

Acquisition of Aspect (Lexical vs. Grammatical) by Ukrainian Children

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Abstract: The study casts some doubt on the predictions of the Aspect First Hypothesis (AFH), according to which children initially mis-analyze tense morphology; they employ their tense morphology to mark aspectuality instead of temporality (Antinucci & Miller 1976, Bloom et al. 1980, Olsen & Weinberg 1999, Wagner 2001, among many others). Experiment 1 is a production study, in which Ukrainian children's use of verbal aspectual morphology (perfective or imperfective) in the past and present tenses is tested. Experiment 2 is a comprehension study, in which children's use of perfective morphology for telicity, and imperfective for atelicity is tested. The findings of the experiments provide evidence that 2.5 - 4.5 year olds do not restrict their use of perfective grammatical aspect to past tense and imperfective to present. The results demonstrate that even the youngest children could comprehend past tense equally when it is applied to events that are completed and to events that are incomplete. Therefore, the results do not seem to support the AFH.

1. Introduction. Theoretical Overview of Aspect

In linguistics, aspect has received considerable attention over the past 40 years and, most especially, in recent years (see, among others, Smith 1991, Comrie 1976, Timberlake and Chung 1985 for Grammatical Aspect (GA); Krifka 1992, Verkyul 1993, Tenny 1994 for Lexical Aspect (LA)). The term 'aspect' has a very wide range of application. It refers either to aspectual classes of verbs and the combination of the verb with its arguments and adverbial phrases or to morphological aspectual markers, such as inflectional or derivational morphemes marked on the verb. As summarized by Olsen (1997), aspect refers to two related phenomena: the ability of verbs and other lexical items to describe how a situation develops or holds in time (LA) and the view some verbal auxiliaries and affixes present of the development or result of a situation at a given time (GA) (Olsen 1997:3).

1.1 Lexical Aspect (LA)/Aktionsart

LA (also known as situation aspect, inherent aspect, or Aktionsart) is compositionally determined by the lexical semantics of the main verb, its relation to the nominal argument that determines the telicity of a predicate and the quantizational status of this nominal argument (Filip 1999:81). Quantized nominal arguments yield quantized (telic) verbal predicates (or sentences) and cumulative (mass, bare plural) ones cumulative (atelic) verbal predicates (Filip 1999:91).¹

LA, specifically the potential of an event to be terminative or durative, is the basis for classification of verbs and verb phrases into aspectual classes. If an event is inherently limited, it is said to be telic (from Greek *telos* 'limit, end, goal'); if an event does not have a natural boundary, it is referred to as atelic.

The most general approaches to classification of LA as individual categories make a binary distinction (e.g., *stative vs. dynamic, telic vs. atelic, durative vs. punctual*). Vendler's (1967) quadripartite classification of verb phrases into aspectual classes is currently the best-known and well-accepted classification.² Taking telicity as the basis of the division, Vendler (1967) categorized all English verbs into four classes with respect to the temporal properties that they encode: *activities, accomplishments, achievements, and states*.³

¹ There exist several theories (syntactic and semantic) which account for telic/atelic interactions and the effect of internal and external arguments on telicity (see Tenny 1994, Verkuyl 1993 for a syntactic account; Krifka 1986, Dowty 1991, Filip 1999 for a semantic one). All the above mentioned accounts agree on one important property of the argument that determines telic or atelic reading of complex verbal predicates; it denotes a participant undergoing a 'gradual' or 'cumulative change' (Filip 1999). Such an argument is referred to as an Incremental Theme (Dowty 1991), a Measure (Tenny 1992), a Gradual Patient (Krifka 1986, 1992), among other labels.

² Vendler's classification is ultimately derived from Aristotle.

³ According to Vendler, activity verbs encode situations as consisting of successive phases over time with no inherent endpoint, for example, *plavaty* 'to swim' or *hodyty* 'to walk' in Ukrainian. Accomplishment verbs like Ukrainian *namalyuvaty* 'to paint' as in *namalyuvaty kartynu* 'to paint a picture' characterize situations as having successive phases as well but contrary to activity verbs, they encode an inherent endpoint. Achievement verbs describe situations as punctual and

To conclude, LA or telicity/atelicity is established by the inherent lexical semantics of the verb together with its environment.

