Dowker, A, Krasowicz, G., Pinto, G., Roazzi, A., & Smith, A. (1998). Phonological and semantic devices in very young children's poems: A cross-cultural study. *Cahiers de Psychologie Cognitive / Current Psychology of Cognition*, *17*, 389-416.

Phonological and semantic devices in very young children's poems: A cross-cultural study

(*Cahiers de Psychologie Cognitive/ Current Psychology of Cognition*, 1998, *17*, 389-416.)

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Abstract: Poem production is an common form of language play in young children, and provides interesting information about their metalinguistic abilities. A task involving poem production was given to 122 English children, 59 French children, 148 Italian children, 118 Polish children and 118 Brazilian (Portuguese-speaking) children between the ages of 4 and 6. The basic task involved the successive presentation of three pictures. After each picture was presented, the child was asked, `Could you tell me a story about this picture?' One of three poems dealing with the picture (a rhyming poem, an alliterative poem and a simile poem) was then presented as a stimulus, and the child was asked, `Can you make up something like that?' During this task, each child heard one rhyming poem, one alliterative poem and one simile poem. In all, 260 poems were produced by the English children, 189 by the French children, 217 by the Italian children, 132 by the Polish children, and 160 by the Brazilian children. Italian and Polish children used phonological devices in a significantly higher proportion of their poems than English children, who in turn used them significantly more often than French or Brazilian children. The relative frequency of rhyme and alliteration also varied with culture. The use of simile and metaphor was greatest in the two language groups that produced fewer phonological devices.

Acknowledgements:
We are extremely grateful to the children who participated in the studies, and to the nursery and primary school teachers for their help and co-operation. We are also grateful to the research assistants who helped to collect some of the Italian, Polish and Brazilian data. The first author is grateful to the Medical Research Council for financial help in collecting the English data.

Some of the material in this paper was presented at the British Psychological Society London Conference in December 1995, and at the British Psychological Society Developmental Section Conference in Loughborough in September 1997. The 1995 conference presentation was reported by Esther Ripley (June 1996): Preschool poets; Montessori Journal, 7(5), 14-15.

We are grateful to the anonymous reviewers for helpful comments on an earlier draft.

Phonological and semantic devices in very young children's poems: A cross-cultural study

It has long been known (e.g. Lukens, 1894; Chamberlain and Chamberlain, 1904; Trettien, 1904; Weir, 1962; Cazden, 1976; Garvey 1976; Billow, 1981; Horgan, 1981; Sutton-Smith, 1981; Kuczaj, 1982, 1983; Fox, 1993; Ely and McCabe, 1995) that many preschool children play with language. Such language play involves manipulation of linguistic patterns and relationships, including phonological relationships (e.g. rhyme and alliteration); syntactic relationships (e.g. 'modified repetition' as defined by Dowker, 1991) and semantic relationships (e.g. simile and metaphor). The present paper will concentrate on phonological devices and metaphor in poems by 4-to 6-year-old children of five countries and languages: English, Italian, Polish, French and (Portuguese-speaking) Brazilian.

Aspects of the English and Italian children's poems have already been discussed (Dowker, 1989; Dowker and Pinto, 1993). It was demonstrated that a lot of children in both groups produce rhythmical poems with great ease; that they can be elicited very readily; and that the use of phonological devices in this context is common well before the stage when children start being instructed in reading and writing or in the actual composition of poems. There were minor differences between the Italian and English groups - most notably that the Italian children produced more alliteration - but the similarities were more striking.

The present study aimed to increase our insight into the extent of cross-cultural universality and variation in children's poem production and the devices used in these poems, by investigating speakers of a wider variety of languages. It also aimed to investigate semantic devices as well as phonological devices.

There is indeed evidence from a number of studies that informal play with words, often involving the creation of chants and verses, is common to young children speaking a wide variety of languages, including, for example, French (Aimard 1972, 1977; Chevalley, 1982), Danish (Jespersen 1922), Russian (Chukovsky 1925/ 1959/ 1968), Hebrew (Goldberg, n.d.; Rivkai, 1937) and the Kaluli language of Papua New Guinea (Schieffelin 1983), to name but a few. Such language play occurs not only in cultures where it is strongly encouraged, e.g. among the black Americans of the Carolinas (Heath 1983), but also in cultures where it is positively discouraged such as the Kaluli. Mann (1991) cites evidence that older children from a wide variety of linguistic backgrounds, including English, Chinese, Bedouin Arabic and a number of African languages invent more formal "secret languages" involving quite complex manipulations of phonemes. There have been many cross-linguistic studies of general language development (Slobin 1985, McWhinney and Bates, 1989; Bavin, 1995);

and specifically of the development of phonological awareness (e.g. Mann 1986; Cossu, Shankweiler, Liberman, Tola and Katz 1987; Boschi and Pinto 1987; Pinto and Bonardi 1991; Caravolas and Bruck, 1993; Cardoso-Martins, 1995; Huang and Hanley, 1995; Krasowicz and Bogdanowicz, 1997; Ho and Bryant, 1997). To our knowledge, however, until the present cross-cultural research began (Dowker and Pinto, 1993), there had been no systematic cross-linguistic or cross-cultural studies of the production of poems by young children.

