ASPECTUAL DISTINCTIONS IN BILINGUAL RUSSIAN–CYPRIOT GREEK CHILDREN*

SVIATLANA KARPAVA
KLEANTHES K. GROHMANN
University of Cyprus, Cyprus Acquisition Team

According to the Semantic Complexity Hypothesis (van Hout, 2008), simple semantic operations are acquired early. Perfective aspect on telic predicates, emphasizing completion, is less complex than imperfective aspect on telic predicates, which requires aspect shift. So, for telic predicates, perfective aspect is acquired earlier than imperfective. The present study deals with acquisition of aspect by Russian–Cypriot Greek bilingual children, in both Cypriot Greek and Russian. A total of 22 children participated in the study, split into four age groups (4-, 5-, 6, and 7-year-olds). The materials were comprehension and production tasks on aspect (from COST Action A33), adapted to Cypriot Greek and Russian. The results of the study showed that 4- and 5-years-olds, both in Russian and in Cypriot Greek, have acquired perfective aspect, yet still have problems with imperfective aspect in incomplete situations; the results improve with age 6.

1 Introduction

Aspect describes the internal properties of the event, the way it unfolds in time without reference to the particular time when it takes place (Comrie, 1976). There are two types of aspect: *lexical* and *grammatical*. Lexical aspect is also called situation aspect, VP aspect, or inherent aspect; it expresses the inherent semantic features that characterize each verb. Vendler (1957) classified all verbs, based on their inherent properties, into four types: activity, state, achievement, and accomplishment. These four types of verbs differ in terms of the semantic features of telicity, dynamicity, and durativity: states are [–punctual, –telic, –dynamic] (e.g. 'believe'), activities are [–punctual, –telic, +dynamic] (e.g. 'walk'), accomplishments are [–punctual, +telic, +dynamic] (e.g. 'build a house'); achievements are [+punctual, +telic, +dynamic] (e.g. 'arrive') (Shirai and Anderson, 1995). Grammatical aspect, also called IP aspect, viewpoint aspect, or sentential aspect, is focused on the morphological and syntactic markings of aspect on verbs (Smith, 1997). Grammatical aspect is differentiated into perfective and imperfective, the former presenting the

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· Corresponding Author: karpava.sviatlana@ucy.ac.cy (Sviatlana Karpava).

event as a complete entity without its internal structures and process, while the latter is focused on the internal structure of the event without taking into consideration its boundaries. Within generativist approaches to language acquisition, it is assumed that there is an interaction between lexical and grammatical aspect (Smith, 1997).

There are many approaches to the acquisition of aspect; one of them is the Primacy of Aspect Hypothesis, also known as Aspect Hypothesis. It centers on the development of aspect and tense morphology and analysis of production data (Bloom et al., 1980; Stephany, 1981; Bardovi-Harlig and Reynolds, 1995; Shirai and Andersen, 1995). According to Li and Shirai (2000) the Aspect Hypothesis is universal and applies cross-linguistically. This hypothesis states that perfective and past tense marking appear first on achievements and accomplishments, and then on activities and statives. If a language has the perfective/imperfective distinction, then statives and activities are marked with imperfective past before accomplishments and achievements. If a language has progressive aspect, then activities are marked with progressive aspect first and then accomplishments and achievements, and it is not overgeneralized to statives.

1.1 L1 and L2 acquisition of aspect

The studies by Bloom et al. (1980) and Stephany (1981) on L1 aspect acquisition found that the use of verbal morphology is affected by lexical aspect (progressive marking on activities and past tense marking on achievements and accomplishments). Smith (1980) and Andersen (1989) supported the independent acquisition of tense and aspect. Chin (2006) also rejected mapping between tense and aspect, and proposed that telic verbs are used first with past tense and atelic verbs with present tense; this is also known as the Weak Aspect Hypothesis.

The Prototype Hypothesis was proposed by Shirai and Andersen (1995), according to which in L1 children first acquire the prototype linguistic category and then proceed to the peripheral categories. The prototype for tense is past tense with [+telic, +punctual, +perfective] features, while the prototype for aspect is progressive aspect with [+atelic, +progressive, +imperfective]. L1 studies on aspect acquisition mainly focus on the development of aspectual morphology, but not on aspectual semantics and its interpretation.

The first L2 studies on aspect were the replications of previous L1 studies, focusing on the development of aspectual morphology. Andersen (1991) found that there are stages of L2 aspect acquisition (based on English): the marking of perfective started from achievements and then proceeded to accomplishments, activities, and states, while imperfective marking started from states before accomplishments, activities, achievements. Bardovi-Harlig and Reynolds (1995) found that achievements were correlated with past tense markings and activities with progressive markings. These studies followed the framework of the Aspect Hypothesis.