1.2 Grammatical Aspect (GA)

The other type of aspect is *grammatical* or *viewpoint* aspect. The basic aspectual opposition within GA is that of perfectivity and imperfectivity. I will characterize GA in Filip's (1999) mereological terms. She proposes that the semantics of many, if not all, aspectual systems can be related to the notions of 'part' and 'whole'. On her account, the semantic contribution of the perfective operator is represented as a function that maps from any kind of eventuality to a 'total event': PERF: $E \rightarrow \text{TOTALEVENT}$, whereby $E = \{\text{process, state, event}\}$ (Filip 1999:184). Hence, the perfective operator denotes events represented as integrated wholes (i.e., in their totality, as single indivisible wholes) (see also Krifka 1992). The imperfective operator can be characterized as follows:

[IMPERFECTIVE ϕ] relates eventualities denoted by ϕ to their parts, where the notion of 'part' is understood in the sense of the weak ordering relation ' $'$ ' (Filip 1999:187).

Contrary to LA, which is encoded in the verb itself or determined by the verb, its arguments and adverbial modifiers, GA is marked explicitly (usually with the help of auxiliaries, such as *to be* for the progressive aspect in English, and/or inflectional and derivational morphology, such as prefixes *na-* (accumulative prefix), *-pro-* (resultative meaning), *z-* (result), *pere-* (change of location), among others, for the perfective aspect in Ukrainian). The status of Slavic GA markers as an inflectional or derivational category is still controversial (see Spencer 1991). Following Filip, I believe that prefixes are clearly derivational affixes, which form new verbs by changing the category and/or the

instantaneous, as in Ukrainian *vpiznaty druha* 'recognize a friend'. State verbs, like Ukrainian *znaty* 'to know' involve indefinite duration and no inherent endpoint. Activities, accomplishments and achievements are grouped together as *eventive* or *dynamic* verb classes.

Another aspectual class has been added to Vendler's classification by Smith (1991). These are *semelfactive* verbs, such as *cough* and *tap* in English or *stovxnuty* 'to push' in Ukrainian. According to Smith, semelfactive verbs resemble achievements in having the property of punctuality; nevertheless, they cannot constitute one class for several reasons. First, semelfactives do not encode endpoint whereas achievements do. Second, semelfactives and achievements are interpreted differently when combined with progressive aspect marking.

meaning of the base verb to which they are applied (for arguments see Filip 1999). I will discuss Ukrainian aspectual system in more detail in the next section.

1.3 Aspectual System of Ukrainian

In Ukrainian, the binary category of aspect is found. This distinction stems from the opposition of accomplishment/non-accomplishment of an action, or the *perfectivity/imperfectivity* in terms of GA. In most cases, the use of perfective aspect in Ukrainian indicates the result of an action, for example:

- (1) Vin **NA**pysav lysta
 He write PERF. PAST.-3SG.MASC letter
 'He wrote the letter.' (=finished writing the letter, the letter is written)

The perfective reading results from the presence of the prefix *-na*. This accumulative prefix adds to the verb the meaning of a large quantity, measure or degree in a variety of ways (Filip 2000:41)⁴. However, the perfective verb can express a start of a single action (with the prefix *za-*) or an instantaneous action (with the prefix *po-*), as in the following examples:

- (2) Vona **ZA**xotila ytaty
 She want PERF. PAST-3SG.FEM to read
 'She suddenly felt like reading.'
- (3) Vin jiji **PO**ba yv
 He her see PERF.PAST-3SG.MASC
 'He saw her.'

In both examples, the completion of action is also conveyed. Additional meaning of the completion of action of short duration is expressed by the verbal perfectivizing prefix *-po* as in (4)⁵:

⁴ The semantics of this prefix is comparable to the English vague quantifiers like *a lot (of)*, *many* or to nominal expressions like *a (relatively) large quantity* (Filip 2000:41).

⁵ According to Filip (2000), the prefix *-po* contributes the meaning of a small quantity, measure or degree. It is comparable to the English *a little*, *a few*, *a (relatively) small quantity/piece/extent of*.

- (4) Vin **PO** ytav žurnal i pišov dodomu
 He read PERF. PAST-3SG. MASC magazine and go PERF.PAST-3SG.MASC home
 'He read a magazine for a while and went home' (=finished reading, but did not read the whole magazine).

The *imperfective* aspect receives a wide range of interpretations in Slavic. Usually, imperfective verbs express actions as processes in their duration at a given moment or as a habitual occurrence. Luckyj & Rudny kyj (1949) distinguish between three cases of the imperfective use in Ukrainian.