If we are to gain a greater understanding of the nature, functions and developmental course of children's language play, it is important to investigate how universal it is and how much it is influenced by the language that the child speaks. Are child speakers of a variety of languages equally ready to produce poems? Do the poems contain similar poetic devices across languages? Are any age differences consistent across languages?

There are several reasons why we might expect some cross-linguistic differences. One is that linguistic differences are often associated with cultural differences: some cultures may place a greater emphasis than others on language play. Particularly relevant in this connection may be the fact that English children are more exposed to nursery rhymes than those of most other cultures. For example, an exhaustive search through Italian children's book catalogues revealed only one readily available collection of nursery rhymes (Brunetti, 1981), whereas 15 such books were easily found during a single visit to one English bookshop. Nursery rhymes, as the name suggests, usually contain rhyme; and English nursery rhymes, more than Italian or Polish nursery rhymes, emphasize rhyme over other phonological devices such as alliteration. Some studies (e.g. Maclean, Bradley and Bryant, 1989) have suggested an association between exposure to nursery rhymes and the development of phonological awareness.

If the above cultural difference might lead to English children producing more rhyme than the other groups, certain linguistic differences might be expected to lead to greater use of rhyme and perhaps alliteration by the other groups. Highly inflected morphologies may provide more opportunity for rhyme if the inflections occur as word endings, or for alliteration if the inflections occur at the beginnings of words. Italian, Portuguese and Polish are all highly inflected languages, which lend themselves easily to rhyme. For example, many verbs rhyme in their infinitive form: Italian examples include andare, mangiare, pensiare (to go, to eat, to think.) They also usually rhyme when used in the same declension: for example, the same Italian verbs in the first person plural become: andamo (we go), mangiamo (we eat) pensiamo (we think). French is also more transparently inflected than English, but pronunciation rules mean that inflections at the ends of words are not always pronounced, e.g. 'ent' representing the third person plural is usually silent.

In studying children's (or anyone's) use of poetic devices, it is important to consider semantic as well as phonological devices. After all, adult poetry is usually regarded as more dependent on semantic than phonological devices, and schoolchildren are often explicitly taught that poetry "doesn't always have to rhyme". It has been previously emphasized (Dowker, 1989, 1991) that the 'poems' studied here are rhythmical forms of language play, and are not necessarily describable as 'poems' in a literary sense. Nonetheless, it is worthwhile investigating the extent to which children's poems do make use of similar semantic devices to adult poetry. The semantic device focused on here is metaphor, as it is one of the most cross-culturally universal semantic devices in adult poetry (Finnegan, 1978).

Metaphor subsumes a variety of devices. Simile and metaphor are distinguished for some literary and psychological purposes (cf. Happe, 1992); but simile will here be treated as just one form of metaphor, and indeed the main form that was used by the children.

There have been numerous studies of the development and early use of metaphor (Gardner, Winner, Bechhoffer and Wolf, 1978; Billow, 1981; Winner, 1982; Fourment, 1985; Gentner, Falkenheimer and Skorstad, 1988; Caramelli and Montanari, 1995), but these have not dealt with its use in rhythmical productions. Moreover, there have been few cross-cultural studies of metaphoric development (Stross, 1975; Van Brabant, 1986; Johnson, 1991). Thus, this study aimed to investigate whether metaphor would be used in children's poems at all, and whether there would be any cross-cultural differences in such metaphor production.

Our central hypothesis was that making up rhythmical poems is a universal activity, in which a significant number of children indulge in all cultures. Therefore a substantial number of such poems should be produced by children in all groups.

It was predicted that phonological devices, especially rhyme, would be used by all groups; but that they would be used somewhat more frequently in the poems in the more transparently inflected languages (Italian, [Brazilian] Portuguese and Polish) than in those in the less transparently inflected languages [English and French]. This hypothesis was based on our theory that, while cultural and linguistic factors should both influence the children's production of poems, the nature of the language spoken should be at least as strong an influence on the nature of the poems produced as the extent of exposure to rhymes and other types of poem. Some justification for this hypothesis comes from findings that Italian children perform better at some phonological awareness tasks than English children (Cossu, Shankweiler, Liberman, Tola and Katz 1987) and

Israeli children (Pinto and Bonardi 1988, 1991); and, even more crucially, from our earlier comparison between Italian and English children (Dowker and Pinto, 1993).

By contrast, it was predicted that metaphor and simile should be used equally often in poems by different language groups. This prediction was more tentative than the others, due to the relative paucity of data in this area; but ease of metaphor use seemed less likely to be affected by the structural details of a particular language than ease of rhyme and alliteration. One of the very few cross-cultural studies of the development of metaphor interpretation (Johnson, 1991) showed few differences between English and Spanish children.