1.2 Comprehensive studies on L1 aspect acquisition

In general, L1 studies were focused more on the experiment rather than on the observation of spontaneous speech. Wagner (2001) found that English-speaking children had a problem with past progressive when it received an incomplete interpretation. Olbishevska (2004) conducted an experiment with Ukrainian-speaking children which revealed that children are able to associate past tense with both perfective and imperfective marking, using the concepts of telicity and atelicity, as well as match past perfective with complete and imperfective aspect with incomplete events. Van Hout (2005) investigated the comprehension of aspect of ongoing, complete, and

incomplete events by Polish-speaking children; the results showed that children do not have a problem with perfective aspect, but they need more time to acquire imperfective aspect.

Van Hout (2008) conducted an aspect comprehension study with Dutch, Italian, and Polish children. Her results showed that the semantics of perfective aspect is acquired earlier than the semantics of imperfective aspect. She proposed the Semantic Complexity Hypothesis, according to which the semantics of simple aspectual operations is acquired before complex, ambiguous ones. Perfective aspect on telic predicates, emphasizing completion, is arguably less complex than imperfective aspect on telic predicates, which requires aspect shift; therefore, for telic predicates, perfective aspect is acquired earlier than imperfective. Konstantzou et al. (2011) found that 4-year-old Greek-speaking children use perfective aspect for completed situations correctly, while they displayed problems with imperfective aspect for incomplete situations; the same goes for 5-year-olds, though the problems decrease.

1.3 Generative approach to L2 aspect acquisition

Within generativist approaches, several studies investigated the syntax–semantics interface, how aspectual semantics is mapped to grammatical morphology and argument structure (Slabakova, 2000; Slabakova and Montrul, 2002; Montrul and Slabakova, 2002; Hawkins et al., 2008). There are also studies that deal with the semantic interpretation of grammatical aspect (Gabriele, 2005; Chin, 2006). A range of studies also explored the influence of L1 on the semantic interpretation of aspect (Slabakova, 2000; Slabakova and Montrul, 2002; Gabriele, 2005; Chin, 2006).

Slabakova (2000) investigated telicity marking through an acceptability interpretation task of Bulgarian and Spanish speakers acquiring English. The cardinality of objects influences telicity in English and Spanish, while perfective a prefix or preverb is responsible for telicity marking in Bulgarian. Bulgarian learners of English did not have a problem with atelic sentences but had a problem to detect telic sentences, while Spanish learners of English did not display this problem. Similar studies by Slabakova and Montrul (2002), Gabriele (2005), Chin (2006), and Hawkins et al. (2008) showed that acquisition of functional categories, such as aspect, involves semantics, syntax, and morphology, and that L2 learners can acquire these categories due to access to UG.

Gabriele (2005) showed that input and learnability factors are crucial in aspect acquisition; advanced learners are more successful in aspect interpretation than intermediate or low proficiency level students; the correct usage of aspect morphology precedes correct interpretation of aspectual semantics. Chin (2006) conducted a study of Chinese and Spanish learners of L2 English and found that the participants were able to distinguish aspectual perfective/imperfective contrasts in L2 due to transfer from their L1s.

1.4 Aspect acquisition cross-linguistically: Russian vs. Greek

The acquisition and production of verb morphology by children depends on the correlation of aspect, tense, and Aktionsart (Antinucci and Miller, 1976; Shirai and Andersen, 1995; Stoll, 1998; Gagarina, 2000). The findings of various studies show that perfective aspect in past tense is used mainly with resultative Aktionsart, with achievements and accomplishments, which are telic types of verbs, while imperfective aspect in the present tense is used with non-resultative Aktionsart, with activities, states, and semelfactives, which are atelic verbs (Filiouchkina, 2004).

The Cognition Hypothesis (Antinucci and Miller, 1976; Bloom et al., 1980) states that cognitive constraints are responsible for the correlation between verb forms and Aktionsarten in child aspect acquisition. According to the Semantic Predisposition Hypothesis and the Prototype

Theory (Rosch, 1975; Slobin, 1985, Li and Shirai, 2000), prototypes or the most frequent/salient associations trigger the use of lexical aspects of verbs with the particular tense–aspect forms by children. The Language Specificity Hypothesis (Bowerman, 1985; Behrens 1993, 2001), in turn, puts emphasis on the ability of a child to analyze the form–function patterns, that is, the system of morphology and syntax of a particular language.

