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THE DEVELOPMENT OF NARRATIVE STRUCTURE IN GREEK L1

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ABSTRACT

The present study seeks to investigate how 7, 9 and 12-year-old Greek-speaking children differ in their ability to encode the temporally ordered events of a story as constituents of narrative structure. The research was conducted on the basis of a written, picture-elicited narrative. The results show that 7 and 9-year-olds show a tendency not to mark the causal relations between events, but to produce linear narratives with local temporal discourse organization. 12-year-olds begin more systematically to encode causal relations between events and episodes of the story. The ability, however, to produce complete episodes which are hierarchically organized appears as fully developed only in adult narratives. These results indicate that global-level mastery of narrative discourse organization still develops after the age of 12.

Keywords: L1, narrative development, discourse, narrative structure

1. Introduction

The acquisition of the grammatical system of any native language is considered to be completed by the age of 5 years. However, language development still continues after the age of 5. Along with the acquisition of a number of complex grammatical structures (e.g. passive constructions, relative clauses etc) and the development of vocabulary, there is evidence that important changes take place in later language development. Many researchers (Karmiloff-Smith 1979; 1986; Berman and Slobin 1994; Hickmann 2003) have demonstrated that even simple linguistic structures, such as determiners, undergo changes in their use during the transition from the local intrasentential to the global intersentential level of discourse. Thus, it seems that an important aspect of late language development is associated with the organization of utterances in long spans of connected discourse, which involves the reorganization of the already mastered linguistic structures in order to express new functions at the discourse level.

The present study concerns late language development, as it examines the development of the ability to create global narrative discourse organization in Greek-speaking children 7-12 years of age. The main objective of this study is to investigate how, with increasing age, children differ in their ability to produce coherent narrative discourse, i.e. to encode the temporally ordered events of a narrative as constituents of narrative structure.

1.1 Narrative discourse

Narrative, as the most common form of extended discourse, is the text type that has mainly been studied with respect to late language development. Narrative discourse has some distinctive characteristics in relation to other text types. The first characteristic is the temporal sequence of events. Labov and Waletsky (1967, 28) define narrative as "any sequence of clauses which contains at least one temporal juncture". Accordingly, Smith (2003, 14) describes narrative mode as advancement in narrative time. This advancement is based on sequence, since the events of the narrative are being perceived as occurring one after the other.

However, the temporal sequence of events, although a necessary condition to characterize a text as a narrative, is not enough. Another criterion for the classification of a text as a narrative is the existence of a "deviation" or "complication" in the normal and expected course of events, which causes a series of events aiming at restoring the initial equilibrium state (Todorov 1968; Bruner 1991, 11). Therefore, besides the relation of temporal succession between events, narrative is also characterized by causal relations between one of more events.

Finally, another important dimension of narrative discourse is its high degree of decontextualization. Narratives can be abstracted from the immediate situational context and can stand on their own, since their production does not necessarily require the involvement or mediation of an immediately present addressee (Benveniste 1966; Toolan 2001, 226). For this reason, narrative discourse production triggers decontextualized linguistic choices; typical extralinguistic elements (for instance, deictics) exhibit intralinguistic functions.

1.2 Narrative structure

Research on narrative structure has aimed at providing principles or rules to capture the general properties of structurally well-formed stories. Two main approaches and two influential models, respectively, have been proposed: the story grammar model (Rumelhart 1975; Thorndyke 1977; Mandler and Johnson 1977; Stein and Glenn 1979; Trabasso, van den Broek and Suh 1989) and the Labovian model (Labov and Waletzky 1967; Labov 1972).

The present study employs the Causal network model of Trabasso, van den Broek and Suh (1989), which belongs to the tradition of story grammars. According to this model, the content of each clause in a story can be classified into one of six categories: *Setting*, where the main characters, the time and the place of the story are introduced, *Event*, which sets up a problem for one of the main characters, the character's *Internal Response* to this event (i.e. perceptions, emotions, cognitions, beliefs etc), which evokes a *Goal* motivating an *Attempt* to solve the problem, and the *Outcome* of this attempt. These categories form an episode.

