kindergarten, while 968 (35.28% (466 boys and 502 girls) were 76 to 89 months of age (*M* = 81.50, *SD* = 3.40) and attended first grade.

Table 2. Absolute and Relative Frequencies of the Sample Children Per Sex and Age Group

	Boys		Girls		Total	
Age Group	*f*	%	*f*	%	*f*	%
4–5 years	343	49.21	354	50.79	697	100.00
5–6 years	536	49.67	543	50.33	1079	100.00
6–7 years	466	48.14	502	51.86	968	100.00
Total	1345	49.00	1399	51.00	2744	100.00

Note: *f* = absolute frequency; % = relative frequency;

[2] In this study, children's age will be referred to in years: 4-5 years, 5-6 years, 6-7 years.

Procedure

Since the translation and adaptation of the original C.A.P. booklets did not match the grammar and syntax of the Greek language, two new booklets titled *The Moon Has Gone* (Tafa, 2008a) and *A Sunny Day…* (Tafa, 2008b), were written in Greek. Although both stories were based on the original *Follow Me, Moon* (Clay, 2000b) and *No Shoes,* (Clay, 2000c) they differed in the plot.

The Greek version was constructed to completely match C.A.P.'s 24 items. The same order and the same instructions for all the items were followed (see Appendix). Special attention was given to the selection of the Greek words used in particularly sensitive items such as 12, 13, 14 or 20. In these items the order of words, or letters at the beginning or end of words, or letters in the middle of words has been changed.

In the 2001-2002 school year a pilot study was carried out (Tafa, 2005). The task was administered to 143 children (70 boys and 73 girls) aged 5 years to 7 years 2 months (M = 6.7). The analysis of the data showed high and acceptable values of the reliability coefficients. Specifically, Cronbach's alpha reliability coefficient was 0.86, while the Guttman split-half was 0.73.

The task was administered from April to June of the 2005-2006 school year, by 12 appropriately trained fourth-year university students. Having made an appointment by phone with the class teachers, the students visited the schools and administered the task individually to all sample children. The task administration lasted about 15 minutes for kindergarteners and 10 minutes for first graders. Of the 2,744 children, 1,714 (62.5%) were assessed using the booklet *The Moon Has Gone* and 1,030 (37.5%) using the booklet *A Sunny Day…* .

RESULTS

Raw Scores

Table 3 provides a summary of the children's scores in the task. The mean correct responses for the three age groups of children increased gradually as the age of the children increased. The mean raw score of 6.69 points for children aged 4 to 5 years old rose to 9.66 points for the 5-to-6-year-olds, while it doubled for the older 6-to-7-year-olds and became 18.07 points. The greatest variance (S = 35.83) and standard deviation (SD = 5.99) were observed for the total number of children. This is expected, given that the range of raw scores for the total number of children was greater than that for each age group.

Table 4 provides a summary of the scores per gender and school area. The total mean score of girls (M = 12.09) was little higher than that of boys (M = 11.64), and there was a small difference between the total mean score of the children who attended schools within Attica (M = 11.96) compared to those in the rest of Greece (M = 11.83).

Table 3. Sample Children's Performance Per Age Group

Age Group	*N*	Min	Max	*M*	*SD*	*S*
4–5 years	697	0	18	6.69	3.45	11.88
5–6 years	1079	0	24	9.66	3.93	15.44
6–7 years	968	0	24	18.07	3.54	12.57
Total	2744	0	24	11.87	5.99	35.83

Note: *N* = number of children; Min = minimum; Max = maximum; *M* = mean; *SD* = standard deviation; *S* = variance

Table 4. Sample Children's Performance Per Gender and School Area

Group of Children	*N*	Min	Max	*M*	*SD*
Boys	1345	0	24	11.64	6.09
Girls	1399	0	24	12.09	5.87
Attica	943	0	24	11.96	5.95
Rest of Greece	1801	0	24	11.83	6.00

Note: *N* = number of children; Min = minimum; Max = maximum; *M* = mean; *SD* = standard deviation

Reliability

To assess C.A.P.'s reliability, the reliability of internal consistency was measured by the Cronbach's alpha coefficient for each age group of children and for the total sample. In addition, the parallel forms reliability and interscorer reliability was measured for a part of the sample. Table 5 presents the Cronbach's alpha reliability coefficient and the standard error of measurement for each age group of children and for the total sample. The reliability values for all age groups of children and for the total sample were high and acceptable for a task of this type. In addition, the standard error of measurement for all age groups of children and for the total sample was quite low. The smaller the standard error of measurement of a task, the greater the likelihood that any child's actual score on the task will be close to his/her true score for that task.

Moreover, the value of the Cronbach's alpha reliability coefficient for each group of children assessed by each of the two booklets was 0.91 and 0.92 respectively (see Table 6), which was quite high. These results indicated that whichever booklet is used to assess children's knowledge about print, the measurement will be reliable.