In Russian, tense and aspect interact. There are three tenses: past, present, and future, and there are also synthetic (e.g. *pisal* 'he wrote'; *pishet* 'he is writing'; *napishet* 'he will write') and analytic constructions (e.g. *napisal* 'he has written'; *budet pisat* 'he will write') that involve both tense and aspect (Whitehead Martelle, 2011). Imperfective aspect can be associated with all three tenses, perfective only with future and past. Grammatical aspect in Russian is encoded with the help of salient aspectual morphology: suppletive forms (*govorit-skazat*: 'say'-'tell'), prefixation (*pisat-napisat* 'write'), or suffixation (*prigat-prignut*, 'jump'; *zakrit-zarivat*, 'close'). Suffixation can form both perfective and imperfective forms, while suppletive forms and prefixes transform imperfective forms into perfective (Andrews et al., 1997). A lot of imperfective verbs also have a perfective counterpart (Forsyth, 1970).

Saeed (1997) proposed a verb classification in terms of situation types, according to which state is [+stative, +durative] (e.g. 'know'), activity [–stative, +durative, –telic] (e.g. 'run'), accomplishment [–stative, +durative, +telic] (e.g. 'run a mile'), semelfactive [–stative, –durative, –telic] (e.g. 'knock'), and achievement [–stative, –durative, +telic] (e.g. 'build a house'). Stoll (1998) divides semelfactive verbs in Russian into delimitatives and ingressives, the first group of verbs denotes events that take place for a while for which the prefix *po-* is used (e.g. *poplavat* 'to swim for a while'), and the latter group of verbs describes a punctual beginning of the event and are used with the prefixes *za-* and *po-* (e.g. *zapetj* 'to start singing') (Filiouchkina 2004). There is a coincidence of semelfactive Aktionsart and suffix morphology (e.g. the suffix *-nu-* in verbs like *pryg-nu-tj* 'to jump once'). The delimitative and ingressive Aktionsarten use the prefixes *za-* and *po-* (e.g. *za-plak-atj* 'to start crying', *posto-jatj* 'stand for a while'). According to Stoll (1998), the morphology of telic verbs (accomplishments and achievements) in Russian does not depend on Aktionsart as they can use several morphological markers (such as prefix and secondary imperfectivization, e.g. *na-litj* 'to fill').

Both the Semantic Predisposition Hypothesis and the Language Specificity Hypothesis predict that children understand non-resultative past and non-immediate future at an early stage, but according to the Cognition Hypothesis states that children need time to understand past and future, without the present context. First, children acquire aspectual distinctions (process, state, result) and then tense distinctions. The Semantic Predisposition Hypothesis here supports the Cognition Hypothesis in that aspectual distinctions come before tense distinctions. Children relate resultative verbs with past tense, as the concept of the result is salient to them. The Language Specificity Hypothesis rejects this view, as it is not true for all languages (Antinucci and Miller, 1976; Bloom et al., 1980); there is some evidence from Russian, for example (Bar-Shalom and Snyder, 2002).

The Cognition Hypothesis presupposes that states and processes are marked differently in child language. The Semantic Predisposition Hypothesis does not support this claim, neither the Language Specificity Hypothesis (e.g. there is no morphological difference in marking states and processes in Russian, e.g. *ljubitj* 'to love' and *sidetj* 'to sit' have the same ending *-it* in present tense). According to the Semantic Predisposition Hypothesis, processes are marked differently from results, which is in line with the Language Specificity Hypothesis. All three hypotheses claim that telic and atelic (punctual vs. non-punctual) events should be marked differently. The

Cognition Hypothesis explains it with the biological predisposition and that they emerge early in language acquisition, while the Semantic Predisposition Hypothesis claims that these distinctions are part of UG and thus available to children from birth.

According to the transparency principle of learning (van Hout, 1998), overt and unambiguous mappings (one-to-one) between linguistic encodings and cognitive notions is easier than covert or conflated ones (many-to one), so in Russian aspectual distinctions are acquired earlier than in Greek. In Russian the morphological marking of the verb (suffixation and/or prefixation) shows the aspectual property of a verb, while in English or Greek the telic/atelic distinction depends on the property of a verb and its object (Slabakova, 1997, 1998). The morphology and phonology of grammatical aspect (perfective/imperfective) in Russian is complex, but these forms are more salient for child language acquisition than in other languages.

In Greek verbs have person, tense, aspect, and voice features; there are regular and irregular verbs (Stephany, 1997). Perfective aspect in Greek can be marked with a special sigmatic marker -*s*, which is added to the stem of a verb (*pezo – epeza*, 'play' – 'played'), with the help of stem modifications (e.g. *pleno – eplina* 'wash' – 'washed'), or through idiosyncratic forms of the verb (e.g. *troo – efaga* 'eat' – 'ate') (Stavrakaki and Clahsen, 2009). Stephany (1997) suggested that tense is acquired before aspect in Greek. That acquisition of aspect requires knowledge of telicity, semantics, and the syntactic structure of VP. The telicity/atelicity distinction is achieved through (non-)cardinality of the direct object.