Trabasso, van den Broek and Suh (1989) showed that the structural components of episodes and the episodes themselves can be linked by causal relations in a causal network representation of any given story. The six categories of information are connected to each other with causal relations in multiple ways. These relations reflect the causal logical inferences made either by the recipient during story comprehension or by the narrator during story production. The Causal Network Model is illustrated in Figure 1. The arrows connecting the categories represent the causal relations between them:
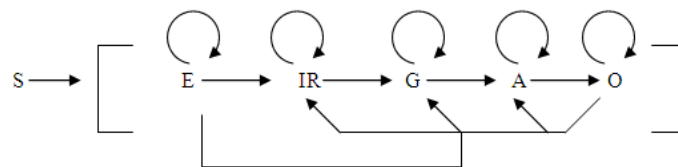

Figure 1 Causal network model (Trabasso, van den Broek and Suh 1989)

The Causal network model has been applied to the study of story production on the basis of a picture series (Trabasso and Nickels 1992; Trabasso and Rodkin 1994). Trabasso and Rodkin (1994, 87) point out that the narration of a picture-elicited story is a joint process of event interpretation and language production. This process involves prior knowledge or interpretation, through logical inferences, of the sequence of pictured events and the relations that link the events together. This interpretation is constrained by the degree to which the narrator recognizes the protagonist's plan aiming to resolve a problem and, subsequently, encodes the protagonist's actions in a way consistent to this plan. Thus, the creation of a complete and coherent story results from the coherent representation of the sequence of the depicted events, which requires the ability to make logical inferences that link the events into episodes and also link episodes by causal relations.

1.3 The development of narrative structure

From a developmental perspective, studies focusing on narrative structure have examined children's productions in spontaneous (personal or fictional) or picture-elicited narratives (Botvin and Sutton-Smith 1977; Applebee 1978; Stein and Glenn 1982; Stein 1988; Peterson and McCabe 1983; Hudson

and Shapiro 1991; Berman and Slobin 1994; Trabasso and Nickels 1992; Trabasso and Rodkin 1994; Shapiro and Hudson 1997). These studies show a gradual development of narrative structure from about 3 to 12 years, while children demonstrate global-level organization of narrative discourse much later than the acquisition of the grammatical system is completed, between ages 9-12.

What is considered as an important factor for the development of narrative structure is the hierarchical organization of narratives around a character's goal-attainment plan. According to the findings of previous research, with increasing age children produce stories of greater structural complexity: they advance from the production of simple event sequences to the production of complete episodes which are hierarchically organized. Production of complete episodes is characterized by the implicit or explicit encoding of characters' motives, causally connected to the actions they perform and their outcomes.

1.4 Objectives and research questions

Developmental studies on narrative structure in bilingual children provide evidence that the development of narrative structure is largely language-independent (Kupersmitt and Berman 2001). However, investigating narrative structure in a particular language, such as Greek, where little research has been conducted on narrative development, serves some additional objectives, besides the study of the development of narrative structure *per se*. The main objective of the present study is to provide developmental evidence for children's ability to construct narrative structure in Greek, which can complement evidence from ongoing research on the development of specific linguistic phenomena at the discourse level, such as anaphora, temporality etc.,

The present study seeks to investigate children's ability to organize the events of the story into a series of episodes consisting of a number of structural components and episodes in a hierarchical macrostructure. To this end, the study examines different aspects of the ability to construct narrative structure, on the basis of the following research questions: How Greek-speaking children differ in their ability to encode: a) the events of the story as structural units of episodes, b) characters' actions as attempts to attain a goal, c) the causal relations between the episodes of the story?

2. Method

2.1 Sample

The study is cross-sectional. The Greek-speaking subjects are primary school pupils. The sample consists of four age groups, 7, 9, 12 years-old children and adults, with 20 subjects each (Table 1). Adults were included in the sample as a control group, representing a developmental stage where linguistic and cognitive development are complete. This age group also allows the investigation of whether the ability to create narrative structure is still developing after the age of 12.

Each age group comprises equal number of male and female subjects. All children come from families of middle socioeconomic status and during the period of data collection they were enrolled in primary schools of Athens and Alexandroupolis[1]. Adults were 25-40 years old, middle-high SES.