For the reliability of parallel forms, 50 children were assessed by both booklets twice in a one-week period. Half of the children were first assessed with *The Moon Has Gone* and then with *A Sunny Day…*, while the other half were assessed in reverse-booklet order. The Pearson *r* correlation coefficient of children's raw scores in both measurements was 0.90 ($p = 0.01$). This value is quite high and statistically significant, indicating the almost-perfect linear correlation between the two parallel forms of the task.

For the interscorer reliability of the task, two experienced students administered it to 50 children in a one-week period. The Cohen's kappa coefficient of concordance (Norusis, 1993) was 0.66 ($p < 0.001$), a value which is quite high and statistically significant, indicating that the degree of agreement between the two administrators' scores was sufficiently high.

Table 5. Cronbach's Alpha Reliability Coefficient and Standard Error of Measurement for Each Age Group and Total Sample

Age Group	α	*SEM*
4–5 years	0.76	1.66
5–6 years	0.81	1.70
6–7 years	0.78	1.60
Total	0.91	1.77

Note: α = Cronbach's Alpha coefficient; *SEM* = standard error of measurement

Table 6. Cronbach's Alpha Reliability Coefficient and Standard Error of Measurement for Children's Group Assessed by Each Booklet

Booklet	*N*	α	*SEM*
The Moon Has Gone	1714	0.91	1.78
A Sunny Day…	1030	0.92	1.71

Note: *N* = number of children; α = Cronbach's Alpha coefficient; *SEM* = standard error of measurement

Validity

For the purpose of this study, the task content, concurrent, and construct validity was assessed. Although the content validity was assumed to have been proven in the original English version, the task was translated into Greek and retranslated back into English in order to ensure the accuracy of the translation. However, special care was taken over each item's syntax and vocabulary so that

Table 7. Correlation Coefficients Between Children's Raw Scores on the C.A.P. and Kindergarten and First-Grade Teachers' Scorings

Class Number	Kindergarten Classes	First-Grade Classes
1	0.74*	0.82**
2	0.77*	0.54
3	0.74*	0.60
4	0.66	0.22
5	0.41	0.68*
6	0.71*	0.92**
7	0.61	0.47
8	0.60	0.82**
9	0.66*	0.82**
10	0.34	0.59
11	0.87**	0.61
12	0.87*	0.30
13	0.67*	0.22
14	0.71*	0.34
15	0.83*	0.28
16	0.47	0.34
17	0.30	0.59
18	0.36	0.54
19	0.77**	0.50

Note: *$p < 0.05$; **$p < 0.01$

it could be completely understood by the young children.

For the evaluation of the concurrent validity, and in the absence of any other Greek task evaluating this age group's knowledge of print, teachers' scorings were collected as an external criterion. Thirty-eight teachers, (19 kindergarten and 19 first grade) were asked to evaluate their pupils' performance on concepts of print on a 5-point scale (1 = very low, 2 = low, 3 = good, 4 = very good, 5 = excellent). The teachers' evaluation preceded the administration of the task to the children so that teachers would not be influenced by the children's performance in the task. The Pearson *r* correlation coefficient between children's scores given by their teachers and children's scores in the task indicated the task concurrent validity (see Table 7). The results showed a satisfactory relationship between children's scores given by their teachers and children's scores in the task for each individual class of both types. In kindergarten classes the correlation coefficients varied from 0.30 to 0.87, while in the first-grade classes it varied from 0.22 to 0.92. Although in some cases the correlation coefficient values were of a sufficiently satisfactory level, they were not statistically significant because in these specific classes the number of the assessed children was small. Given that the teachers' evaluations and scorings were subjective judgments, the correlation coefficients between their judgments and children's raw scores were quite high and acceptable for a task of this type.

For the evaluation of the construct validity, a principal components analysis with Varimax rotation was performed separately for kindergarten and first-grade children. The analysis revealed a four-factor model for both groups. The number of factors was based on the Scree plots (Cattell, 1966). In both groups of children, all factors had eigenvalues above 1 and each factor explained at least 5% of the total task variance. The Varimax orthogonal rotated factor

loadings (> 0.30) are shown in Tables 8 and 9 on the following pages. The four factors that explained 42.05% of the total variance for kindergarten children (Table 8) and 40.79% of the total variance for first-grade children (Table 9) follow.

Print direction concepts

This factor which explained the 14.84% variance for the kindergarten children and the 11.89% variance for the first-grade children included items 2, 3, 4, 5, 6, 7, 11 for the former group, and items 2, 3, 4, 5, 6 for the latter. These items assessed children's understanding of print directional rules and concepts.

Letter and word concepts

This factor explained the 10.05% variance for kindergarten children and the 9.84% variance for first-grade children and included items 8, 9, 21, 22, 23, 24 for the former group, and items 7, 9, 19, 21, 22, 23, 24 for the latter. These items assessed whether children had understood the letter and word concepts. Item 8 did not load significantly for the first-grade children because it was very easy for them. Most of the children could show the bottom of an upside-down picture in the book. In addition, and for the same group of children, item 7 loaded significantly on the second factor and not on the first one because in this item children were asked to show, on a particular page, the beginning and the end of the story. As first graders knew how to read, they showed the first and the last letter of the text as the beginning and the end of the story, while the kindergarteners showed sometimes both the top and the bottom of this particular page or the front and the back cover of the booklet. In other words, it seems that while this item (7) assessed kindergarteners' knowledge of print direction, the same item assessed the first graders' knowledge of the letter concept.

