

**THE INVENTORY OF SEMANTIC ROLES AS A TEXT COMPREHENSION  
PARAMETER**

***O INVENTÁRIO DE FUNÇÕES SEMÂNTICAS COMO UM PARÂMETRO DE  
COMPREENSÃO DE TEXTO***

***EL INVENTARIO DE ROLES SEMÁNTICOS COMO PARÁMETRO DE  
COMPRENSIÓN DE TEXTOS***

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**ABSTRACT:** In the present article, we studied young readers' understanding to add to our knowledge of the inventory and range of the semantic roles followed in the immediate oral recalls. Understanding of an expository 200-word Russian text studied by 22 Russian citizens between age 10-11 was evaluated with free memory. The obtained design of the semantic roles' inventory in the reading text and its recalls includes 2 kinds: principal positions and sub-propositions, the end of which fall into agents, conditions, and conditioners. The findings also confirm that nominal phrases used in the text as main propositions are typically substituted with verbs and verbal phrases in recalls. The authors suggest that the number and range of propositions are good predictors of text complexity

**KEYWORDS:** Text comprehension. Proposition. Semantic role. Social sciences. Experiment

**RESUMO:** Neste estudo examinamos a compreensão de jovens leitores com o objetivo de contribuir para nossa compreensão do inventário e da amplitude dos papéis semânticos reproduzidos nas lembranças orais imediatas. A compreensão de um texto expositivo em russo de 200 palavras lido por 22 nativos russos com idades entre 10-11 foi avaliada com memória livre. O padrão revelado do inventário dos papéis semânticos tanto no texto de leitura quanto em suas lembranças compreende dois tipos: proposições principais e subpropostas, as últimas das quais recaem em agentes, circunstâncias e modificadores. As chamadas correspondem ao texto de leitura no inventário das funções semânticas definidas. No geral, o estudo indica que os respondentes não reproduzem mais do que 40% das proposições do texto de leitura. Os achados também confirmam que as frases nominais usadas no texto como proposições principais são normalmente substituídas por verbos e frases verbais nas evocações. Os autores sugerem que o número e a variedade de proposições são bons preditores da complexidade do texto

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**PALAVRAS-CHAVE:** *Compreensão de texto. Proposição. Papel semântico. Ciências sociais. Experimento*

**RESUMEN:** *En este estudio examinamos la comprensión de los lectores jóvenes con el propósito de contribuir a nuestra comprensión del inventario y rango de los roles semánticos reproducidos en los recuerdos orales inmediatos. La comprensión de un texto expositivo en ruso de 200 palabras leído por 22 nativos rusos de entre 10 y 11 años se evaluó con memoria libre. El patrón revelado del inventario de los roles semánticos tanto en el texto de lectura como en sus recuerdos comprende dos tipos: proposiciones principales y subproposiciones, las últimas de las cuales caen en agentes, circunstancias y modificadores. Los recordatorios coinciden con el texto de lectura en el inventario de los roles semánticos definidos. En general, el estudio indica que los encuestados reproducen no más del 40% de las proposiciones en el texto de lectura. Los hallazgos también confirman que las frases nominales utilizadas en el texto como proposiciones principales suelen sustituirse por verbos y frases verbales en los recuerdos. Los autores sugieren que el número y rango de proposiciones son buenos predictores de la complejidad del texto.*

**PALABRAS CLAVE:** *Comprensión de textos. Proposición. Rol semántico. Ciencias sociales. Experimento*

## **Introduction**

While obtaining a language, people need to learn the definition of terms and combine words into syntactic structures to carry meaning. The power of the form-meaning mapping system of a language requires acquiring various sorts of information. Initially, individuals need to determine which forms they have to apply to display particular sorts of meaning. For instance, in English, transitive construction is applied to reveal causal intentions. Next, learners should determine how to connect semantic and syntactic roles in various formations. Finally, they must know the syntactic leads to mean employed by their language. For instance, agent–patient relationships in English are considered applying word order.