First, the imperfective aspect describes an action, which is still in progress and is incomplete. Second, the imperfective may describe an action that will be taking place in the future, and third, an action, which may be even completed, but the speaker is not aware of its completion (Luckyj & Rudnykyj 1949:25). The duration can be expressed by an imperfective in any tense, such as:

- (5) Ja pyšu lysta.
 I write IMP. **PRES**-1SG. letter
 'I am writing a letter.'
- (6) Ja pysav lysty.
 I write IMP.**PAST**-1SG.MASC letters
 'I wrote letters' (+used to write/was writing).
- (7) Ja pysatymu lysty.
 I write IMP.**FUT**-1SG letters
 'I will write/be writing letters.'

Imperfectives are also used in generalized and habitual statements, as in examples (8) and (9) respectively:

- (8) Cikavo ytaty.
 interesting to read IMP.INF
 It is fun to read.
- (9) Vin zvy aino dyvyt'sya televizor vve eri.
 He usually watch IMP.PRES-3SG TV in the evening
 'He usually watches TV in the evening.'

The most common way of deriving a new perfective verb in Ukrainian is by prefixation⁶. Usually simpler and shorter imperfective form serves as a base for the derivation of the perfective form. The relation between a given imperfective verb and its prefixed perfective counterpart is, in most cases, idiosyncratic: the meaning of a new prefixed verb is not always transparent from the combination of a simple imperfective verb and a prefix, but rather partly or fully lexicalized (Filip 1999:181).

Another feature of the Ukrainian aspect, as well as that of other Slavic languages, is that the syntactic *past/nonpast* distinction is added to the *perfective/imperfective* distinction, with *perfective* combining only with *past*, and the *past/nonpast* distinction only occurring in the *imperfective*. Thus, there are no present tense perfectives.

In summary, Ukrainian verbs are divided into perfective and imperfective forms. The main way of deriving a new perfective verb form is by adding prefixes to the imperfective forms. Prefixes are derivational morphemes that change the category and/or the meaning of a given imperfective verb, creating a new perfective verb.

Having outlined a theoretical background on aspect in general, the typology of aspect, and the aspectual system of Ukrainian, we shall now touch upon the semantic treatment of telicity and telicity encoding in Ukrainian.

1.4 Telicity

Telicity describes resultativity in the internal temporal contour of an event (Van Hout 2000:241). It refers to the semantic inherent endpoint of an event denoted by a verbal predicate or sentence⁷.

⁶ Danylenko & Vakulenko (1995) distinguish between four possible methods of perfectivity: a prefix added to an imperfective form like *cytaty (I) – procytaty (P)* ('to read'); a degree-suffix such as *nalyvaty (I) – nalyty(P)* ('to pour out')⁶; a vocalic alternation and degree-suffix as in *zbyraty (I) – zibraty (P)* ('to gather'); or an accentuation *sklykaty(I) – sklykaty (P)* ('to summon'). In addition, there are also a few verbs that change their aspect depending on the context.

⁷ In its original sense 'telic' means 'goal' or 'purpose'. The term is derived by Garey (1957) from the Greek *télos*. In Garey's words telic verbs are described as "...a category of verbs expressing an action tending towards a goal envisaged as realized in a perfective tense, but as contingent in an

Telicity of a verbal predicate or sentence is determined by the lexical semantics of the verb, its arguments (both obligatory and optional), adjuncts, the discourse-level linguistic context, the extralinguistic context of the utterance and general world knowledge associated with the meaning of sentences (Filip 1999:122).

1.4.1 Telicity Marking in Ukrainian

Languages differ in how they encode telicity. As noted by Filip (1999), in English the interpretation of a verb as telic or atelic is typically not marked overtly in its verb form. A few overt markers of telicity in English are verb particles like *up* and *through* and resultative phrases (adjectival or prepositional) in resultative constructions, for example: *He ate up all the cookies*, *He thought the problem through*, *He painted the walls blue* (Filip 1999:174). It is the inherent lexical semantics of the verb along with the semantics of its arguments and adjuncts that together determine telic or atelic interpretation of a predicate or sentence (ibid.).

Ukrainian encodes telicity in its morpho-syntax on the verb. A prefix, when added to an (im)perfective verb, yields a new perfective verb that is telic (event-denoting). Prefixes are therefore thought of as functions that take state, process or event predicates as their arguments and yield event predicates as their value: PREFIX: $E \rightarrow \text{event}$, where $E = \{\text{process, state, event}\}$ (Filip 1999: 184).