Punctuation

This factor explained the 8.27% variance for kindergarteners and the 9.49% variance for first graders. It included items 15, 16, 17, 18, and 20 for both groups, which assessed (except for item 20) children's knowledge of the punctuation marks. Item 20 assessed children's responses to words that included the same letters in a different order.

Letter, word, and line sequence

This factor, which explained the 8.89% variance for kindergarteners and the 9.58% variance for first graders, included items 10, 12, 13, and 14 for both cases. These items were particularly sensitive and assessed what children were attending to as they looked at print.

Table 8. Varimax Rotation Factor Loadings for Kindergarten Children

Items	F1	F2	F3	F4
2	0.67			
3	0.87			
4	0.90			
5	0.89			
6	0.32			
7	0.43			
11	0.47			
8		0.32		
9		0.34		
19		0.53		
21		0.60		
22		0.70		
23		0.59		
24		0.57		
15			0.60	
16			0.69	
17			0.71	
18			0.51	
20			0.33	
10				0.34
12				0.68
13				0.79
14				0.70

Note: F1 = print direction concepts; F2 = letter and word concepts; F3 = punctuation; F4 = letter, word, and line sequence

Item Analysis

Item difficulty index

The difficulty index of an item is determined by the percentage of children who answer it correctly (Alexopoulos, 1998). The easier the item is, the larger this percentage will be. According to Anastasi (1969), the closer the difficulty index is to 0.50, the better and more functional the item is. However, there are researchers who argue that the item difficulty index should range from 0.10 to 0.90, with the majority of items hovering around 0.50 (Walsh & Betz, 1990 in

Table 9. Varimax Rotation Factor Loadings for First-Grade Children

Items	F1	F2	F3	F4
2	0.39			
3	0.81			
4	0.90			
5	0.89			
6	0.42			
7		0.49		
9		0.39	0.31	
19		0.33		
21		0.61		
22		0.66		
23		0.67		
24		0.49	0.32	
15			0.47	
16			0.75	
17			0.76	
18			0.43	
20			0.46	
10				0.37
12				0.77
13				0.80
14				0.76

Note: F1 = print direction concepts; F2 = letter and word concepts; F3 = punctuation; F4 = letter, word, and line sequence

Alexopoulos 1998), while others state that the majority of items should range from 0.50 to 0.80 (Wiersma & Yurs 1990 in Alexopoulos, 1998).

Table 10 presents the item difficulty index, the standard deviation and the difficulty rank order of the items calculated for each age group of children and for the total sample. In the present study, the formula used for the item difficulty index is P = R/T, where P = item difficulty, R = number of children who answered item correctly and T = total number of children who tried the item.

For younger children 4–5 years old, 11 items (6, 9, 10, 12, 13, 14, 15, 16, 17, 18, 20) (45.83%) had difficulty index lower than 0.20. Only the first item (4.16%) had difficulty index higher than 0.80, while 12 items (2, 3, 4,

5, 7, 8, 11, 19, 21, 22, 23, 24) (50%) had difficulty index ranging from 0.20 to 0.80. For children aged 5–6 years old, 10 items (6, 10, 12, 13, 14, 15, 16, 17, 18, 20) (41.66%) had difficulty index lower than 0.20. Three items (1, 2, 21) (12.50%) had difficulty index higher than 0.80, while in 11 items (3, 4, 5, 7, 8, 9, 11, 19, 22, 23, 24) (45.83%) the difficulty index ranged from 0.20 to 0.80. For children aged 6–7 years old no item had a difficulty index lower than 0.20. Fifteen items (1, 2, 3, 4, 5, 7, 9, 11, 16, 19, 20, 21, 22, 23, 24) (62.50%) had a difficulty index higher than 0.80, while 9 items (6, 8, 10, 12, 13, 14, 15, 17, 18) (37.50%) had difficulty index ranging from 0.20 to 0.80. Finally, for the total sample, only five items (10, 12, 13, 14, 18) (20.84%) had a difficulty index lower than 0.20. Three items (1, 2, 21) (12.50%) had a difficulty index

Table 10. Difficulty Index, Standard Deviation, and Difficulty Rank Order of Each Item for Each Age Group and Total Sample