Thematic relation in some linguistic theories refers to the various roles that a noun phrase can play, depending on the action or state described by the verb commander (ruler), which is usually the main verb of the sentence. Slowly for example, in the phrase "the lily eats an apple", the lily does the act of eating, so he is an actor, the apple is something that is eaten, so he is an actionable. While most modern linguistic theories refer to these relationships in some way, both "general expressions" and "special relation" expressions can have different meanings.

The last decades have observed a wave of enthusiasm in studying comprehension study, and various procedures have been improved to assess the understanding of reading.

Sufficient reading comprehension as the reading instruction purpose is now evaluated applying various experiments ranging along multiple dimensions (MCNAMARA ET AL., 2017; MARINA & ALEKSANDER, 2015; IVANOV ET AL., 2018; SOLOVYEV ET AL., 2019; SOLOVYEV ET AL., 2019; SOLOVYEV ET AL., 2019; ANDREEVA ET AL., 2019; RINATOVNA EREMEEVA ET AL., 2019) readers' interest and abilities, time constraints (MCDANIEL ET AL., 2000; KINTSCH, 1977; KUKANOVA, 2008).

The action of comprehension implies "a process of stringing together a sequence of obtained word meanings until a "unit" has been achieved and then proceeding on to the next unit" (Royer, & Cunningham, 1981). Based on the Construction-Integration model (KINTSCH & WALTER KINTSCH, 1998), perception of a text requires 2 significant levels; in other words, a surface level described by syntax and words, and a textbase level outlined by propositions (MCNAMARA ET AL., 2017). Several propositions in a recall are employed as a means to evaluate reading comprehension (MCNAMARA ET AL., 2017). (ZWAAN & SINGER, 2003).

This present survey measures middle-school children's understanding of expository texts utilized in the courses. We investigated how respondents develop, produce and represent semantic parts of the reading text in their recalls.

The existing research has been intended to respond to two study inquiries:

RQ 1: What is the scope of the semantic roles in an expository reading text?

RQ 2: What kind of propositions are regularly dropped in the recalls?

## **Literature review**

### **Propositions**

The concept of 'proposition' is utilized in multiple studies aimed at assessment of comprehension (KINTSCH, 1977; KUKANOVA, 2008; ZWAAN & SINGER, 2003; FAUCONNIER, 1994; GUSARENKO, 2015).

A proposition is observed as a design unit in a text (MCNAMARA ET AL., 2017). The proposition concept arose from the philosophical section of logic and advanced to the language theories (GUSARENKO, 2015). S. Gusarenko (2015) explains that while considered in a discussion, a proposition (1) is to be regarded as an analytical description of that part of an utterance that indicates a particular situation of things narrated or explained (2) it is a cognitive-semantic arrangement which determines the position of the world by a language; (3) it is a symbolic mental composition concerning a situation model; (4) it is a definition of content of a predicate (GUSARENKO, 2015).

Propositions are observed as a mental unit associated with ontological status, capable of reducing the mental model's content parameters to a predicate-argument arrangement (KHUDYAKOV, 2000; FAUCONNIER, 1994; STARODUMOVA, 2005). Ch. Fillmore explains the essence of a proposition as 'a timeless collection of connections among names and verbs, isolated from the modal constituent.' (POLIKARPOVA, 2016; FILLMORE, 1968). E. Paducheva identifies a proposition as a result of predication (PADUCHEVA, 2004; STARODUMOVA, 2005).

### **Propositions and text comprehension**

Linguists evolved various ways to manage text understanding: definitions of each word in a text, capacity to gather words into orders, the number of propositions recalled. Propositions or idea units (CLARK & CLARK, 1977; ROBECK & RANDALL, 2017; CARROLL, 1978; ZWAAN & SINGER, 2003; TOWNSEND & BEVER, 1982) were recognized by Kintsch (1977) in the reading of stories comprehension. McDaniel et al. (2000) sought a propositional examination to test attentional requirements for texts. Connecting the number of propositions recalled to the interest, McDaniel (2000) recommends that less exciting tales need more supplies to maintain attention concentrated upon deciphering the unique propositions, whereby providing extra proposition-specific processing grows superfluous (MCDANIEL ET AL., 2000; PADUCHEVA, 2004; KARPOVA ET AL., 2010; KARPOVA ET AL., 2011; KASHKIN, E.V., & LYASHEVSKAYA, 2015).