It might be tempting to assume that perfective verbs are always telic and imperfective verbs are atelic. However, this is not the case. Let us take a Ukrainian imperfective activity verb *pysaty* 'to write'. (10a) yields an atelic reading. Perfectivizing *pysaty* with the prefix *na-* makes *NApysaty* refer to a telic situation, as in (10b). Similar effect is observed with *pere-* (10c). Another perfectivizing prefix, *po-*, has a different effect. *Po-* perfectivizes the verbal aspect, but the event remains atelic (d).

imperfective tense" (Garey 1957:6). "Telic" now refers to all verbs that involve some delimitation in their semantic structure (see Hopper & Thompson 1980, Rappaport & Levin 1988, Dowty 1991, Zaenen 1993, among many others).

- (10) a. Ja pysav lysta. I wrote-IMP a/the letter
- b. Ja **NA**pysav lysta. I wrote-PERF a/the letter
- c. Ja **PERE**pysav lysta. I rewrote-PERF a/the letter.
- d. Ja **PO**pysav lysta. I wrote-PERF a/the letter for a while

Imperfective verbs, which usually have an atelic interpretation, may have a telic reading in Ukrainian. According to Vinnitskaya & Wexler (2001), who discuss the telic interpretation of the imperfective in Russian, this is possible due to the pragmatic factor, when the speaker presupposes that the fact has taken place and the event is completed.

Having reviewed the theories of aspect, aspectual system of Ukrainian, semantic treatment and several analysis of telicity marking as well as providing a more detailed analysis of telicity encoding in Ukrainian, I laid a relevant background for the next section. I shall now address the issues of the acquisition of aspect.

2. Acquisition of Aspect. Experimental Findings

In this section, I shall discuss the AFH in more detail and offer a new study that tests this hypothesis with Ukrainian native learners.

In recent years, a number of researchers have studied the acquisition of tense and aspect in young children (Bar-Shalom & Snyder 2002, Brun et al. 1999, Slabakova 1997, Shirai & Anderson 1995, Olsen & Weinberg 1999, to mention just a few). Theoretical and experimental studies have shown an intriguing fact in the use of temporal inflections: young learners are characterized by the more restricted use of tense and aspect markers. In particular, children produce an asymmetrical pattern: they tend to use present or progressive morphology (depending on the language) mostly with atelic verbs and past or perfective morphology mostly with telic verbs.

The distribution of verbal morphology according to lexical aspectual type, i.e. past morphology to telic verbs and present to atelic has been found in many languages, among which are English (Bloom et al. 1980, Shirai & Anderson 1995,

Olsen & Weinberg 1999), Italian (Antinucci & Miller 1976), Polish (Weist et al. 1984), Japanese (Shirai 1995, 1998), among others.

The explanation of this pattern is referred to as the Aspect First Hypothesis⁸. The main idea of the Hypothesis is that children initially mis-analyze tense morphology; they employ their tense morphology to mark aspectuality instead of temporality (Wagner 2001).

Experimental findings from languages that encode the perfectivity/imperfectivity distinction demonstrate that imperfective past appears later than perfective past, and imperfective past marking begins with atelic verbs, then extending to telic (Weist et al. 1984).

In fact, there are two versions of the APH: Lexical Aspect First and Grammatical Aspect First (LAF and GAF, respectively). According to LAF hypothesis, children use past and present tense inflection (or perfective and imperfective aspect morphology) to encode telic/atelic semantic distinction. GAF hypothesis says that grammatical aspect (perfective and imperfective) is encoded instead by temporal inflections. Both LAF and GAF hypotheses reflect the idea that children's early tense/perfectivity inflections do not mark temporal but aspectual relations.

As previously mentioned, both hypotheses were developed to explain a production pattern and have been tested across languages. However, to the best of my knowledge, there are no studies about aspectuality in the Ukrainian language. In what follows, I report on both production and comprehension experimental studies testing the AFH on Ukrainian.

3. Experiments

Both production and comprehension experiments aim at finding out which kind of aspect (lexical or grammatical) might initially be involved in tense interpretation. In most general terms, the experiments are set up to find out what impact

⁸ Aspect First Hypothesis has been also referred to as Aspect Before Tense Hypothesis (Bloom et al. 1980); Primacy of Aspect Hypothesis (Bronckart and Sinclair 1973, Antinucci and Miller 1976); Defective Tense Hypothesis (Weist et al. 1984).

aspectual information has on tense interpretation in Ukrainian and which kind of aspect (lexical or grammatical), if any, might initially be involved in tense interpretation.