	4–5 Years			5–6 Years			6–7 Years			Total Sample		
Item	P	*SD*	DR	P	*SD*	DR	P	*SD*	DR	P	*SD*	DR
1	0.85	0.35	1	0.89	0.31	1	0.95	0.21	2	0.90	0.29	1
2	0.65	0.48	3	0.83	0.38	3	0.97	0.17	1	0.83	0.37	3
3	0.49	0.50	5	0.73	0.44	5	0.93	0.25	5	0.74	0.44	5
4	0.36	0.48	9	0.65	0.48	7	0.88	0.32	12	0.66	0.47	8
5	0.34	0.47	10	0.63	0.48	10	0.88	0.33	13	0.64	0.48	10
6	0.07	0.26	16	0.16	0.36	16	0.67	0.47	19	0.32	0.47	17
7	0.46	0.50	7	0.65	0.48	8	0.90	0.30	10	0.69	0.46	6
8	0.62	0.48	4	0.66	0.47	6	0.76	0.43	17	0.69	0.46	7
9	0.13	0.33	14	0.28	0.45	14	0.81	0.39	14	0.43	0.49	14
10	0.05	0.22	18	0.06	0.25	18	0.36	0.48	20	0.16	0.37	20
11	0.49	0.50	6	0.75	0.43	4	0.93	0.26	6	0.75	0.44	4
12	0.01	0.08	23	0.04	0.19	20	0.28	0.45	23	0.11	0.32	23
13	0.01	0.09	22	0.03	0.17	23	0.35	0.48	21	0.14	0.34	21
14	0.01	0.12	21	0.03	0.18	22	0.33	0.47	22	0.13	0.34	22
15	0.03	0.18	19	0.05	0.22	19	0.69	0.46	18	0.27	0.44	19
16	0.09	0.29	15	0.18	0.39	15	0.92	0.27	7	0.42	0.49	15
17	0.02	0.13	20	0.04	0.19	21	0.79	0.41	16	0.30	0.46	18
18	0.01	0.04	24	0.01	0.11	24	0.26	0.44	24	0.10	0.30	24
19	0.20	0.40	13	0.44	0.50	13	0.92	0.28	8	0.55	0.50	13
20	0.05	0.22	17	0.12	0.33	17	0.81	0.40	15	0.35	0.48	16
21	0.73	0.44	2	0.87	0.34	2	0.94	0.23	4	0.86	0.35	2
22	0.28	0.45	12	0.44	0.50	12	0.91	0.28	9	0.56	0.50	12
23	0.37	0.48	8	0.63	0.48	19	0.89	0.31	11	0.65	0.47	9
24	0.34	0.47	11	0.48	0.50	11	0.95	0.23	3	0.61	0.49	11

Note: P = difficulty index; *SD* = standard deviation; DR = difficulty rank order

higher than 0.80, while 16 items (3, 4, 5, 6, 7, 8, 9, 11, 15, 16, 17, 19, 20, 22, 23, 24) (66.66%) had difficulty index ranging from 0.20 to 0.80.

These results showed that there were items which were very difficult for children aged 4–6, who were not yet able to read. Some of these items, such as items 10, 12, 13, 14, and 18 were difficult even for the first graders 6–7 years old.

Item discrimination index

The higher the discrimination index, the better the item contributes to the discrimination potential of the task (Georgousis, 1999). A discrimination index rating 0.40 and above is considered to be satisfactory, while it is marginally accepted when it ranges from 0.20 to 0.30 (Ebel & Frisbie, 1986; Mehrens & Lehmann, 1978). However, Ebel (1972, cited in Georgousis, 1999) argues that 10% of the items should have a discrimination index ranging from 0 to 0.20.

In the present study, the procedure used to measure the discrimination index of each item was as follows. At first, all children's raw scores were rated from the highest to the lowest. The 27% of children with the highest raw scores constituted the upper group and the 27% of children with the lowest raw scores constituted the lower group (Kelley, 1939). These two groups were used as a representative sample for measuring the discrimination index of each item. The item discrimination index was found by subtracting the number of children in the lower group who answered the item correctly, from the number of children in the upper group who also answered the item correctly and then dividing the total number of these children by half. Table 11 shows the discrimination index of all items for each age group of children and for the total sample. It is clear that the majority of the items had a high discrimination index. For the total sample, 16 out of 24 items (2, 3, 4, 5, 6, 7, 9, 11, 15, 16, 17, 19, 20, 22, 23, 24) (67%) had discrimination indices above 0.40. For the group of children aged 4–5, 9 items (2, 3, 4, 5, 7, 11, 21, 22, 23) (37.5%) had a discrimination index above 0.40, while 16 items (1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 16, 19, 21, 22, 23, 24) (67%) had a discrimination index above 0.20. For the group of children aged 5–6, 14 items (1, 2, 3, 4, 5, 7, 8, 9, 11, 19, 21, 22, 23, 24) (58.3%) had a discrimination index above 0.40, while 17 items (1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 16, 19, 20, 21, 22, 23, 24) (71%) had a discrimination index above 0.20. For the group of children aged 6–7, all items had a discrimination index above 0.40. In summary, the items' discrimination indices for each age group of children and for the total sample seemed to be satisfactory and acceptable.