Speakers of Greek		
Age	No of subjects	
	Male	Female
7	10	10
9	10	10
12	10	10
Adults	10	10
Total	40	40

Table 1 The sample of the study

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[1] The children enrolled in primary schools of Alexandroupolis consisted part of the monolingual control group of the research project "Assessing language proficiency of the Muslim minority children in Thrace", conducted during 2003 as part of the "Education of the Muslim Minority Children" Programme of the Greek Ministry of Education (see Tzevelekou *et al.* 2008 for details).

2.2 Elicitation material and procedure

Narratives were elicited on the basis of a picture series, which is an adapted version of the "cat story" picture series originally designed by Maya Hickmann (Hickmann 2003). The "cat story" comprises 6 pictures, which depict a short, simple story (Appendix I): Mother-bird leaves the nest to bring food to her little birds. A cat comes by and attacks the birds, while a dog pulls the cat down and chases him away.

Elicitation procedure was held at children's schools, into their classrooms during school hours. Subjects were given the "cat story" in a single-page sheet and were asked to write down the story they see in the pictures. Particular emphasis was given to the elicitation conditions, in order to ensure that the subject and the researcher do not share mutual knowledge of the story and that the elicited text belongs to the expected text type. To this end, oral instructions specifically stated that the story addressee would not have the pictures available, so he/she should understand the story without any reference to the elicitation material. In this way, students were encouraged to produce narrative discourse, rather than the description of individual pictures, as well as a decontextualized story, i.e. a story that would not contain any deictic elements.

2.3 Transcription, annotation and analysis

Stories were transcribed and annotated using the CLAN program of the CHILDES system (MacWhinney and Snow 1985). Data transcription followed the conventions of the CHAT program, adapted to the characteristics of Greek on the basis of the transcription system proposed by Kati and Kantzou (2001).

For every parameter of narrative structure under study, a particular annotation scheme was created. The criteria used for the development of the individual annotation schemes are described in the respective subsections of section 3 (*Results*).

Data were statistically analyzed in order to identify the statistically significant differences between the different age groups. To this end, the non parametric *U* test (Mann-Whitney) was applied.

3. Results

3.1 Episodic structure

The first research question addresses children's ability to create episodes which contain a number of structural units. On the basis of the Causal network model of Trabasso, van den Broek and Suh (1989) (see section 1.2), the content of each clause of the story was classified into one of the six categories of episodic structure: *Setting*, *Event*, *Internal Response*, *Goal*, *Attempt* and *Outcome*. The following general criteria were applied for annotating a clause as belonging into one of these categories: a) Setting: verbs in Past Imperfective (Paratatikos) (e.g. *there was, was sitting*), indefinite NPs introducing characters (e.g. *a mother-bird*), adverbials of place (e.g. *on a tree*), b) Event: presentational structures, action or motion verbs (e.g. *came along*, *showed up, approached, climbed*), c) Internal response: lexical elements expressing characters' cognitions, emotions and beliefs (e.g. *he understood*, *he was aware*, d) Goal: volitional verbs, embedded clauses of purpose (e.g. *he wanted to eat them*, *to protect the nest*) e) Attempt: verbs expressing attempt or effort (e.g. *tried*)) f) Outcome: lexical elements expressing success or failure (e.g. *fortunately, unfortunately, he did it*).

The ability to create episodes is measured by the number of units of episodic structure contained in the stories produced. The distribution of the six categories of episodic structure in the stories of the four age groups is shown in Chart 1. All structural units of episodes are included in the stories of all age groups. This indicates that children of all ages are able to construct episodes which contain basic structural components. However, there is a difference between adults and children of all age groups. The results show that the most frequent unit in children's stories is *Event*. Events are characters' actions which are not causally connected to other events of the story, but they are presented one after the other in a linear way, forming event sequences. This finding suggests that children's stories of all age groups are characterized by local narrative discourse organization. This is also a first indication that construction of complete episodes is not systematic until the age of 12. In example 1, which comes from a story of a 7 year-old child, events are presented one after the other in the form of sequence and they are connected with temporal relations.