Experiment 1 aims to test young children's production. The aim of the study is to observe what verbal aspectual morphology (perfective or imperfective) children predominantly use to express past and present.

In Experiment 2, I test whether children use perfective morphology to encode telicity, and imperfective atelicity, i.e. whether they mark lexical aspect with the help of overt grammatical aspect marking.

The study may support either one of the hypotheses (LAF or GAF) as well as reject one or both. Being a pilot study, it serves as a starting point for further experiments on the acquisition of tense and aspect in Ukrainian. Depending on the results, it may lead to comparison between other Slavic languages, Russian in particular. At the present, we hypothesize that in Ukrainian, similarly to Polish (Weist 1991), children might distribute *both* grammatical aspect and tense morphology according to lexical aspect. According to this hypothesis, they use both past and perfective marking for telic verbs and both present and imperfective marking for atelic verbs. If there is a clear pattern that perfective morphology and past tense are associated with the verbs describing bounded events and imperfective morphology and present tense with the ones describing non-bounded events, i.e. those that have no inherent termination, we would claim that children restrict the perfective and past tense morphology to express telicity, and imperfective and present morphology to express atelicity.

Since the perfective overt marker is included in prefixes in Ukrainian, I hypothesize that children would tend to use prefixed perfective verbs to describe past events and simple (non-derived) imperfective verbs to describe the present. I also expect to find perfective verbs derived with the help of degree suffixes, vocalic alternations, and stress shift in children's performance but their ratio might be rather small relative to that of the prefixed verbs. The explanation for this pattern lies in the leading productivity of formation of perfective verbs by means of prefixation in Ukrainian.

Both telic and atelic verbs are used in the past by an adult speaker, such as *chytala* (I, atelic) /*prochytala* (P, telic) (read-PAST-1SG.FEM). The same verb stem is used with either perfective or imperfective grammatical marking where imperfective denotes an incomplete action though possibly terminated at some past moment, and perfective refers to the completed one. I expect to see a strong preference among young learners to use the perfective prefixes in the past to denote a telic event and the imperfective present forms (without prefixes) to denote atelic events. Thus, we expect to find very few, if none at all, imperfective past forms in children's speech.

3.1 Experiment 1 – Production Study

3.1.1 Aim

The main goal of this experiment is to observe what verbal aspectual morphology (perfective or imperfective) children predominantly use to express past and present. My assumption is that children might restrict their use of perfective grammatical aspect to past tense and imperfective to present. This pattern is different from that of adult competence. In adult grammar, both perfective and imperfective verbs are used in the past tense. The prediction of the strong version of the GAF hypothesis, tested here, is that young learners of Ukrainian should use no past imperfective forms.

3.1.2 Participants

Thirty-six native Ukrainian-speaking children were tested. The participants were divided into three groups according to their age: two and a half year olds (mean 29.8 months; range 26 to 35 months), three and a half year olds (mean 41.8 months; range 36 to 47 months), and four and a half year olds (mean 53.4 months; range 49 to 58 months on the day of the test). Each group included 12 participants. In all instances within age groups, half of the children were male and half were female. A control group included twelve adults (mean age=27 years and 7 months; range 21 to 40 years old).

All participants were drawn from a Ukrainian-language kindergarten and daycare in Kiev oblast, Ukraine. Both parents of each child were native Ukrainian speakers. The subjects were pretested in order to identify if any of the children

simply did not understand what was expected of them in the experiment or to eliminate children who could not pay attention to the task at hand.

3.1.3 Stimuli and procedure

Children are brought individually to a room and are told a story about Mother Cat and Little Kitty. The story, as translated to English, is as follows:

Mother Cat has a cute little son – Little Kitty. Kitty is very curious, active, and likes to try everything. He likes to paint, to build, to fix things, etc. He also likes to help his Mother by sweeping and cleaning the floor. Of course, he likes to eat sausages and to drink milk. He is a very good and obedient kitty. However, sometimes he can be naughty and can do wrong things. Kitty's Mom is very tired now and she wants to take a nap. However, she is very worried about Kitty and she needs somebody to check up on Kitty. Do you want to help her?

Mother Cat goes to her room (to the other side of the partition, so that she cannot see Kitty but the child sees both) and falls asleep. The child is asked to help her by answering the questions. The child is then asked to describe a situation enacted by Kitty. There are three situations, performed by the puppet.