The item discrimination validity is also shown in Table 12 in which the correlation between each item score with the whole task score, as well as the items' Cronbach's alpha coefficient when the item is deleted, is presented for each age group of children and for the total sample. For children aged 4–5, the correlation of each item score with the whole task score ranged from 0.025 to

Table 11. Item Discrimination Index for Each Age Group of Children and Total Sample

Item	4–5 Years	5–6 Years	6–7 Years	Total Sample
1	0.27	0.50	0.49	0.22
2	0.70	0.71	0.45	0.46
3	0.86	0.93	0.54	0.67
4	0.86	1.00	0.50	0.78
5	0.84	1.00	0.61	0.80
6	0.20	0.34	0.85	0.73
7	0.66	0.75	0.62	0.63
8	0.35	0.52	0.57	0.29
9	0.23	0.50	0.78	0.80
10	0.09	0.12	0.53	0.37
11	0.59	0.66	0.53	0.54
12	-0.01	0.09	0.63	0.31
13	0.01	0.05	0.80	0.38
14	0.01	0.05	0.72	0.35
15	0.09	0.14	0.76	0.72
16	0.20	0.36	0.59	0.91
17	0.05	0.09	0.71	0.80
18	0.01	0.03	0.43	0.27
19	0.38	0.69	0.57	0.83
20	0.11	0.27	0.76	0.84
21	0.45	0.56	0.52	0.32
22	0.47	0.76	0.57	0.81
23	0.57	0.77	0.60	0.68
24	0.34	0.66	0.54	0.73

0.643[3]. Only in items 8, 12, 13, 14, 18, and 24, when the item was deleted, was Cronbach's alpha coefficient higher than that of the whole task, which was 0.758 (see Table 5). For children aged 5–6, the correlation of each item score with the whole task score ranged from 0.169 to 0.599 and only in item 8 was Cronbach's alpha coefficient, when the item was deleted, higher than that of the whole task, which was 0.809 (see Table 5). For children aged 6–7, the correlation of each item score with the whole task score ranged from 0.188 to 0.467, and only in items 8 and 10 was the Cronbach's alpha coefficient, when the item was deleted, higher than that of the whole task, which was 0.785 (see Table 5). Finally, for the total sample, the correlation of each item score with the whole task score ranged from 0.203 to 0.709. All items had a quite high

[3] The three decimal digits were given so as to better demonstration the differentiation among the items.

Table 12. Correlation of Each Item Score with the Whole Task Score and Cronbach's Alpha Coefficient, When the Item was Deleted, for Each Age Group of Children and the Total Sample

	4–5 Years		5–6 Years		6–7 Years		Total Sample	
Item	IS	α	IS	α	IS	α	IS	a
1	0.203	0.756	0.216	0.807	0.219	0.782	0.229	0.914
2	0.440	0.739	0.431	0.798	0.225	0.783	0.454	0.911
3	0.566	0.727	0.578	0.789	0.304	0.779	0.546	0.909
4	0.643	0.721	0.599	0.787	0.351	0.776	0.607	0.908
5	0.627	0.723	0.592	0.787	0.346	0.776	0.609	0.908
6	0.332	0.749	0.349	0.802	0.419	0.771	0.628	0.908
7	0.394	0.743	0.397	0.799	0.373	0.775	0.501	0.910
8	0.164	0.762	0.180	0.812	0.188	0.786	0.203	0.917
9	0.250	0.753	0.358	0.801	0.467	0.769	0.644	0.907
10	0.147	0.757	0.227	0.807	0.206	0.787	0.406	0.912
11	0.342	0.748	0.321	0.803	0.202	0.783	0.441	0.912
12	-0.076	0.761	0.270	0.806	0.370	0.775	0.441	0.912
13	0.058	0.759	0.206	0.807	0.451	0.769	0.508	0.910
14	0.043	0.760	0.169	0.808	0.408	0.772	0.468	0.911
15	0.243	0.754	0.337	0.804	0.338	0.777	0.655	0.907
16	0.246	0.753	0.346	0.802	0.349	0.777	0.709	0.906
17	0.203	0.756	0.265	0.806	0.362	0.775	0.701	0.906
18	0.025	0.759	0.177	0.808	0.226	0.784	0.400	0.912
19	0.327	0.748	0.401	0.799	0.319	0.778	0.632	0.908
20	0.208	0.755	0.324	0.803	0.436	0.771	0.698	0.906
21	0.274	0.752	0.267	0.805	0.251	0.781	0.317	0.913
22	0.344	0.747	0.451	0.796	0.341	0.777	0.622	0.908
23	0.332	0.748	0.411	0.799	0.314	0.778	0.521	0.910
24	0.183	0.760	0.353	0.802	0.393	0.776	0.567	0.909

Note: IS = item score; α = Cronbach's Alpha coefficient

correlation coefficient. In particular, in 21 out of 24 items (87.5%) the correlation coefficient was higher than 0.40 points and only in items 1 and 8 was the Cronbach's alpha coefficient, when the item was deleted, higher than that of the whole task, which was 0.913 (see Table 5).