Adults' stories contain significantly less Events than all children age groups (7y-adults: U=69, p=0.000, 9y-adults: U=114, p=0.020, 12y-adults: U=118.5, p=0.027). This finding suggests that the ability to construct complete episodes is still developing after the age of 12. Only adults have gone beyond the stage of forming event sequences and they systematically encode events as units of episodic structure (example 2).
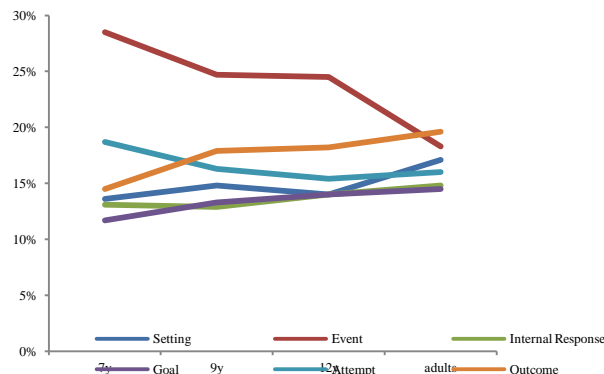

Chart 1 Structural units of episodes by age group

(1) Όταν έφυγε η μαμά η γάτα σκαρφάλωσε επάνω στο δέντρο. Μετά ήρθε ένας σκύλος. Μετά από λίγο γύρισε η μαμά τους με το φαγητό. Μόλις σκαρφάλωσε η γάτα στη φωλιά ο σκύλος την τράβηξε από την ουρά.
'When the mother left the cat climbed up the tree. Then a dog came along. After a while their mother came back bringing food. Once the cat climbed to the nest, the dog pulled him down by the tail.' (7y)

(2) μια γατούλα πλησίασε το δέντρο που βρίσκονταν τα παιδιά της (*E*). Τα κοίταζε με ενδιαφέρον (*IR*) γιατί μάλλον ήθελε να τα φάει (*G*). Αφού η γατούλα σιγουρεύτηκε ότι η Σίσυ είχε απομακρυνθεί ανέβηκε στο δέντρο (*A*) για να φάει τα πουλάκια. Την ώρα που ανέβαινε όμως εμφανίστηκε ο πιστός φίλος της Σίσυς ο Μπόμπος σκύλος και τράβηξε τη γατούλα από την ουρά την κατάλληλη στιγμή πριν αρπάξει η γατούλα τα πουλάκια (*O*).
'a cat approached the tree with the bird nest (*E*). He was staring at them (*IR*), because he probably wanted to eat them (*G*). When the cat made sure that Sissy was away, he climbed up the tree (*A*) to eat the little birds. But, while he was climbing, Sissy's loyal friend, Bobo the dog, came by and pulled the cat down just before the cat catches the little birds (*O*).' (adult)

3.2 Characters' attempts to attain a goal

The second research question concerns children's ability to infer and appropriately encode characters' plans to attain a goal, establishing causal relations between goals and attempts. According to the Causal network model, understanding the underlying goals which motivate characters' actions is a key condition for the creation of a complete and coherent episode (Trabasso, van den Broek and Suh 1989).

Every utterance that refers to actions taken by the story characters was annotated either as an attempt to attain a goal or as a simple action without an explicitly or implicitly expressed goal. In the "cat story" there are three cases of such actions and their respective goals (in bold): a) mother-bird is leaving the nest **to bring food to the little birds**, b) the cat is climbing the tree **to eat the little birds**, c) the dog is attacking the cat **to push him away** / **to rescue the little birds**. The criteria used for annotating an action as an attempt to attain a goal belong to two categories: a) grammatical or lexical means which explicitly state a character's goal (e.g. embedded clauses of purpose, volitional verbs), b) pragmatic and evaluative elements implying a goal, without it being explicitly stated (e.g. *the faithful dog*, *the dog who always chases the cat* etc).