For example, Kitty is seen as he is eating a sausage and, while the action is still in progress, the second puppet (Mother Cat), which appeared to be sleeping during the performance on the other side of partition, wakes up and asks the child being tested to describe the action of the other puppet. She would ask the questions such as *What's up? What's with Kitty? (Š o z koshenyam?* in Ukrainian). Notice that there are no tensed verbs in such questions. The questions were phrases in such a way so that the child would not hear a tensed verb and would not be inclined to answer in the same tense. Only if the child could not respond to such a question, another one with a tensed verb was asked.

The second scenario shows Kitty, who has already finished half of his sausage, has food all over his face and a rotund stomach still sitting in front of the plate. Kitty states, "I'd like some more sausage in a few minutes." Again, Mother Cat wakes up and asks the child what Kitty was doing (*Š o z koshenyam?*). Again, no tensed verbs are used.

The third scenario shows Kitty sitting in front of an empty plate. Once more, Mother Cat asks the child what's with Kitty (*Š o z koshenyam?*).

The first scenario of the puppet show is to present the idea of a verb in the imperfective present tense (the expected response is *Košnja jist' sosysku* "Kitty is eating a sausage."). The second scenario represents the imperfective past tense (the expected response is *Košnja jilo sosysku* "Kitty was eating/ate a sausage.") and the third symbolizes the perfective past tense (the expected response is *Košnja zjilo sosysku* "Kitty ate up a sausage."). All scenarios clearly show the action in a given tense and aspect, so there are no other grammatical responses possible than the ones given above. All predicates applied in these testing situations can be used in both perfective and imperfective forms. They are the verbs denoting processes that can be interpreted as telic or atelic (refer to Appendix A for a complete list of verbs).

The order of enacted situations (present, past perfective, past imperfective) was randomized across and within trials. In total, each child is asked to describe 12 situations: 4 present, 4 past perfective, and 4 past imperfective. However, this is performed in two sessions. In the first session, six situations for each child are enacted. After a rest period of a half hour, the child is then tested for a second session of another six situations. The length of each session is fifteen minutes. There are two experimenters. One acts as the puppeteer while the other performs an observational role and records the child's answers.

3.1.4 Results

Table 1 shows the mean percentages correct for three conditions for three different age groups and one control group. The number of correct responses for each condition is given in parentheses.

Table 1.
Mean percentages correct. Production data.

Age	Past IMP (PI)	Past PERF (PP)	Present
2.5 (n=12)	24% (11)	60% (28)	90% (43)
3.5 (n=12)	30% (14)	72% (34)	93% (44)
4.5 (n=12)	35% (16)	75% (36)	95% (45)
adults (n=12)	100%	100%	100%

As shown in Table 1, children in all age groups differentiated among all three tenses (PP, PI, and Present). Even the youngest children produced PI (consistent with previous studies by Brun et al. (1999) and Bar-Shalom & Snyder (2002))⁹.

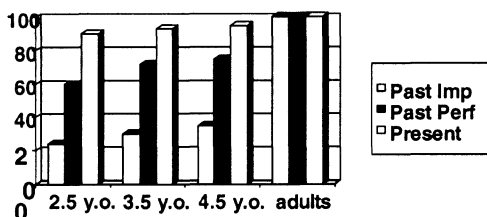


Chart 1. Percentage of correct choices for the three tenses

From Chart 1 it may seem that the prevalence of past perfective over past imperfective verbs support the idea that children prefer perfective verbs to describe past tense events. The child's semantics for the past tense seems to be associated with a natural conclusion of an event.

However, we hypothesized that children would not produce any past imperfective verbs to describe past events but they do. Therefore, the results do not seem to support a strong version of GAF, according to which perfective predicates are restricted to the past tense and imperfective to present.

Recall also that in adult grammar, a past-tense perfective may describe an atelic event, and past-tense imperfectives may be used to describe telic events. As was already shown by Bar-Shalom & Snyder (2002), young learners of Russian follow this adult's pattern. In their single-child case study, a child used past-tense imperfectives to describe both telic (3 accomplishments, 1 achievement) and atelic (4 activities, 1 state) events (Bar-Shalom & Snyder 2002:72). In our experiments, children not only produced past imperfectives but also used them to describe past telic events. They also used perfective verbs to refer to atelic events

⁹ As noted by an anonymous reviewer, the discussion of the types of children's responses, which are different from those counted as grammatical or right (expected) should be included in this study and should be accounted for. Though I fully agree with this remark, in the absence of complete data at hand, I am unable to provide an adequate response at this time.