Method

Children

The children who took part in the present study were 122 English children, 59 French children, 148 Italian children, 118 Polish children and 118 Brazilian (Portuguese-speaking) children between the ages of 4 and 6 years. The age distribution in each language group is shown in Table 1.

Table 1 about here

The English and Italian children discussed here are a large subset of those discussed by Dowker and Pinto (1993). To permit comparability with the other groups, English and Italian children outside the 4 -to 6-year age range have been excluded from the present paper.

Procedure

The basic procedure has already been described in some detail, with regard to English and Italian children (Dowker, 1989, 1991; Dowker and Pinto, 1993). It will therefore be described more briefly here.

The basic task involved the successive presentation of three pictures. After each picture was presented, the child was asked, `Could you tell me a story about this picture?' and his/her response was recorded on a tape-recorder and then played back to the child. The child was then told, `Now I'm going to tell you a poem, which is a bit like a story but not quite. And I'd like you to make up something like that.' One of three poems dealing with the picture (a rhyming poem, an alliterative poem and a simile poem) was then presented as a stimulus,

and the child was asked, `Can you make up something like that?' Once again, the child's response was recorded and then played back to him/her on the tape-recorder. The same procedure was followed with the next two pictures. (The instructions were, of course, translated into the relevant languages for the non-English children).

During this task, each child heard one rhyming poem, one alliterative poem and one simile poem. The order in which the pictures were presented, the order in which the poem-types (simile, rhyme, alliteration) were presented, and the poem-type chosen for each picture were all selected randomly.

Differences between the procedure as applied to the different groups were (1) that of necessity the stimulus poems were different, as the children of each group heard stimulus poems in their own language; (2) the pictures sometimes differed between languages, as they had to permit the production of stimulus poems with the appropriate devices in a particular language. English children were presented with three pictures taken from a set of eight: a snowy day scene, a forest scene, a nighttime scene, a playground scene, a bird, a horse, a cat and a fish. Italian children were shown pictures of a cat, a horse and a dig. Polish children were shown pictures of a bird, a horse and a fish. French children were shown pictures of a cat, a rabbit and a pig. Brazilian children were shown pictures of a cat, a dog and a horse. Examples of the stimulus poems are given in the Appendix.

In the subsequent analyses, poems were defined as those of the children's productions that had obvious rhythm. Those productions by children that did not contain rhythm were classed as stories rather than poems, even if they contained phonological devices. On the other hand, rhythmical productions were classified as poems even if they did not contain phonological or other 'poetic' devices.

The classification of the children's productions into the categories of 'stories' or 'poems' was based both on hearing them during the experimental sessions, and on subsequent playback of the tapes. For all language groups, the classification into 'stories' and 'poems' was checked by presenting children's productions for classification by an independent rater, who was a native speaker of the language. For the English and Brazilian groups this was done with a sample of 20 productions (10 poems and 10 stories). In each of the other groups, it was carried out for all of the children's productions. In all cases, interrater agreement was nearly 100%.

Chi-square tests were used to test the significance of age differences within each language group and of differences between the groups.

Results

Table 2 shows the percentages of children in each language group who produced poems, and the numbers of poems and stories that were produced.

Table 2 about here

The proportion of English children who produced poems did not differ significantly from that for Italian children ($X^2 = 0.02$; df = 1; p n.s.); Polish children ($X^2 = 0.02$; df = 1; p n.s.) or Brazilian children ($X^2 = 3.7$; df = 1; p n.s.). Polish children did not differ significantly from Italian children ($X^2 = 0$; df = 1; p n.s.) or Brazilian children ($X^2 = 3.8$; df = 1; p n.s.). However, French children were significantly more likely to produce poems than English children ($X^2 = 5.71$; df = 1; $p < 0.05$), Italian children ($X^2 = 7.01$; df = 1; $p < 0.01$); Polish children ($X^2 = 6.83$; df = 1; $p < 0.01$) or Brazilian children ($X^2 = 16.25$; df = 1; $p < 0.01$). Italian children were more likely to produce poems than Brazilian children ($X^2 = 3.8$; df = 1; p n.s.).

The percentages of poems in each group containing different types of poetic devices are given in Table 3. Table 4 shows the results of chi-square comparisons between each pair of groups regarding the frequency of these poetic devices.

Tables 3 and 4 about here

Rhyme

Tables 3 and 4 demonstrate that children in all groups produced rhyming poems; but that there were significant group differences in the frequency of rhyme, with Italian and English children using rhyme in a higher proportion of their poems than Polish or Brazilian children, who in turn use more rhyme than French children.