Chart 2 shows the percentages of actions encoded as attempts to attain a goal and simple actions without an underlying goal, appearing in the stories of the four age groups. The results show that adults encode characters' actions as attempts to attain a goal more frequently than all children age groups (7y-

adults: U=77.5, p=0.001, 9y-adults: U=74.5, p=0.000, 12y-adults: U=121, p=0.018), while 7 year-olds encode characters' goals less frequently than 12 year-olds (U=123, p=0.028). These results indicate that with increasing age the ability to understand and appropriately encode characters' actions as relevant to a goal plan is developing. Children, especially 7 and 9 year-olds, tend to present the relevant actions as temporally related to each other, rather than as attempts causally related to their goals (example 3). Since, as mentioned earlier, the degree to which the narrator can infer and apply in a consistent way a goal-attainment plan in a series of events affects the construction of coherent episodes, this finding reinforces the conclusions drawn from the examination of the first parameter of narrative structure (see section 3.1) that the ability to construct complete and coherent episodes is developing from 7 to 12 years of age. This ability is still developing after the age of 12, since only adults appear to systematically express and encode characters' actions as purposeful attempts.
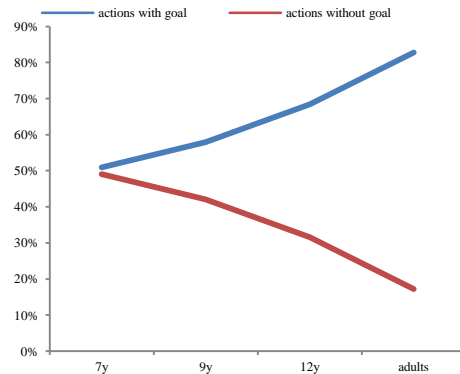

Chart 2 Actions with or without a goal by age group

(3) Μετά από λίγο γύρισε η μαμά τους με το φαγητό. Μόλις σκαρφάλωσε η γάτα στη φωλιά ο σκύλος την τράβηξε από την ουρά.
'After a while their mother came back with food. When the cat climbed to the nest the dog pulled him down' (7y)

(4) Ο σκύλος την είδε και θέλησε να τη σταματήσει γι' αυτό που πήγαινε να κάνει.
'The dog saw him and wanted to stop him from what he was planning to do.' (12y)

(5) Έλα όμως που στη γειτονιά ήταν κι ένας σκύλος. Στους σκύλους όπως όλοι ξέρουμε αρέσει να κυνηγούν τις γάτες.
'But a dog was in the neighborhood. As we all know, dogs like to chase cats.' (adult)

Moreover, qualitative analysis of the linguistic means used by the subjects to encode actions as attempts to attain a goal reveals that adults systematically express characters' goals implicitly, making references to their stereotypical properties (e.g. *the protective mother*, *the evil cat*, *the faithful/good/protective dog*, example 5). This characteristic appears only sporadically in the stories of the 12 year-olds, who tend to explicitly encode characters' goals (example 4) and is missing from the stories of the two younger age groups. This indicates that adults incorporate characters into a global cognitive schema (e.g. cats are always chasing birds, dogs are chasing cats), which contributes to the formation of a complete mental representation of the story and, consequently, to the construction of narrative structure.

3.3 Causal relations between episodes

The third research question addresses children's ability to understand, infer and appropriately encode the causal relations between the story episodes. This ability exceeds the episode level and applies to the level of the story macrostructure.

There are two cases of causal relations between the "cat story" episodes; the first episode, the episode of mother leaving the nest to bring food to her little birds, can be connected to the second episode, the episode of the cat's attack, with enablement relation, since mother's departure gives the cat the opportunity to attack. Moreover, the third episode, dog attacking the cat, is embedded to the second episode (cat's attack) and the two episodes can be connected with a cause-effect relation, since dog's attack prevents the fulfillment of the cat's plan.

The criteria used to identify the causal relations between episodes were specifically developed for the purposes of the present study (Table 2). This is because this parameter of narrative structure has not been widely studied, as most of the developmental studies focus on the encoding of causal relations at the interclausal level with causal conjunctions. On the basis of these criteria, causal relations were annotated in the stories of all age groups.