(*POchytav* – ‘read for a while’, *POskladav ihrashky* – ‘gathered the toys’). Moreover, children produce telic predicates in the present tense (consistent with Bar-Shalom & Snyder 2002 Russian data). Therefore, the results of this study cannot support the LAF hypothesis, according to which telic predicates are restricted to past and atelic to present.

I conclude that children do not restrict their use of perfective grammatical aspect to past tense and imperfective to present.

3.2 Experiment 2 – Comprehension Experiment

Several questions emerge when looking at the results of the production experiment. The first one is whether children can understand tense independently of GA. The second is whether they comprehend past tense equally when it is applied to events that are completed and to events that are incomplete. The third one questions the capacity of children to differentiate between Past Perfective and Past Imperfective. With these questions in mind, a comprehension study is conducted.

3.2.1 Aim

This comprehension experiment tests whether Ukrainian-language learning children distinguish between perfective and imperfective past, whether they choose perfective aspect to encode telicity and imperfective atelicity.

It is important to stress that both perfective and imperfective verbs are in the past tense in this experiment. Therefore, children may not simply associate perfectivity with past-completed situation and imperfectivity with present ongoing situation. How do children determine telicity or atelicity then? Following Van Hout & Hollebrandse (2001), I assume that children will look for a quantized event, a situation with a culmination moment for telic verbs, and a non-quantized event, a situation without any culmination moment for atelic. By contrast, adults will notice the perfectivity difference in the pictures, not accessible for children. I assume that children will choose past *perfective* to encode a completed event (telic predicate) and that they would have problems with past imperfective denoting *incomplete* events (atelic predicates) as in their mind incompleteness might be associated with the present. According to the LAF hypothesis, children

will choose either picture for the Past PERF condition and only one (IMP) for the ongoing condition. Since both tenses here are past tenses, they both should encode perfectivity for a child. Consistent with the GAF hypothesis, the child then will always choose the completed picture and will refuse the ongoing one.

3.2.2 Participants

The same three groups of thirty-six native Ukrainian-speaking children who participated in the production experiment were also the subjects in this comprehension experiment.

3.2.3 Stimuli and procedure

The experiment is a modified version of the picture selection task developed by Van Hout & Hollebrandse (2001) and a forced-choice comprehension task by Weist (Weist 1991). In this experiment, the child is presented with two pictures at the same time. The one depicts a situation in progress and the other shows a completed situation with a clear result (see Appendix B for a set of pictures). A child being tested hears a sentence either with a verb in the past *imperfective* or past *perfective* tense and asked to point at the picture that corresponds to the experimenter's statement. Thus, the choice is between a completed and incomplete action in the past. The same 12 verbs that were tested in the previous production experiment are also applied to this experiment. However, the difference here is that we are testing the child's grasp of the concepts (telicity/atelicity) in the past tense.

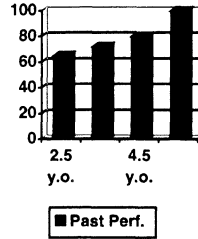
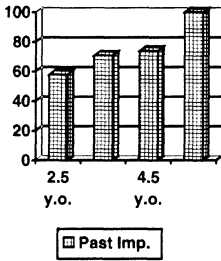
Again, a second experimenter records the child's answers. In total, there are 12 trials (6 PP and 6 PI) for each child. The order of the perfective and imperfective questions was randomized across and within trials. The duration of the experiment is 20 minutes. The subjects receive a rest period of at least 48 hours between the two experiments.

3.2.4 Results

Children did surprisingly well on this task. Table 2 shows the mean percentages correct for both condition for the different age groups, where the correct picture for the past imperfective is the ongoing picture and for the past perfective the completed one.

Table 2.
The mean percentages correct. Comprehension data.

Age	Past IMP	Past PERF
2.5 y.o. (n=12)	58 % (41)	65% (46)
3.5 y.o. (n=12)	71% (51)	72% (52)
4.5 y.o. (n=12)	74% (53)	80% (57)
adults (n=12)	100%	100%



The Charts above show correct choices for perfective and imperfective verbs. Contrary to what we expected, the results show that young native Ukrainian speakers can match the perfective form to the complete situation and imperfective to the incomplete. Therefore, the results indicate that children could comprehend past tense equally when it is applied to events that are completed and to events that are incomplete.