Chi-square tests were carried out to compare the proportions of poems containing rhyme produced by 4-, 5- and 6-year-olds within each language group. Age differences failed to reach significance within the English group ($X^2 = 0.7$; df = 2; p <n.s.); the Italian group ($X^2 = 4.82$; df = 2; p n.s); the Polish group ($X^2 = 2.88$; df = 2; p n.s); or the French group ($X^2 = 4.8$; df = 2; p n.s.). There were highly significant age differences in the Brazilian group ($X^2 = 10.00$; df = 2; $p < 0.01$). Pairwise chi-square comparisons revealed that this significant difference resulted from 5-year-olds using rhyme in a higher proportion of their poems than either 4-year-olds

($X^2 = 6.18$; df = 1; $p < 0.01$) or 6-year-olds ($X^2 = 7.18$; df = 1; $p < 0.01$).

The following are examples of rhyming poems from each language group.

(1) English poem by a girl of 4 years 2 months:
The cat pricked his ears up
And he heared a dog noise.
He thought it was a dog noise
'Cause it was a bear.
He put his paws
Under his claws.

(2) Italian poem by a girl of 4 years 6 months:
"La pecora va di la.
La pecora viene qui
E va a mangiare la
L'erba che i'e li."
(The sheep goes there.
The sheep comes here
And goes there to eat
The grass that is growing there.)

(3) French poem by a 6-year-old boy:
"Martin le lapin
Courait dans le jardin."
(Martin the rabbit
Ran in the garden),

(4) Polish poem by a girl of 5 years 4 months:
"Kotek siedzi na murku
I maiuczu, ze mu brak sznurku."
(A cat is sitting on the wall
And is mewing that he lacks a string.)

(5) Brazilian poem by a girl of 5 years 0 months:
"Gatao,
Camizao
Caiu no chao.
Plantao e Carnizao."

(A big cat,
A big shirt
Fell on the floor.
A big plant and Carnizao.)

Alliteration

Tables 3 and 4 also demonstrate significant group differences regarding the proportion of poems that contain alliteration. The Polish children produced the largest number of poems containing alliteration, followed by the Italian children. The other groups used alliteration in a considerably lower proportion (one-sixth) of their poems.

Age differences for alliteration failed to reach significance in the Italian group ($X^2 = 0.11$; df = 2; p n.s), the Polish group ($X^2 = 1.13$; df = 1; p n.s.); the French group ($X^2 = 4.8$; df = 2; p n.s.), or the Brazilian group ($X^2 = 0.63$; df = 2; p n.s.). In the English group, the decline in alliteration between 4 and 6 did reach significance ($X^2 = 6.91$; df = 2; $p < 0.05$). This finding was further investigated through pairwise chi-square comparisons. The differences between 4- and 5-year-olds ($X^2 = 0.95$; df = 1; p n.s) and between 4- and 5-year-olds ($X^2 = 3.88$; df = 1; p n.s.) did not reach significance, but the difference between 4- and 6-year-olds was significant ($X^2 = 6.31$; df = 1; p n.s.).

The following are examples of alliterative poems from each language group.

(1) English poem (also containing rhyme) by a boy of 5 years 6 months:
It's a latta with a peed,
A plappa plotty pleed
And there's a wop,
A weep,
A stop.
And yes. No.
Sledge.
Fledge.

(2) Italian poem by a boy of 4 years 7 months:
"Una cavalla cammina, cammina.
Com'e che cammina?
Cammina cantando."
(A horse walks and walks.
How does it walk?
It walks singing.)

(3) French poem by a 5-year-old girl:
"La poule regarde ses petits poussins
Pour qu'ils ne partent pas."
(The hen watches over her little chicks
So that they won't go away.)

(4) Polish poem by a boy of 5 years 3 months:
"Kotek lubi,
Bardzo lubi knedelki
I kalfiorki."
(The cat likes,

Likes very much
Knadels and cauliflower.)

(5) Brazilian poem by a girl of 6 years 7 months:
"O gato Guto
Ganhou un galo."
(The cat Guto
Received a cock.)

Presence and absence of phonological devices

Phonological devices consisted mainly of rhyme and alliteration, though a few other devices such as assonance were also used.

Chi-square tests were carried out to compare the proportions of poems containing phonological devices produced by 4-, 5- and 6-year-olds within each language group. Age differences were completely nonsignificant within the English group ($X^2 = 0.48$; df = 2; p <n.s.); or the Italian group ($X^2 = 2.26$; df = 2; p n.s); and failed to reach significance within the Brazilian group ($X^2 = 5.62$; df = 2; p n.s.). The use of phonological devices did increase significantly with age in the Polish group ($X^2 = 9.28$; df = 2; $p < 0.01$); and the French group ($X^2 = 6.34$; df = 2; p <0.05). These findings were further investigated through pairwise chi-square comparisons. In the Polish group, the difference between 5- and 6-year-olds was not significant ($X^2 = 0.06$; df = 1; p n.s.) but there were significant differences between 4- and 5-year-olds ($X^2 = 5.76$; df = 1; $p < 0.05$.) and between 4- and 6-year-olds ($X^2 = 6.52$; df = 1; $p < 0.05$). In the French group, differences between 4- and 5-year-olds ($X^2 = 0.48$; df = 1; p n.s) and between 5- and 6-year-olds ($X^2 = 2.93$; df = 1; p n.s.) did not reach significance, but the difference between 4- and 6-year-olds was significant ($X^2 = 5.34$; df = 1; $p < 0.05$).