Van Hout (2002) expects that aspect acquisition will take place earlier in Russian, since the verbs themselves bear aspectual markers. In other languages, such as Greek, children should reach the stage of a higher mean length of utterances and know the mechanism of semantics and syntactic structure. In this respect, the Language Specificity Hypothesis (that is, vis-à-vis the transparency principle of learning) is in line with the Cognition Hypothesis.

2 The study

The aim of this study is to examine comprehension and production of aspectual distinctions of bilingual children with L1 Russian (R) and L2 Cypriot Greek (CG) and compare their production with monolingual L1 Greek children (Konstantzou et al., 2012) in order to test the Semantic Complexity Hypothesis (van Hout, 2008).

The present study thus deals with the acquisition of aspect by R–CG bilingual children, both in CG and in R. A total of 22 children participated in the study, split into four age groups (4-, 5-, 6-, and 7-year-olds). The parents of the children filled in a comprehensive questionnaire on the socio-economic and linguistic background of their children (Li et al., 2006 and Gagarina et al., 2010). The children were also tested on their Greek language abilities with the help of the Developmental Verbal IQ (DVIQ) test, adapted to CG from the Standard Modern Greek original (Stavrakaki and Tsimpli, 2000), and on their Russian proficiency with the help of the Russian Proficiency Test (Gagarina et al., 2010).

Test materials included comprehension and production tasks on aspect (from COST Action A33), adapted to CG and R (from van Hout et al., 2010). The children were asked to participate in the task by watching short movie clips in which a clown performed complete and interrupted actions. They had to judge whether the situations were complete or incomplete (comprehension) and use perfective or imperfective aspect (production).

The focus of the task lies on the distinction between complete and incomplete situations. The experiment included 6 transitive and telic verbs with regular inflection in the past tense ('open', 'build', 'blow out', 'close', 'make', 'draw'), and *while*-clauses to establish a specific time frame within which the event could be completed or not. There were six conditions: Com–P (complete situation plus perfective aspect), Com–I (complete situation plus imperfective aspect), Inc–P (incomplete situation plus perfective aspect), Inc–I (incomplete situation plus imperfective aspect), Com–Prod (complete situation), and Inc–Prod (incomplete situation). The first four deal with comprehension and the latter two with production (see examples of the task items, for each condition, below):

(1) Com–P (comprehension)
   San epezen i musici, o kloun anikse to kuti?
   When the music was playing, the clown opened the box? Yes/No.

(2) Inc–P (comprehension)
   San epeze i musici, o kloun anige to vazo?
   While the music was playing the clown opened the box? Yes/ No.

(3) Com–I (comprehension)
   San epeze i musici, o kloun anie to guti ton pexnidcon.
   When the music was playing the clown was opening the box? Yes/No.

(4) Inc–I (comprehension)
   San epeze i musici, o kloun anikse do mbuhkali.
   When the music was playing the clown opened the bottle? Yes/No.

(5) Com–Prod (production)
   Pe mu jia to anima tʃe to tenekhui.
   Tell me about the opening of the can.
   San epezen i musici, i kloun…………………………P/I.
   While the music was playing the clown…………………………P/I.

(6) Inc–Prod (production)
   Pe mu jia to anima tʃe to δoro.
   Tell me about opening the present.
   San epezen I musici, i kloun…………………………P/I.
   While the music was playing the clown…………………………P/I.

3 Results

3.1 Production of Greek aspect

The results of the comprehension tasks showed that, in general, all participants used target perfective aspect for the Com–P condition (complete situation plus perfective aspect), with more than 90% correct. They used correctly (89.85%) imperfective aspect for Com–I (complete

situation plus imperfective aspect), while for Inc–P (incomplete situation plus perfective aspect) they performed worse (80%). The most problematic condition was Inc–I (incomplete situation plus imperfective aspect), for which the target production of imperfective aspect was only 50% — nearly half of the children used perfective instead of imperfective.

With respect to the production data, the Inc–Prod condition was easier for the participants than Com–Prod, meaning that the participants used imperfective aspect for incomplete situations a little bit more than they used perfective aspect for complete situations. Looking at the data (see Table 1), it becomes clear that there is a difference between comprehension and production data: production results for imperfective aspect in incomplete situation were much better than the relevant comprehension results, while for the perfective aspect in the complete situation the reverse picture emerged, with comprehension results better than production data.

Task conditions	Participants' target productions (%)
Com–P	92.75
Com–I	89.85
Inc–P	80.43
Inc–I	52.89
Com–Prod	81.88
Inc–Prod	86.95

Table 1. Greek task: participants' target productions on all conditions

The participants were divided into four groups, according to their age (4;0–4;11; 5;0–5;11; 6;0–6;11; 7;0–7;11). As it can be seen from Table 2, all age groups exhibited problems with imperfective aspect in the Inc–I condition. There is no clear correlation or tendency to improve production with age increase. The groups produced nearly the same for the Com–P, the Inc–P, the Inc–I, and the Inc–Prod conditions, and at the same time they performed differently for the Com–I and the Com–Prod conditions.