Psychical and scientific investigations recommend that the number and inventory of propositions influence reading time, understanding and learning a text, hence, the text complexity (ZWAAN & SINGER, 2003; MCKOON & RATCLIFF, 1992; MUSTAJOKI, 2007).

Based on the study of propositions recalled by professionals in a literary text, V. Kukanova (2008) states that a recall as 'a secondary text' reflects ways and types of comprehension. The scholar also claims that the recalled propositions are limited by syntactic structures of a language (KUKANOVA, 2008).

O. Lyashevskaya defines a semantic role as 'an invariant over a variety of morphosyntactic ways of encoding a participant; similarly, semantically, it is a generalization

of the participant's functions in situations denoted by a group of predicates' (Kashkin & Lyashevskaya, 2013).

P. Griffith (1986) and R. Zwaan (2005) support the principles of structural grammar and apply the term 'argument' to suggest a noun, operating as an "goal", 'instrument', agent', 'beneficiary' 'patient' which complement a predicate (ZWAAN & SINGER, 2003; GRIFFITH ET AL., 1986; FILLMORE, 1982; DOWTY, 1991; STARODUMOVA, 2005)

## **Materials and Methods**

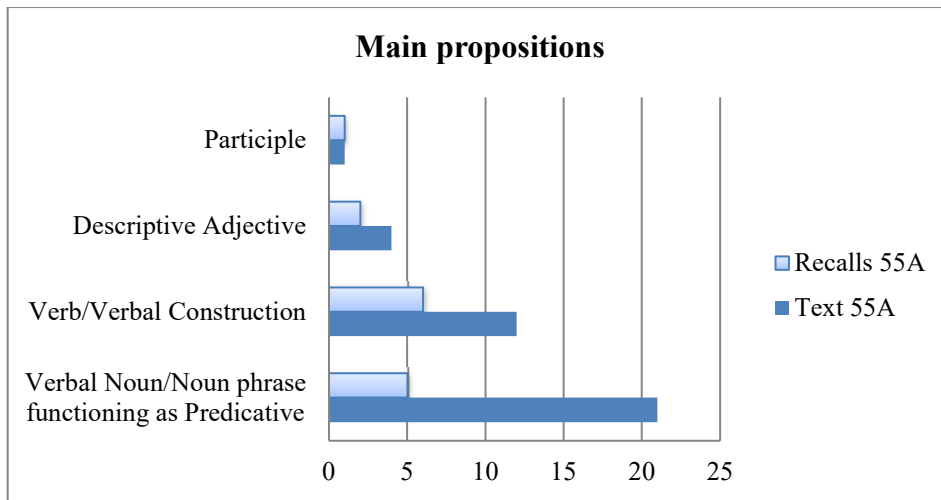
For the study we selected a 200-word expository text from "Social Sciences, 5" by Bogolyubov (2013) coded and hereinafter referred to as Text 55A. The text connects the house and family source thematically. It intends to foster responsibility and rational utilization of family resources, especially electricity, gas, and financiers. The subsequent detailed metrics of Text 55A measured with the aid of RusAC (<http://tykau.pythonanywhere.com>): the number of verbs 20, words 160, nouns 83, sentences 20, average sentence length (ASL) 8.0 words, adjectives 16, pronouns 30, adverbs 4, average word length (AWL) 2.65 syllables and Text readability SIS 6.1 verify the appropriateness of the text for 5th graders (Solovyev et al., 2019).

The test was carried with 22 participants, 10 – 11-year-old Russian residents, 13 boys, nine girls. The participants were picked for the research on the basis of the consequences of the General Knowledge subtest of WISC hold a medium GK index (11 – 17) (MAKARTHY ET AL., 2019).