Metaphor and simile

Metaphor and simile are here considered together: nearly all examples of figurative language were in fact similes.

As Tables 3 and 4 demonstrate, simile was in general less common than the phonological devices; but there were extremely striking group differences. Only a tiny proportion of English, Italian or Polish children produced poems containing similes, whereas similes were much more common in the French and Brazilian poems.

It was inappropriate to investigate age differences in the use of simile in the English, Italian or Polish group, because of the very small numbers involved. They were nonsignificant in the Brazilian group ($X^2 = 0.45$; df - 2; p n.s.). In the French group, there was a significant increase with age ($X^2 = 8.82$; df = 2; $p < 0.05$). When pairwise chi-square tests were carried out between the age groups, differences between 4- and 5-year-olds ($X^2 = 1.59$; df = 1; p n.s) and between 5- and 6-year-olds ($X^2 = 3.02$; df = 1; p n.s.) did not reach significance, but the difference between 4- and 6-year-olds was significant ($X^2 = 7.61$; df = 1; $p < 0.01$).

The following are some examples of poems containing similes:

(1) English poem by a girl of 4 years 6 months:
It was quiet as the night.
The rabbits were running across the street faster than the wind.
They were hopping around so fast.
We saw them run so fast
That the badgers watched us.
The trees were as big as a girl.
And they could fall down
Across the stream
Into the woods of a chipmunk.

(2) French poem by a 6-year-old boy
"Le cochon est gros comme une armoire."
(The pig is as fat as a wardrobe.)

(3) Brazilian poem by a girl of 5 years 5 months:
"O gatinho e branquinho como nuvem.
O gatinho e branquinho como o papel.
O gatiho gost de jogar bolinha e come
Leite feito um bebe."

(The kitten is white as clouds.
The kitten is white as paper.
The kitten likes to play with a ball, and drinks
Milk like a baby).

Discussion

The most striking finding of the study is that a majority of children in all the groups studied did produce poems. This is not an activity confined to English children, or to any other single language group. It thus appears that poem-like productions can be elicited quite readily from very young children form several cultural and language backgrounds, supporting the hypothesis (Dowker and Pinto, 1993) that the tendency of a significant proportion of children to make up poems is a cross-cultural universal.

However, the devices that predominate in children's poems do vary with language and culture. The groups

varied both with regard to the absolute frequency of use of phonological devices and with regard to the relative frequency of rhyme and alliteration. Italian and Polish children use phonological devices more frequently than English children, who in turn use them more frequently than French or Brazilian children. Within the groups that make relatively frequent use of phonological devices, Italian and Polish children make more use of alliteration than English children, but Polish children use less rhyme than English children. Whereas the English children, and to a lesser extent most of the other groups, use much more rhyme than alliteration, the Polish children use much more alliteration than rhyme.

Contrary to predictions, group differences were even more striking with regard to the use of metaphor and simile. Whereas all the groups did make significant use of phonological devices in their poems, three of the five groups (English, Polish and Italian) used almost no metaphor in their poems. French children used more; and Brazilian children the most: nearly a third of their poems contained metaphor.

Age differences were not consistent across language groups; and were not nearly as great as differences between language groups. Thus, at least within the age groups studied, the precise form that language play takes seems to be influenced far more by linguistic than maturational factors.

Why do these group differences occur?

Possible explanations to be considered must include methodological ones. Variations could have occurred either because of differences in sample characteristics, unrelated to cultural or linguistic differences, or because of differences between the poems given as examples to different language groups. Despite every effort at comparability, a particular device such as rhyme or alliteration might have been more salient in the examples presented in some languages than in others.

A methodological explanation is, however, rendered less likely by the results of a study (Dowker 1986, 1993) that compared spontaneous poems by young English and French children, from various published and unpublished sources. The spontaneous poems differed between languages in ways that were very similar to those observed in the present study: the English poems contained significantly more phonological devices than the French poems, while the French poems contained significantly more similes and metaphors. The poems in that study were not elicited by means of examples, so the same methodological considerations do not apply.

It is thus likely that the differences were either due to linguistic or to cultural factors.

Linguistic factors may include:

(a) morphological characteristics. It was proposed in the Introduction that the children who spoke the more

inflected languages in the study would produce poems with more phonological devices. This was confirmed with regard to Italian and Polish; but the Brazilian children, who also spoke a highly inflected language, produced fewer phonological devices than any other group. English children produced far more phonological devices than French children, although if anything French is a more inflected language than English. Thus, if the inflectional morphology of a language does affect the production of phonological devices, the effects must be quite subtle, and possibly qualitative rather than quantitative.

(b) stress patterns. It is possible that rhyme is less easy to produce, and perhaps to detect, if stress patterns are relatively 'flat', as in French.