The question is whether children made the correct choice. If they guessed randomly, they would make the correct choice about half the time they chose the right verb. A 2-tailed t-test was performed to see if children's answers were different from chance. Indeed, all the results are significant ($p < .001$). Thus the children's performance is significantly better than chance. We can therefore conclude that the results do not support either the LAF or the GAF hypothesis.

4. Conclusions

The main goal of this study was to test the predictions of both versions of the AFH: LAF and GAF hypotheses on the Ukrainian data. Two experiments were performed. Experiment 1 tested young children's production by observing what

verbal aspectual morphology (perfective or imperfective) children predominantly use to express past and present. Experiment 2, a comprehension study, tested whether children use perfective morphology to encode telicity and imperfective atelicity.

The results of the experiments reject the assumption that 2.5 - 4.5 year olds restrict their use of perfective grammatical aspect to past tense and imperfective to present. The data demonstrate that even the youngest children could comprehend past tense equally when it is applied to events that are completed and to events that are incomplete. Therefore, the results of at least these experiments do not seem to support either LAF or GAF.

However, in Experiment 1, though children used PI verbs, the mean percentage correct for the PP answers is still much higher. From Experiment 2, it also appears that children in all age groups did somewhat worse with PI verbs than with PPs. The explanation for this may stem from children's reliance on natural classes.¹⁰ From a linguistic perspective, perfective aspect conflates with past tense, whereas imperfective conflates with present. From a cognitive perspective, completion and past tense naturally form one class, whereas incompleteness and present tense pattern together as well.

Given the above observations, I conclude that aspectual information plays some role in children's interpretation of tense, but since even the youngest subjects could differentiate PP and PI, I strongly believe that tense is somewhat independent of aspect, and the strength of the AFH is weakened by the results of these experiments. Similar conclusions for Russian were drawn by Bar Shalom & Snyder (2002), Kazanina & Phillips (2003), among others.

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¹⁰ In the sense of Wagner (2001) and Shirai & Anderson (1995, 1996). Shirai & Anderson, however, use the notion of prototype, where telicity conflates with perfectivity and pastness, and atelicity with imperfectivity and presentness.

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APPENDIX A

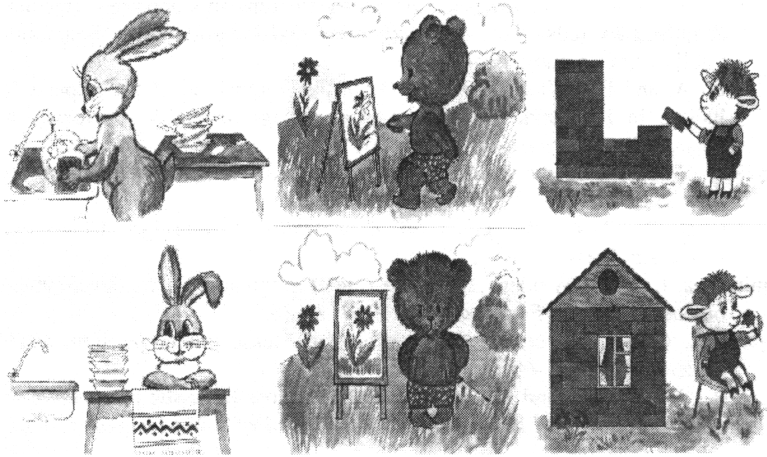
List of predicates used in stimuli for Experiment 1 and 2 (most of the verbs are adopted from van Hout & Hollebrandse (2001)). The first verb in each row is imperfective present, the second is imperfective past and the third is perfective past. Perfective prefixes are in bold.

1. jist' jiv zjiv (eat a sausage)
2. ytaje, ytav, **pro** ytav (read a book)
3. buduže, buduvav, **z**buduvav (build a house)
4. malyuje, malyuvav, **nam**alyuvav (paint a picture)
5. pje, pyv, **v**pyv (drink milk)
6. pyše, pysav, **nap**ysav (write a letter)
7. remontuje, remontyvav, **vid**remontuvav (repair a car)
8. myje, myv, **po**myv (wash a plate)
9. dyvyt'sja, dyvyvsja, **po**dyvyvsja (watch TV)

10. pidmitaje, pidmitav, pidmiv (sweep the floor)
11. skladaje, skladav, sklav/**poskladav** (gather toys)
12. nalyvaje, nalyvav, nalyv (pour a glass of juice)

APPENDIX B

I do not have space here to provide a full set of pictures used in the production study, but I hope the idea of what they look like is clear from the three picture below. Events denoted by the same verbs as those used in the comprehension experiment (see Appendix 1) are depicted.



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