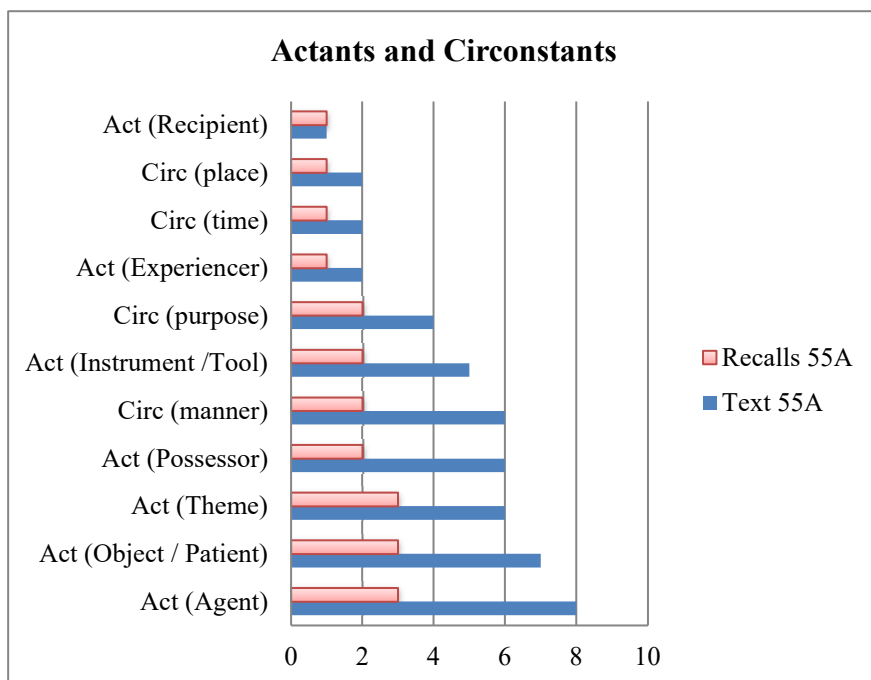
Respondents were recruited by face-to-face meeting with parents. We presented data regarding the research and the plan of examination sessions and demanded parents to approve an Approval letter.

## **Results and Discussion**

Considering the knowledge in the participants' recalls of Text 55A we created 3 semantic roles' groups: 1. Agents; 2. Main propositions; 3. Circumstants. The entire catalog of the semantic roles defined in Text 55A is presented in Figure 1 and 2.



**Fig 1.** The Main (Verbal) propositions inventory in Text 55A and its recalls



**Fig 2.** The Actants and Circonstants inventory in Text 55A and its recalls

The study reveals that Verbal Nouns (21) are shared amongst the foremost propositions, while verbal structures are prevalent in recalls. The least pervasive was the Participle (1 / 1), in recalls and the text.

The participants represented 40% of the reading text knowledge (see Table 1 below), which is observed over average (KAUSLER, 2012).

**Table 1.** The semantic roles distribution in Recalls 55A and Text 55A

Text 55A Recalls			Text 55A

Main propositions	17%	44%	Main propositions
Actants	15%	35%	Actants
Circonstants	6%	14%	Circonstants
Modifiers	1%	4%	Modifiers

The recall is compatible with the reading text in the inventory of semantic roles described. As nominators of the verbal phrases, central propositions, and verbs, are common in recalls, while the nominal words dominate the text.

### Conclusion

The investigation was sought to evaluate and compare the inventory and variety of the semantic roles in a Russian expository text and its recalls made by 10-11-year-olds.

The conclusions show that on average, recalls 40% of the reading text data: 41% of agents, 36,8% of the foremost propositions, and 42,8 % of circonstans. The design and catalog of the semantic roles in recalls are related to those in the reading text: The chief propositions amount to 38.8% in recalls and 41.7% in the reading text.

The semantic roles of Agent granted the majority of the semantic parts of recall and reading text, at 44.4% and 42.8% in turn. The position of the semantic roles of an agent both in the reading text and recalls involve a possessor, experience, sender, recipient, theme, instrument. The parts of Goal, Theme, Time, Place are badly created in the recalls (15%).

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