Sex and School Differences

An aim of this study was also to examine whether there were significant differences between the scores of children who attended schools in Attica and those

in the rest of Greece, as well as between the scores of boys and girls. The comparison of mean scores between the former groups of children showed a statistically insignificant difference when tested by the two group *t*-test [$t = 0.534$ ($df = 2742$, $p = 0.59$)]. While the comparison of boys' and girls' mean scores showed that the girls had a small advantage that was only marginally significant when tested by the two group *t*-test [$t = 2{,}007$ ($df = 2742$, $p = 0.045$)].

Conversion of raw scores to standardized scores

The standardized scores used in the original version of C.A.P. for English-speaking children (Clay, 2005) were stanine scores. These standardized scores were also used for the standardization of the Greek version. Stanines are normalized standard scores which are widely used because of the ease with which they can be computed and interpreted. The stanine system uses a 9-point scale in which 9 is high, 1 is low, and 5 is average (Gronlund, 1985). Table 13 represents stanine scores equivalent to raw scores in 6-month intervals, for children aged 52–75 months, and in 7-month intervals, for children aged 76–89 months.

DISCUSSION

The purpose of the present study was to translate and standardize the Concepts About Print observational task into Greek language and to evaluate its psychometric properties. Psychometrically the Greek version of C.A.P. seems sound.

The reliability value is high and acceptable for this type of task, showing that it is a reliable tool that Greek teachers can use to reliably measure 4-to-7-year-old children's knowledge of print. The Greek C.A.P. has a high internal consistency, sufficiently high correlation between the two administrators' scores,

Table 13. Conversion Table of Raw Scores to Stanine Scores

Age in Months	Stanine Score	1	2	3	4	5	6	7	8	9
52–57	Raw	0-1	2	3-4	5-6	7-8	9	10-11	12-14	15-24
58–63	Raw	0-2	3	4-5	6-7	8-9	10-11	12-13	14-15	16-24
64–69	Raw	0-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-24
70–75	Raw	0-3	4-5	6-7	8-9	10-11	12-13	14-15	16-17	18-24
76–82	Raw	0-11	12-13	14-16	17-18	19	20	21-22	23	24
83–89	Raw	0-12	13-14	15-16	17-18	19-20	21	22	23	24

Note: Conversion in 6-month intervals for children aged 52 to 75 months, and in 7-month intervals for children aged 76 to 89 months.

and quite high correlation between the two parallel task booklets. Comparisons between the reliability values of the present study with those of other studies show similar results (see Clay, 1966; Pinnell, McCarrier & Button, 1990 in Clay 2005; Gilmore, 1998 in Clay 2005), and in some cases the Greek version has a higher reliability coefficient than that of the original version (see Perkins, 1978 in Clay 2005; Escamilla, 1992 in Clay 2005).

The concurrent validity, as shown by the Pearson *r* correlation coefficients between teachers' assessments and the children's raw scores, are satisfactory and acceptable for a task of this type. Moreover, results indicated that the Greek C.A.P. has high construct validity, which was corroborated by the following. Firstly, the children's correct responses increase as their age increases (see Table 3). The mean task score of 4-to-5-year-olds is 6.69 points, for the 5-to-6-year-olds it is 9.66, while for the 6-to-7-year-olds it almost doubles at 18.07 points. Given that as children grow older their knowledge about print also increases, the difference in their performance according to their age is an indicator of the task construct validity. Secondly, the correlation coefficient between teachers' assessments and the children's raw scores is at a satisfactory level (see Table 7). Thirdly, the high Cronbach's alpha reliability coefficients (see Table 5) show that the task has a high degree of internal consistency. Finally, the principal components analysis showed that all items, except item 1, loaded onto one of the four factors; and the number of these factors that resulted from the present study is similar to those that resulted in the Day and Day (1979) study. Item 1 in both studies did not load to any factor. In other words, the Greek C.A.P. task seems to be a valid tool for the evaluation of young children's knowledge about print.

As far as the difficulty level of each item is concerned, the data analysis showed that there are easy items answered correctly by the vast majority of children in each age group, and difficult ones answered correctly by a smaller percentage of children. Particularly, items 6, 9, 10, 12, 13, 14, 15, 16, 17, 18, and 20 are extremely difficult for children aged 4–5 years old, while they continue to be difficult—though to a lesser degree—for older ones aged 5–6. For the first graders, aged 6–7, items 10, 12, 13, 14, and 18 continued to be difficult. However, in any such type of task there should be easy and difficult items, since there are children who have grasped the concepts about print early in their life while others have difficulties in learning them. Similar results in the difficulty level of test items have also been shown in studies with English-speaking children (Clay, 1970 in Clay, 2000a).

In the Greek version, the data analysis showed that the majority of the items have a satisfactory discrimination index. In other words, the Greek task validly classifies children according to their performance. Of course, there are items which are very difficult for younger children aged 4 to 5 years old, and have a very low discrimination index. However, these items are absolutely nec-

essary for older children who already know how to read. Comparisons of this study's items' power of discrimination with that of other studies cannot be made since, as far as we know, the items' discrimination indices were not measured in the original version of the C.A.P. task.