(c) frequency and complexity of consonant clusters. Consonant clusters may be more difficult to manipulate than single consonants, and therefore consonant clusters at the beginnings and ends of syllables may make rhyme and alliteration more difficult respectively. Polish contains more consonant clusters, especially at the ends of syllables, than the other languages in the study: this may help to explain the relatively infrequent use of rhyme.

(d) overall frequency of rhyming and alliterative words in a language. This is likely to be negatively associated with the number of legitimate phonemes in a language: if a language uses relatively few phonemes, more words are likely to rhyme. It might be expected that children would use more rhyme and alliteration in languages where a large number of rhyming and alliterative words are available, though this relationship may become reversed when the number of available rhyming and alliterative words is very large. Rhyme is not a common device in Chinese (adult) poetry, and it has been suggested that this is because so many Chinese words rhyme that rhyme ceases to be salient. However, while such factors would be likely to be important if a wider variety of languages were being considered, it is unlikely that they were a major determinant of the group differences in the present study.

Cultural non-linguistic differences are likely to reflect the children's level of exposure to poems of various types, and to stories. The English children probably had greater exposure to nursery rhymes than the other groups. This did not lead to their producing more rhyming poems than any other group (Italians produced non-significantly more); but rhyme did outnumber other phonological devices to a greater extent in the English group than in the other groups. This may reflect their greater exposure to a genre of poetry which is dominated by rhyme. Such an explanation is supported by the decline with age in their use of alliteration, perhaps indicating that their experience of nursery rhymes had led them to the conclusion that the genre of 'poem' is

characterized by rhyme rather than other devices.

The unexpected and striking group differences in the use of metaphor are harder to explain. There appears to be a trade-off between the use of phonological devices and of semantic devices (e.g. simile and metaphor), in that the groups (French and Brazilian) that made the least use of phonological devices made the greatest use of metaphor. There are no clear linguistic or cultural reasons why metaphor should be used to a greater extent in poems by these groups of children.

However, one feature that did distinguish these two groups from the other groups is that French and Brazilian children's poems outnumbered their stories, whereas the reverse was true of the other groups. This may indicate differences in the nature and sharpness of the division between the genres of stories and poems. Perhaps to French and Brazilian children, poems are 'stories with rhythm', featuring semantic devices. For the other groups, poems may be more sharply distinguished from stories through their emphasis on phonological as opposed to semantic devices.

Do the group differences in poem production reflect differences in actual capacities for rhyme, alliteration and metaphor? It is difficult to answer this question with certainty. Cross-cultural and cross-linguistic differences in metaphoric development have not been much studied; but much of the research on metaphoric development has been carried out with English-speaking children (e.g. Gardner et al 1978; Billow 1982), and there is ample evidence that such children are capable of using metaphor and simile from an early age.

The evidence with regard to phonological abilities is more extensive but equivocal. As indicated in the Introduction, Italian children (who made the most frequent use of phonological devices) do perform better on phonological awareness tasks than children of some other language groups (Cossu, Shankweiler, Tola and Katz, 1988; Pinto and Bonardi, 1991). Brazilian children (who made the least frequent use of phonological devices) seem to develop phonological awareness in a similar way to English children (Rego and Bryant, 1993). Brazilian adults do show a surprising tendency to confuse rhyme and alliteration in rhyme production tests (Roazzi, Dowker and Bryant, 1993), though control data for other language groups are as yet lacking. Polish children (who use alliteration more than rhyme) seem better at detecting alliteration than rhyme (Krasowicz and Bogdanowicz, 1997).

Thus, there is no evidence that the differences in metaphoric production are caused by or related to an inability to use or detect metaphor in certain groups. There is a little more evidence that the differences in use of phonological devices may in part reflect differences in sensitivity to such devices.

In considering possible explanations for the differences observed, we must not lose sight of the commonalities between the groups, which are perhaps the most important aspect of the results. In testing theories about children's thinking and behaviour, results are likely to be affected by the fact that, especially where young children are concerned, even subtle variations in methodological or other conditions may sometimes result in considerable variations in performance (Dowker 1992; Lesh, Landau and Hamilton 1983). Theories about children's thinking or behaviour and its development are most likely to be valid with regard to those aspects which have been shown to occur in a similar way despite methodological and environmental (for instance, cultural) variations: those aspects which lie in what Dowker and Pinto (1993) termed the zone of universal parity. The fact that certain characteristics occur in a similar way in these five groups, despite cultural, linguistic and some methodological differences, points to the fundamental nature of these characteristics.

All groups produced a large number of poems; all used a significant amount of rhyme and other phonological devices. These similarities can be used as evidence that at least for many children the production of such poems is a natural form of language play. All the groups in the study do appear to have access to a distinct and universal 'poem', 'chanting' or 'verse' genre, which, while they rarely give it a name, possesses features that distinguish it from other linguistic productions. For all groups, this genre is frequently associated with poetic devices, often of a phonological nature.