Task conditions	4;0–4;11	5;0–5;11	6;0–6;11	7;0–7;11
Com–P	94.44	79.16	98.33	91.66
Com–I	77.77	95.83	91.66	88.88
Inc–P	83.33	75	76.66	88.88
Inc–I	72.22	16.66	61.66	58.33
Com–Prod	83.33	100	81.66	69.44
Inc–Prod	88.88	91.66	88.33	80.55

Table 2. Greek task: participants' target productions on all conditions per age group

Then the participants were divided according to schooling (st)age (kindergarten, pre-primary, and primary). As can be seen from Table 3, the kindergarten and pre-primary groups performed nearly the same, except for the Comp–P and the Com–I conditions. The primary school group performed the same with the two previous groups for Comp–P, Com–I, Inc–P, and Inc–Prod as well as better for Inc–I and worse for Com–Prod. For all groups, the most problematic condition

was Inc–I, to use imperfective aspect for incomplete situations. The primary school group performed better than the other two younger groups, meaning that the production of imperfective aspect improves when the children enter school. There is a difference between production and comprehension results only concerning imperfective aspect as production results for the usage of imperfective aspect in incomplete situations were much better than the comprehension results. It can thus be said that there is a relation between groups' productions and the schooling factor, at least more than between the participants' productions and their chronological age as factor.

Task conditions	kindergarten	pre-primary	primary
Com–P	83.33	96.66	95.83
Com–I	86.11	100	85.7
Inc–P	77.77	80	81.94
Inc–I	41.66	36.66	65.27
Com–Prod	91.66	90	73.61
Inc–Prod	91.66	86.66	84.72

Table 3. Greek task: participants' target productions on all conditions per school group

The participants were also divided into three groups according to their scores of the DVIQ test: low, intermediate, and high. As can be seen from Table 4, once again all groups displayed a problem with the Inc–I condition. The group with high DVIQ scores in general performed better than or the same as the other groups, except for the Com–Prod condition. The intermediate group performed better than the low group, except for the Inc–P and Inc–Prod conditions.

Task conditions	low	intermediate	high
Com–P	83.33	92.85	96.96
Com–I	86.66	95.23	87.87
Inc–P	86.66	43.05	81.81
Inc–I	33.33	42.85	68.18
Com–Prod	86.66	95.23	71.21
Inc–Prod	86.66	78.57	92.42

Table 4. Greek task: participants' target production on all conditions per proficiency group

3.2 Production of Russian aspect

The overall results of the task for Russian aspect acquisition show that production was worse than comprehension by the Russian (R)–Cypriot Greek (CG) bilingual children. With respect to comprehension, the most problematic condition, with less than 80% of target production, was Inc–I (incomplete situation plus imperfective aspect), meaning that the participants used perfective instead target imperfective. The Comp–P and Inc–P conditions were 100% target-like; this means that participants used perfective aspect correctly for both complete and incomplete situation. With respect to production, the Com–Prod condition was more problematic (less than

40% of target production) than Inc–Prod (more than 80% of target production), which means that, for production, the participants exhibited problems using perfective aspect for complete situation. The results are summarized in Table 5.

Task conditions	Participants' target productions (%)
Com–P	100
Com–I	90
Inc–P	100
Inc–I	76.66
Com–Prod	36.66
Inc–Prod	83.33

Table 5. Russian task: participants' target productions on all conditions

The participants were divided into four groups according to age (4;0–4;11; 5;0–5;11; 6;0–6;11, 7;0–7;11). There was no great correlation between their task productions and chronological age, all groups displayed a similar pattern. The most difficult condition was Inc–I for all groups (use of imperfective aspect for incomplete situation). The 4-year-old group performed better than the other groups, except for the Inc–P condition. In other words, the youngest group performed better than the older ones. This can be probably explained by the fact that, with age, exposure to Russian diminishes and exposure to Greek language increases. The results are shown in Table 6.

Task conditions	4;0–4;11	5;0–5;11	6;0–6;11	7;0–7;11
Com–P	100	83.33	83.33	94.44
Com–I	94.44	87.5	92.59	91.66
Inc–P	77.77	95.83	79.62	100
Inc–I	66.66	29.16	46.29	41.66
Com–Prod	100	79.16	64.81	66.66
Inc–Prod	94.44	83.33	75.92	83.33

Table 6. Russian task: participants' target productions on all conditions per age group

The participants were also divided according to schooling age into kindergarten, pre-primary, and primary school groups. The results are shown in Table 7.