1st – 2nd episode (enablement)	2nd – 3rd episode (cause-effect)
a) lexical items (adjectives) indicating that after their mother's departure the little birds were left alone (e.g. *alone*, *unprotected*, *helpless* etc)	a) evaluative devices indicating the positive outcome for the birds of the dog's attack (e.g. *fortunately*, *saved*, *safe*, *relieved* etc)
b) lexical items (verbs) indicating that the cat is waiting for the mother to leave (e.g. *wait*, *stark* etc)	b) evaluative devices and lexical items (verbs) indicating the negative outcome for the cat of the dog's attack (e.g. *unfortunately*, *stopped* (*the cat*), *pushed/took away*, *prevent*, *force to come down*)
c) expressions indicating that the cat is taking advantage of mother's departure (e.g. *she finds the opportunity*, *she doesn't waste time*, *she wouldn't miss this opportunity* etc)	c) non factual *before*-clauses indicating that there is a causal connection between the two events, since the main clause event (dog's attack) prevents the *before*-clause event from happening (cat's attack) (e.g. *he pulled the cat down at the right moment, before he catches the little birds*)
d) lexical items (verbs) of cognition or perception indicating that the cat was aware that the mother was away (e.g. *knew*, *understood*, *observed*, *noticed* etc)	d) counterfactual conditional sentences (e.g. *if the dog hadn't appear, the birds wouldn't be alive anymore*)

Table 2 Criteria for identification of causal relations between the "cat story" episodes

The percentages of the presence and absence of causal relations between the "cat story" episodes are shown in Chart 4. Again, adults encode the causal relations more frequently than all children age groups (7y-adults: U=32, p=0.000, 9y-adults: U=49.5, p=0.000, 12y-adults: U=74, p=0.000), while 7 year-olds encode causal relations less frequently than the 12 year-olds (U=116, p=0.014). Thus, the examination of this parameter shows that the ability to express causal relations linking episodes together into a hierarchical narrative macrostructure is gradually developing between 7 and 12 years and is still developing after the age of 12.
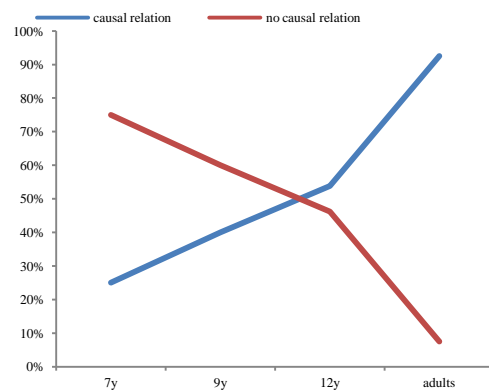

Chart 3 Presence and absence of causal relations by age group

More specifically, the examination of the two types of causal relations (Chart 5) shows that all children age groups encounter difficulties to infer and encode the enablement relation between the first (mother leaving the nest) and the second episode (cat attacking the nest) compared to adults (7y-ad: U=60, p=0.000, 9y-ad: U=80, p=0.000, 12y-ad: U=90, p=0.000). Moreover, 7 and 9 year-olds have difficulties in encoding the cause-effect relation between the second and the third episode. All children age groups tend to link the first and the second episode with temporal relation rather than with enablement relation (example 6), while the 12 year-olds show a more adult-like performance only regarding the connection between the second and third episode (examples 7-8).
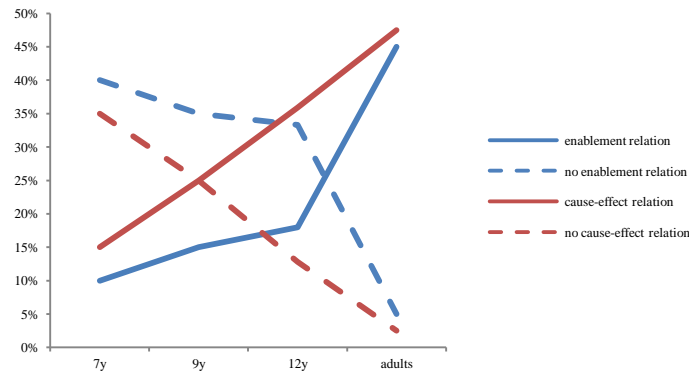
Chart 4 Presence and absence of causal relations by type of relation