While the results did not show significant differences between children who attend schools in Athens, Attica with those of the rest of Greece, they did show a small advantage in favor of girls, a difference marginally significant when tested by the two group *t*-test. However, in a task comprising 24 items and in which the mean score of the whole sample is $M = 11.87$, with a standard deviation of $SD = 5.97$, the difference of approximately half a point, which is within the standard error of measurement, is considered to be too small to countenance establishing two sets of normative tables. Consequently, one conversion table of raw scores to standardized scores was constructed for both groups.

The conversion of raw scores to stanine scores showed that the Greek sample children have grasped the C.A.P. to a level similar with their English-speaking counterparts which were assessed by the original version of this task. In particular, the mean performance of the Greek-speaking children aged 6 years, 6 months to 7 years is almost the same with that of an English-speaking sample in New Zealand of the same age, while the mean performance of the Greek sample aged 5 years to 5 years, 6 months is lower than that of the New Zealand English-speaking children of the same age (see Clay, 2005, p. 46). On the other hand, the mean performance of the Greek first graders is higher than that of the mean performance of the Ohio first graders tested in 1990-1991 (see Clay, 2000a, p. 10).

In summary, the findings of the present study showed that the Greek version of the C.A.P. observational task seems to work fairly well with Greek beginning readers and will help Greek educators to observe young children and find out reliably and validly what they know about print.

APPENDIX

The list of items

Item 1 Test — Orientation of book
Item 2 Test — Concept that print not picture, carries the message
Item 3 Test — Directional rules
Item 4 Test — Moves left to right on any line
Item 5 Test — Return sweep
Item 6 Test — Word-by-word pointing
Item 7 Test — Concept of first and last
Item 8 Test — Inversion of picture
Item 9 Test — Response to inverted print
Item 10 Test — Line sequence
Item 11 Test — A left page is read before a right page
Item 12 Test — Word sequence
Item 13 Test — Letter order
Item 14 Test — Reordering of letters within a word
Item 15 Test — Meaning of a question mark
Item 16 Test — Meaning of a full stop
Item 17 Test — Meaning of a comma
Item 18 Test — Meaning of quotation marks
Item 19 Test — Capital and lowercase letters
Item 20 Test — Words that contain the same letters in a different order
Item 21 Test — Letter concepts
Item 22 Test — Word concept
Item 23 Test — First and last letter concepts
Item 24 Test — Capital letter concepts

REFERENCES

Alexopoulos, D. (1998). *Psychometria. Schediasmos test ke analisi erotiseon. (Pscychometry. Test development and item analysis).* Athens, Greece: Ellinika Grammata.

Alves, R. A., Aguiar, C., Castro, S. L., & Bairrao, J. (2004, June). *Assessment of concepts about print using an ecologically valid task with Portuguese children.* Poster session presented at the 11th Annual Conference of the Society for the Scientific Study of Reading, Amsterdam, Netherlands.

Anastasi, A. (1969). *Psychological testing* (3rd ed.). London: MacMillan.

Bourque, G. (2001). Redevelopment of reading recovery in French: intervention préventive en lecture-écriture. *The Journal of Reading Recovery, 1*(1), 25–26.

Clay, M. M. (1966). *Emergent reading behavior.* Doctoral dissertation. New Zealand: University of Auckland.

Clay, M. M. (1989). Concepts about print in English and other languages. *The Reading Teacher*, *42*(4), 268–276.

Clay, M. M. (1991). *Becoming literate: The construction of inner control.* Auckland, New Zealand: Heinemann.

Clay, M. M. (2000a). *Concepts about print.* Auckland, New Zealand: Heinemann.

Clay, M. M. (2000b). *Follow me, moon.* Auckland, New Zealand: Heinemann.

Clay, M. M. (2000c). *No shoes.* Auckland, New Zealand: Heinemann.

Clay, M. M. (2005). *An observation survey of early literacy achievement* (rev. 2nd ed.). Auckland, New Zealand: Heinemann.

Cooper, J. D. & Kiger, N. D. (2005). *Literacy assessment.* Boston: Houghton Mifflin.

Day, K. C. & Day, H. D. (1979). *Item and factor analysis of the concepts about print test: Patterns in the Sand.* Unpublished paper. Denton, TX: Department of Psychology and Philosophy, Texas Woman's University.

Day, K. C. & Day, H. D. (1991). The concurrent validity of four tests of metalinguistic awareness. *Reading Psychology, 12,* 1–11.

Ebel, R. L. & Frisbie, D. A. (1986). *Essentials of educational measurement* (4th ed.). Englewood Cliffs, NJ: Prentice-Hall Inc.

Escamilla, K., Andrade, A. M., Basurro, A., & Ruiz, O. (1996). *Instrumento de observation de los logos de la lecto-escritura inicial.* Portsmouth, NH: Heinemann.