Task conditions	kindergarten	pre-primary	primary
Com–P	88.88	83.33	90.9
Com–I	88.88	96.66	90.9
Inc–P	86.11	93.33	84.84
Inc–I	44.44	50	42.42
Com–Prod	91.66	83.33	66.66
Inc–Prod	91.66	86.66	75.75

Table 7. Russian task: participants' target production on all conditions per school group

There is no clear correlation between participants' productions and schooling; all groups showed nearly the same production rates, but the kindergarten and pre-primary groups performed better than the primary schoolers. This can be explained by the fact that the children attend Greek-speaking schools and have more exposure to Greek than to Russian, so they show worse performance for Russian than for Greek. Again, the most problematic condition was the Inc–I for all the groups; they had problems in the use of imperfective aspect for incomplete situation.

The participants were grouped according to Russian proficiency scores: low, intermediate, and high. The best production was by the high proficiency group, except for the Com–Prod condition; the participants with low proficiency scores performed the worst. The most difficult condition for all groups was Inc–I, except for the high group, and the most difficult was Com–Prod. Therefore, there is a correlation between participants' productions and Russian proficiency. There was no a crucial difference between comprehension and production results; see Table 8.

Task conditions	low	intermediate	high
Com–P	73.8	88.33	100
Com–I	73.8	96.66	90
Inc–P	69.04	83.33	100
Inc–I	26.19	41.66	76.66
Com–Prod	71.42	85	36.66
Inc–Prod	54.76	88.33	83.33

Table 8. Russian task: participants' target productions on all conditions per proficiency group

4 Comparison between Russian and Greek aspect production

We now compare the results of the Greek and the Russian tasks, as in Table 9.

Task conditions	Participants' target productions in the Greek task (%)	Participants' target productions in the Russian task (%)
Com–P	92.75	88.63
Com–I	89.85	87.12
Inc–P	80.43	87.12
Inc–I	52.89	44.69
Com–Prod	81.88	72.72
Inc–Prod	86.95	81.81

Table 9. Greek vs. Russian task: participants' target production on all conditions

It was found that the participants performed nearly the same in both languages; the most problematic condition is Inc–I for both tasks. The comprehension and production scores do not differ too much. The Greek task elicited better results for the Com–P, the Com–I, and the Inc–I

conditions for comprehension, and the Com–Prod and the Inc–Prod conditions for production. The Russian task elicited better results only for one condition, Inc–P. This means the bilingual Russian–CG children had better knowledge of aspect in Greek than in Russian for all conditions, with the exception for the comprehension condition Inc–P.

According to a paired-samples *t*-test statistical analysis, a statistically significant difference exists for the results of the Greek and Russian tasks on the Inc–P (comprehension) condition (*t*(22)=2.084, *df*=21, *p*=.050), and for the results of the Greek and Russian tasks on the Com–Prod (production) condition (*t*(22)=1.857, *df*=21, *p*=.077). With respect to the other conditions, there is no statistically significant difference between the Greek and the Russian tasks.

4.1 Age factor and Greek and Russian task production

There seems to be no crucial difference between the results of the Russian and Greek tasks when looking into chronological age groups, though it is interesting to note that younger children (4- and 5-year-olds) performed better in Russian, while older children (6-year-olds) performed better in Greek. This might be explained by the schooling factor, as it is at the age of 6 that children enter public schooling and their exposure to Greek increases. This is shown in Table 10.

Task conditions	Greek 4;0–4;11	Russian 4;0–4;11	Greek 5;0–5;11	Russian 5;0–5;11	Greek 6;0–6;11	Russian 6;0–6;11	Greek 7;0–7;11	Russian 7;0–7;11
Com–P	94.44	100	79.16	83.33	98.33	83.33	91.66	94.44
Com–I	77.77	94.44	95.83	87.5	91.66	92.59	88.88	91.66
Inc–P	83.33	77.77	75	95.83	76.66	79.62	88.88	100
Inc–I	72.22	66.66	16.66	29.16	61.66	46.29	58.33	41.66
Com–Prod	83.33	100	100	79.16	81.66	64.81	69.44	66.66
Inc–Prod	88.88	94.44	91.66	83.33	88.33	75.92	80.55	83.33

Table 10. Greek vs. Russian task: participants' target productions on all conditions per age group

The group of 4-year-olds performed better in Russian for Com–P, Com–I, Com–Prod, and Inc–Prod, while they performed better in Greek for such conditions as Inc–P and Inc–I. In general, it can be said that the 4-year-olds displayed better knowledge in Russian than in Greek, concerning aspect. The 5-year-old group showed nearly the same patterns for Greek and Russian productions, with the worst production for the Inc–I condition. The Russian task elicited more correct answers than the Greek task on such conditions as Com–P, Inc–P, and Inc–I, while the Greek task elicited more correct answers for Com–I, Com–Prod, and Inc–Prod.