(6) Αλλά μια γάτα που περνούσε από κει τα είδε και ήθελε να τα φάει και ανέβηκε στο δέντρο αλλά ένας σκύλος...
'But a cat passing by saw them and wanted to eat them and she climbed up the tree but a dog…' (7y)

(7) και παραλίγο το κακό να γίνει. Αν δεν είχε εμφανιστεί ο σκύλος του σπιτιού τα πουλάκια δεν θα ζούσαν πια.
'and things almost went wrong; if the dog had not showed up, the little birds wouldn't be alive anymore' (12y)

(8) και τράβηξε την γατούλα από την ουρά την κατάλληλη στιγμή πριν αρπάξει η γατούλα τα πουλάκια.
'And he pulled the cat from his tail just in time before the cat catches the little birds.' (adult)

The difficulties of the 7 and 9 year-olds to encode the causal relation between the second and the third episode could be possibly attributed to their difficulty to control, in parallel, the local temporal relations between the events of the story and the global narrative macrostructure. The same seems to hold for encoding the enablement relation. However the enablement relation has an additional difficulty, even for the 12 year-olds. This relation is entirely the result of subjective interpretation of events, and is not supported visually by the "cat story" picture series. The two characters, mother and cat, do not come into any contact, and it is merely the absence of the former character which is causally associated with the presence of the latter. This favors the association of the two events with a temporal relation rather than a causal one.

4. Conclusions

The results of the study on the development of narrative structure in Greek-speaking children show that the ability to create global-level narrative discourse organization develops from 7 to 12 years, and the development continues even after the age of 12. Although children of all age groups demonstrate knowledge of the story schema, since they are able to produce stories which contain basic structural elements, it was observed that they favor linear event sequencing rather than causally relating the narrated events. This characteristic is more pronounced in the stories of the 7 and 9 year-olds. These two groups have more characteristics in common in most of the parameters examined, compared to the 12 year-olds. 12 year-olds seem to be in a transitional stage where they begin to attribute more consistently goals and motives to story characters and to encode causal relations between events and episodes. However, only adults demonstrate a fully developed ability to integrate events into a coherent mental representation of the story and encode them as causally related components of episodic structure and hierarchical macrostructure, producing stories of structural complexity and global-level organization.

The developmental trends found in the present study are consistent with previous research on narrative development, according to which development advances from the production of simple event sequences to the production of complete episodes (Peterson and McCabe 1983; Berman and Slobin 1994; Trabasso and Nickels 1992; Trabasso and Rodkin 1994; Shapiro and Hudson 1997), setting the age where narratives appear to approach adult-like performance at 12 years.

Children's observed tendency to favor local linear event sequencing rather than hierarchical causal connection between events, in comparison to adults, could be attributed to the cognitive effort required to control the different aspects of storytelling at the same time. Narrative production is a complex task which requires the coordination of several capacities, such as knowledge of the story schema, production of grammatical and meaningful sentences, processing and establishing interclausal - temporal and/or causal- relations, regulating information flow across utterances, causal inferencing and world knowledge. All these capacities activated in the process of narrative production draw on the same limited cognitive resources. In case or written story production, cognitive load is even more burdened by the process of handwriting, which is a particularly demanding task and is considered not to be fully automated even in secondary school-aged children (Christensen 2005). Thus, although research on each individual component of storytelling suggests that these skills are present in school-aged children, the results of the present study indicate that children, even at the age of 12, experience difficulties in putting all the "pieces" together in a complete whole, which affects their ability to construct hierarchical narrative macrostructure.

The results of the present study provide developmental evidence on the ability to construct narrative structure in Greek, which could serve as descriptors of narrative discourse production in Greek L1, with applicability to studies on Greek L2 acquisition or language impairments. Moreover, the linguistic criteria for defining the parameters of narrative structure in Greek could also be applied to studies in other research fields where narratives are being investigated, such as natural language processing.

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Appendix I

The elicitation material of the study (adapted version of the original "cat story" picture-series).