Georgousis, P. (1995). I axiologisi ton pedion tis proscholikis ilikias. (Preschool children's evaluation). *Ellinochristianiki Agogi, 419,* 87–154.

Georgousis, P. (1999). *I metrisi ke i axiologisi tis epidosis ton mathiton (Measuring and evaluation of students' achievement).* Athens, Greece: Author.

Goodman, Y. M. (1981). Test review: concepts about print test. *The Reading Teacher, 34*(4), 445–448.

Gronlund, N. E. (1985). *Measurement and evaluation in teaching* (5th ed.). New York: MacMillan.

IRA & NAEYC (International Reading Association & National Association for the Education of Young Children) (1998). *Learning to read and write: developmentally appropriate practices for young children.* Newark, DE: International Reading Association and National Association for the Education of Young Children.

Kelley, T. L. (1939). The selection of the upper and lower groups for the validation of test items. *Journal of Educational Psychology, 30,* 17–24.

Mehrens, W. A., & Lehmann, I. J. (1978). *Measurement and evaluation in education and psychology* (2nd ed.). New York: Holt-Rinehart and Winston.

Morrow, L. M. (2005). *Literacy development in the early years* (5th ed.). Boston: Pearson.

National Statistical Service of Greece (2001). *Pragmatikos plithismos kata filo ke omada ilikion (Actual population per sex and age group)*. Retrieved July 9, 2008, from http://www.statistics.gr/gr_tables/S1101_SAP_1_TB_DC_01_02_Y.pdf

National Statistical Service of Greece (2005a). *Protovathmia ekpedefsi – Proscholiki ekpedefsi (kipiagogia). Tinakas 1, scholikes monades (kipiagogia) [Primary education – Preschool education (kindergartens). Table 1, school units (kindergartens)]*. Retrieved February 18, 2007, from http://www.statistics.gr/gr_tables/S806_SED_1A_TB_AN_04_1_E_Y.pdf

National Statistical Service of Greece (2005b). *Protovathmia ekpedefsi – Dimotika. pinakas. Tinakas 2, scholikes monades (dimotika) [Primary education – Elementary schools. Table 2, school units (elementary schools)]*. Retrieved February 18, 2007, from http://www.statistics.gr/gr_tables/S806_SED_1B_TB_AN_04_1DIM_E_Y.pdf

National Statistical Service of Greece (2005c). *Protovathmia ekpedefsi – Proscholiki ekpedefsi (nipiagogia). Pinakas 2, mathites (nipia) [Primary education – Preschool education (kindergartens). Table 2, students (kindergartners)]*. Retrieved February 18, 2007, from http://www.statistics.gr/gr_tables/S806_SED_1A_TB_AN_04_2_E_Y.pdf

National Statistical Service of Greece (2005d). *Protovathmia ekpedefsi – Dimotika. Pinakas 2a, Mathites egegrameni sta Dimotika scholia [Primary education – Elementary schools. Table 2a, students registered in elementary schools]*. Retrieved February 18, 2007, from http://www.statistics.gr/gr_tables/S806_SED_1B_TB_AN_04_2A_E_Y.pdf

Norusis, M. J. (1993). *SPSS for Windows base system user's guide. Release 6.0.* Chicago: SPSS, Inc.

Nutbrown, C. (1997). *Recognising early literacy development: Assessing children's achievements.* London: Paul Chapman Publishing Ltd.

Nutbrown, C. (1999). Purpose and authenticity in early literacy assessment. *Reading, 33*(1), 33–40.

Owocki, G., & Goodman, Y. (2002). *Kidwatching: Documenting children's literacy development.* Portsmouth, NH: Heinemann.

Rodríguez, Y., Hobsbaum, A., & Bourque, G. (2003). The reconstruction of the observation survey in other languages. *The Journal of Reading Recovery, 2*(2), 38–40.

Rog, L. J. (2001). *Early literacy instruction in kindergarten.* Newark, DE: International Reading Association.

Tafa, E. (2001). *Anagnosi ke grafi stin proscholiki ekpedefsi (Reading and writing in preschool education).* Athens, Greece: Ellinika Grammata.

Tafa, E. (2005). Greek kindergartners' concepts about print. In M. Pandis, A. Ward, & S. R. Mathews (Eds.), *Reading, writing, thinking* (pp. 88–95). Newark, DE: International Reading Association.

Tafa, E. (2008a). *To feggaraki chathike* (*The moon has gone)*. Athens, Greece: Ellinika Grammata.

Tafa, E. (2008b). *Mia iliolousti mera...* (*A sunny day…)*. Athens, Greece: Ellinika Grammata.

Tompkins, G.E. & McGee, L.M. (1984). Visually impaired and sighted children's emerging concepts about written language. In D. Yaden (Ed.), *Metalinguistic awareness: Findings, problems and classroom applications.* Portsmouth, NH: Heinemann.

Vukelich, C., & Christie, J. (2004). *Building a foundation for preschool literacy: effective instruction for children's reading and writing development.* Newark, DE: International Reading Association.