The 6-year-olds, again, had nearly the same pattern for the Greek and Russian tasks, with the worst production for Inc–I. The Greek task elicited more target answers than the Russian task on such conditions as Com–P, Inc–I, Com–Prod, and Inc–Prod, while both tasks yielded the same number of target performance on such conditions as Com–I and Inc–P. This means that 6-year-old children show a better knowledge of aspectual distinctions in Greek rather than in Russian. The 7-year-olds show nearly the same pattern, both for the Greek and the Russian tasks, with the worst production for the Inc–I condition. The Russian and Greek tasks coincide in the number of correct answers for such conditions as Com–P, Com–I, Com–Prod, and Inc–Prod, while the

Russian task outranks the Greek task on the Inc–P condition, and the Greek task outranks the Russian task on the Inc–I condition.

4.2 School factor and Greek and Russian task production

The group of kindergarteners had nearly the same production, in both the Greek and the Russian tasks. There is a correspondence in the number of correct answers for all task conditions, with the exception of such conditions as Com–P and Inc–P, where the Russian task slightly prevails. The pre-primary school group children displayed nearly the same pattern for both tasks, Russian and Greek. The participants' productions coincide for such conditions as Com–I and Inc–Prod, while the Greek task outranks the Russian task for such conditions as Com–P and Com–Prod, and the Russian task outranks the Greek task for Inc–P and Inc–I. The primary school group performed slightly better in Greek than in Russian. This could be explained by the schooling factor, as in primary school children have more exposure to Greek than the other two groups. There is also a correspondence for the two tasks in two conditions (Com–P and Inc–P), while for all other conditions, the Greek task outranks the Russian task. The numbers are provided in Table 11.

Task conditions	Greek kindergarten	Russian kindergarten	Greek pre-primary	Russian pre-primary	Greek primary	Russian primary
Com–P	83.33	88.88	96.66	83.33	95.83	90.9
Com–I	86.11	88.88	100	96.66	85.7	90.9
Inc–P	77.77	86.11	80	93.33	81.94	84.84
Inc–I	41.66	44.44	36.66	50	65.27	42.42
Com–Prod	91.66	91.66	90	83.33	73.61	66.66
Inc–Prod	91.66	91.66	86.66	86.66	84.72	75.75

Table 11. Greek vs. Russian task: participants' target productions per school group

4.3 Proficiency factor and Greek and Russian task production

The participants with low scores in the Russian and Greek proficiency tests show nearly the same pattern of production in both the Greek and the Russian tasks, but the Greek task outranks the Russian task for all conditions. Consider the numbers in Table 12:

Task conditions	Greek low	Russian low	Greek intermediate	Russian intermediate	Greek high	Russian high
Com–P	83.33	73.8	92.85	88.33	96.96	100
Com–I	86.66	73.8	95.23	96.66	87.87	90
Inc–P	86.66	69.04	43.05	83.33	81.81	100
Inc–I	33.33	26.19	42.85	41.66	68.18	76.66
Com–Prod	86.66	71.42	95.23	85	71.21	36.66
Inc–Prod	86.66	54.76	78.57	88.33	92.42	83.33

Table 12. Greek vs. Russian task: participants' target productions per proficiency group

It can be said that children with low Greek proficiency show a better knowledge of Greek aspect than the participants with a low proficiency in Russian and their knowledge of Russian aspect. The participants with a low level of proficiency in Greek and in Russian had nearly the same pattern of productions, both for the Greek and the Russian tasks; there is a correspondence for two conditions, Com–I and Inc–I. The Greek task elicited better results for such conditions as Com–P and Com–Prod, while the Russian task elicited better results for Inc–P and Inc–Prod. It is interesting to note that the high proficiency group performed better on comprehension in Russian and better on production in Greek, and the worst condition was not Inc–I, as in all other groups, but Com–Prod for Russian. There is also a correspondence for two conditions, Com–P and Com–I; children performed better in Inc–P and Inc–I in the Russian task, and in Com–Prod and Inc–Prod in the Greek task.

According to a Pearson correlation analysis, statistically significant (2-tailed) correlations were found between age and Russian Inc–P production (p=.070), age and Russian Com–Prod production (p=.058), age and school (p=.000); school factor and Russian Com–Prod (p=.021), school and all conditions in the Russian task (p=.008); DVIQ scores and Greek Com–P (p=.063), DVIQ scores and Greek Inc–I (p=.096), Greek DVIQ scores and Russian Com–Prod (p=.037), DVIQ scores and age (p=.001), DVIQ scores and school (p=.000), DVIQ scores and Russian for all conditions (p=.057); Russian proficiency test scores and Greek Inc–I (p=.039), Russian proficiency test scores and Greek Com–I (p=.065), Russian proficiency test scores and Greek Com–Prod (p=.004), Russian proficiency test scores and Russian Inc–P (p=.016), Russian proficiency test scores and Russian Com–Prod (p=.019), Russian proficiency test scores and Russian Com–Prod (p=.019), and Russian proficiency test scores and age (p=.054). For reasons of space, we will not enter into further interpretation of these results beyond the summary observations above.