Language play involving manipulations of phonological, syntactic, semantic and pragmatic patterns is thus readily observable in young children; but is not confined to this age group. School-age children enjoy jokes, puns, riddles, nonsense rhymes, parodies, singing games, and verbal banter that incorporates both phonological and semantic devices (Opie & Opie, 1959, 1985; Snyder, 1975; Heath, 1983). Language play continues into adult life, with, for example, jokes, verbal banter, advertising and political slogans, and the production and appreciation of oral and written poetry.

The form of language play studied here was the production of oral poetry. Not only do adults from a wide variety of cultures engage in more sophisticated versions of this same activity, but there are striking resemblances between the conclusions that may be drawn from the cross-cultural study of oral poetry by children and adults. Finnegan (1978) discussed the characteristics of oral poetry across time and place, ranging from Homer's epics to traditional and modern English and American folk songs, Yoruba hunting chants, Yugoslavian and Somali recitations, songs of 'Eskimo' shamans, etc. Her observations (p.90) with regard to the

commonalities and differences between oral poetry of different cultures were fundamentally similar to our findings with regard to young children's poems from our (relatively small) set of cultures: "If we look comparatively at the varying forms of poetic expression in different periods and cultures, we are struck by the apparently infinite variability of these conventions, and also by the underlying patterns that, in differing combinations, recur again and again ... The most marked feature of poetry is surely repetition... The collocations of line or stanza or refrain are based on their repeated recurrence; metre, rhythm or stylistic features like alliteration or parallelism are also based on repeated patterns of sound, syntax or meaning."

Thus cross-cultural studies of oral poetry by children and adults alike reveal important cross-cultural differences, still more crucial cross-cultural similarities, and the fundamental cross-cultural - and cross-age - similarity of a fascination with linguistic pattern. The fact that so many adults engage in oral poem production, and that linguistic pattern manipulation is such a seemingly universal characteristic of adult poetry, lends support to the view (Dowker and Pinto, 1993) that children's play with the patterns of language reflects a universal human (and perhaps not exclusively human; cf. Kuczaj, in press) cognitive characteristic of preoccupation with pattern, rather than primarily serving the function of mastery of specific aspects of language.

Further support for this view comes from the fact that pattern play also occurs in non-verbal domains such as drawing; and there seem to be significant parallels between the nature and developmental course of pattern play in language and drawing. Alland (1986) analyzed preschool and early primary school age children's drawings in the United States, France, Japan, Taiwan, Bali and Ponape. He found that there were some culturally determined differences between the drawings from different cultures, but one thing which appeared to be universal was an early stage of playing with form. They had acquired certain shapes or patterns, which were frequently influenced by the shapes and patterns that they saw used in adult illustrations, and they enjoyed playing with them, repeating them and varying them. This stage lasted for some time before the children became interested in representational drawing.

In the present study we see children from five cultures, who, though they engage in a great deal of straightforward communicative language production, also indulge in play with linguistic patterns and who may pay much more attention to this in their poems than to trying to make sense (cf. Dowker 1989).

Alexander (1962) argued that in children's drawings, "the very tendencies toward repetition, random variation and the levelling and sharpening of forms in such variation" contribute to artistic development and, in

particular, to "the child's developing ability to force the forms apart from one another". It is our argument that a very similar developmental process occurs in children's poems and other linguistic productions. Children's initial play with repetition and variation of words, sounds and linguistic forms develops into more mature uses and distinctions (a) between specific devices such as rhyme and alliteration and (b) between broader linguistic genres such as serious poems, humorous poems, narratives, casual conversations, etc. (cf. Fox 1983, 1993; Berman 1985; Nelson 1987; Preece 1987; Hicks 1990).

An interesting avenue for further research is to see whether similar findings would be obtained with regard to languages and cultures other than those involved in the present study. This would make it possible further to test our hypothesis that the tendency of a significant proportion of children to make up poems is a cross-cultural universal, as well as to investigate the extent to which cultural and linguistic factors influence the phonological and other aspects of the poems that are produced.

The effects of cultural differences could be investigated; e.g. the extent of literacy within a culture; the extent to which children are exposed to poems; and the extent to which children's language play is encouraged or indeed discouraged. For instance, Russian children would be an interesting group to study, as poetry probably plays a more important role in the lives of Russian children and adults (Chukovsky 1926/1959/1968) than in the lives of children and adults in many other cultures.

It seems desirable to investigate linguistic differences between languages themselves which may make different forms of sound play relatively easy or difficult. For this purpose, it would be interesting to look both at other Europaean languages, and at non-Europaean languages. For example, would children speaking tonal languages use significantly different phonological devices (cf Chao 1971)? We predict that cross-linguistic studies of language play and early production of poems will give support to the view of Slobin (1985) and others that "patterns of acquisition of specific properties [of language] vary from language to language, while they are determined by common principles of a higher order."

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Appendix

Examples of the stimulus poems used:

(a) Rhyming

(1) Italian, about the picture of the cat:

"Il gatto Martino
Uscendo il mattino
Scendendo le scale
Si fece del male".
(The cat Martino,
Getting up in the morning
And going downstairs,
Hurt himself.)