5 Conclusions

The results of the present study showed that 4- and 5-years-old bilingual children, both in Russian and in (Cypriot) Greek, have acquired perfective aspect, yet still display problems with imperfective aspect in incomplete situations; the results improve around age 6. Children have problems associating imperfective predicates with incomplete events. These findings are in line with Kazanina and Phillips (2003, 2007) and van Hout (2005). There is a correlation between schooling factor, proficiency, and task production: the higher the language proficiency of the participants and the higher the school grade they attend, the better task production the children show. It is interesting to note that with more exposure to Greek, by living in a CG-speaking environment, task production improves for Greek and decreases for Russian. These results are in line with Konstantzou et al.'s (2011) findings from Greece and also support van Hout's (2008) Semantic Complexity Hypothesis, according to which perfective aspect for telic predicates is acquired before imperfective. The usage of imperfective aspect on telic predicates requires an aspect shift, since there is a contradiction of imperfective aspect with the entailment of telic predicates.

Appendix 1

	gender	age	grade	Com–P/6	Com–I/6	Inc–I/6	Inc–P/6	Com–Prod/6	Inc–Prod/6	total/36
1	m	5;4	kindergarten	5	5	1	3	6	6	26
2	m	7;1	1st	4	4	2	5	5	6	26
3	f	7;0	1st	5	5	3	5	6	0	24
4	f	6;4	pre-primary	6	6	1	5	6	6	30
5	f	4;8	kindergarten	6	6	4	4	6	6	32
6	m	6;0	pre-primary	5	6	1	5	5	6	28
7	f	6;0	pre-primary	6	6	3	4	5	4	28
8	m	6;0	pre-primary	6	6	6	5	5	5	33
9	m	5;6	pre-primary	6	6	0	5	6	5	28
10	m	6;8	1st	6	6	5	3	3	6	29
11	f	7;6	1st	6	5	5	6	6	6	34
12	m	6;11	1st	6	3	3	5	6	4	27
13	f	6;10	1st	6	5	5	4	6	6	32
14	f	8;4	2nd	6	6	6	5	1	6	30
15	f	3;10	kindergarten	5	5	4	5	4	5	28
16	m	6;0	1st	6	5	1	5	5	5	27
17	m	7;8	2nd	6	6	0	5	6	6	29
18	f	6;8	1st	6	6	6	4	3	6	31
19	m	7;0	1st	6	6	5	6	1	5	29
20	m	4;8	kindergarten	6	3	5	6	5	5	30
21	f	5;7	kindergarten	3	6	0	5	6	5	25
22	f	6;8	1st primary	6	6	6	1	5	5	29

Greek task: target production per participant

Appendix 2

	gender	age	grade	Com–P/6	Com–I/6	Inc–I/6	Inc–P/6	Com–Prod/6	Inc–Prod/6	total/36
1	m	5;4	kindergarten	5	5	4	6	5	5	30
2	m	7;1	1st	5	6	0	5	6	5	27
3	f	7;0	1st	6	3	4	6	6	2	27
4	f	6;4	pre-primary	4	6	1	6	5	6	28
5	f	4;8	kindergarten	6	5	2	5	6	6	30
6	m	6;0	pre-primary	4	5	3	5	6	5	28
7	f	6;0	pre-primary	6	6	2	6	5	5	30
8	m	6;0	pre-primary	5	6	6	5	5	5	32
9	m	5;6	pre-primary	6	6	3	6	4	5	30
10	m	6;8	1st	5	6	5	4	3	5	28
11	f	7;6	1st	6	6	0	6	6	5	29
12	m	6;11	1st	6	5	1	4	4	3	23
13	f	6;10	1st	5	5	1	4	3	1	19
14	f	8;4	2nd	6	6	6	6	0	6	30
15	f	3;10	kindergarten	6	6	5	4	6	6	33
16	m	6;0	1st	4	5	0	4	4	5	22
17	m	7;8	2nd	5	6	0	5	6	6	28
18	f	6;8	1st	6	6	6	6	0	6	30
19	m	7;0	1st	6	6	5	6	0	6	29
20	m	4;8	kindergarten	6	6	5	5	6	5	33
21	f	5;7	kindergarten	6	5	0	5	6	5	27
22	f	6;8	1st primary	3	5	0	6	4	5	23

Russian task: target production per participant

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