(2) Polish, about the picture of the cat:

"Kotek lubi cieple mleczko
Czasem zjada tez jaleczko."
(The little cat likes warm milk.
Soemtimes he eats an egg too.)

(3) French, about the picture of the chicken:

"La poule et ses poussins
Dormaient dans le jardin
Lorsqu'ils sont reveilles
Par le mechant fermier."
(The hen and her chicks
Were sleeping in the garden
When they were woken up
By the nasty farmer.)

(4) Brazilian, about the picture of the cat:

"O gato traquino
Mexeu nosino
Derrobou o prato
A correu atras do rato."
(The mischievous cat
Fidgeted with his nose,
Knocked down the plate

And ran after the rat.)

(b) Alliterative
(1) Italian, about the picture of the horse:
"Per un strada
Stretta e storta
Una strana cavalla
Trotta stanca."
(Along a street
Narrow and crooked,
A strange horse
Trotted wearily.)

(2) Polish, about the picture of the horse:

"Ten konik ktorego kazdy kocha
Ma glowe i grzbiet i grzywe."
(The little horse, whom everyone loved,
Has a head and a back and a mane.)

(3) French, about the picture of the rabbit:
"Le lapin se lavait dans le lac
Et la lune se levait devant lui."

(The rabbit washed himself in the lake
And the moon rose before him.)

(4) Brazilian, about the picture of the dog:
"O cao de caca
Comeu a carne
E comegou a correr."
(The hunting dog
Ate the meat
And began to run.)

(c) Poems containing similes
(1) English, about the picture of the bird:
The bird is flying in the sky
Like a tiny aeroplane.

(2) Italian, about the picture of the dog:
"Ho visto un cane che abbaiava forte come un tuono
E aveva gli occhi neri come il carbone".
(I saw a dog who barked as loudly as thunder
And had eyes as black as coal.)

(3) French, about the picture of the rabbit:
"Le lapin est rapide comme l'eclair
Et leger comme une plume."
(The rabbit is as fast as lightning

And as light as a feather.)

(4) Polish, about the picture of the horse:
"Kon jest pracowity
Jak ta mala mrowka."
(The horse is hardworking
Like a little ant.)

(5) Brazilian, about the picture of the cat:
"Eu vi um gato preto como o carvao
Com os olhos azuls como o cel."
(I saw a cat as black as coal
With eyes as blue as the sky.)

TABLE 1 Numbers of 4-, 5- and 6-year olds in each language group

Number of children at each age	Group				
	English	Italian	Polish	French	Brazilian
4	48	53	36	19	48
5	17	59	38	15	29
6	15	24	44	25	21
Total	80	136	118	59	98

TABLE 2 Numbers of children in each language group who produced poems, and numbers of poems and stories produced

	Group					
	Farsi	English	Italian	Polish	French	Brazilian
Total number of children	140	80	136	118	50	98
Numbers who produced poems	98(70%)	57 (67%)	90 (66%)	78 (66%)	50 (85%)	52 (43%)
Number of poems produced at each age						
4	190	190	80	72	34	35
5	44	44	90	60	40	56
6	26	26	47	66	56	78
Total	250	250	217	198	130	169
Number of stories produced	360	360	300	193	142	163

TABLE 3 Percentages of poems containing poetic devices

Group and age	*Rhyme*	*Alliteration*	*Any phonological device*	*Metaphor / Simile*	*Total poems*
ENGLISH					
4	39%	20%	52%	3%	190
5	36%	6%	59%	2%	44
6	46%	0%	58%	3%	26
Total	41%	18%	54%	3%	260
ITALIAN					
4	38%	34%	85%	3%	80
5	46%	37%	93%	2%	90
6	57%	36%	87%	2%	47
Total	44%	35%	90%	2%	217
POLISH					
4	17%	34%	39%	2%	41
5	34%	41%	84%	2%	32
6	25%	46%	82%	2%	51
Total	25%	40%	63%	2%	124
FRENCH					
4	18%	6%	20%	6%	34
5	10%	18%	28%	15%	40
6	27%	25%	45%	30%	56
Total	19%	18%	33%	19%	130
BRAZILIAN					
4	14%	23%	29%	26%	35
5	39%	10%	52%	25%	56
6	17%	18%	35%	29%	78
Total	24%	18%	39%	27%	169

TABLE 4 Chi-square comparisons between groups (df=1, in all comparisons)

	Iranian *vs* English	**Iranian *vs* Italian**	**Iranian *vs* Polish**	**Iranian *vs* French**	**Iranian *vs* Brazilian**
Proportion of poems containing rhyme	**55.04****	**44.55****	**76.69****	**95.6****	**117.81****
Proportion of poems containing alliteration	0.04	*13.75***	*17.79***	0.02	0.05
Proportion of poems containing metaphor/simile	#	#	#	*31.24***	*26.1*

p<0.05 ; ** p<0.01

Not applicable, as less than 5% in either group

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