# Text Comprehension: A Synthetic Psychological/ Linguistic Framework

## Olga V. Shcherbakova

Saint Petersburg State University, Saint Petersburg, Russia
ORCID: https://orcid.org/0000-0002-9200-4310, e-mail: o.scherbakova@gmail.com

## Varvara A. Obolskaia

Saint Petersburg State University, Saint Petersburg, Russia
ORCID: https://orcid.org/0000-0001-6723-5339, e-mail: varavery@gmail.com

The article describes an interdisciplinary framework which we have developed to study verbal text comprehension based on a combination of psychological and linguistic approaches. The comprehension phenomenon is considered to be a result of a reversible transformation between verbal symbols and mental images of the to-be-comprehended material, with the obligatory condition of preserving its semantic invariance. We emphasize a gradual nature of comprehension and its reliance on a coordinated activity of the recipient's cognitive and emotional mechanisms. We pay particular attention to the negative potential of subjective projections in the comprehension process. We also describe the method of in-depth semi-structured interview, which allows for a multi-level explication of the processes involved in building up a mental representation of the text's content. As a model for studying the comprehension phenomenon, we suggest a short story "The Invisible Japanese Gentlemen" by G. Greene, which has a complex intrinsic structure of implicit meanings. Using linguostylistic and propositional analyses, we described the story's structure of implicit meanings and identified its various elements (87 in total) and 66 key textual propositions. The reliability analysis showed a high degree of consistency between the experts' ($\alpha = 0.6$ for elements, $\alpha = 0.67$ for propositions). This indicates that this text and the structure of its implicit meanings can serve as an adequate stimulus material for studying the comprehension phenomenon. Finally, based on in-depth semi-structured interview data (N = 30), we developed a set of quantitative criteria for assessing the completeness of text comprehension on a 5-point scale.

***Keywords:*** text, comprehension, implicit meanings, levels of comprehension, linguostylistic analysis, propositional analysis, in-depth semi-structured interview, subjective projections.

# Уровни понимания и градуальность смысловой организации текста: комплексный подход на стыке психологии и лингвистики

## О.В. Щербакова
Санкт-Петербургский государственный университет (ФГБОУ ВО СПбГУ),
г. Санкт-Петербург, Российская Федерация
ORCID: https://orcid.org/0000-0002-9200-4310, e-mail: o.scherbakova@gmail.com

## В.А. Обольская
Санкт-Петербургский государственный университет (ФГБОУ ВО СПбГУ),
г. Санкт-Петербург, Российская Федерация
ORCID: https://orcid.org/0000-0001-6723-5339, e-mail: varavery@gmail.com

В статье развиваются идеи предлагаемого нами подхода к изучению понимания вербальных текстов, основанного на совмещении психологической и лингвистической традиций. Феномен понимания рассматривается как результат взаимообратимого перевода осмысляемого содержания из вербально-символической формы в образную с сохранением смыслового инварианта. Подчеркивается, что понимание имеет градуальную природу и зависит от слаженной работы когнитивных и эмоциональных механизмов реципиента. Особое внимание уделяется описанию психических проекций как потенциальной угрозы пониманию, а также метода глубинного полуструктурированного интервью, открывающего возможности для «послойной» экспликации процесса построения ментальной репрезентации прочитанного и сопровождающих его затруднений. В качестве модели для изучения феномена понимания предлагается художественный рассказ Г. Грина «Невидимые японские джентльмены» со сложной организацией имплицитных смыслов. Для этого рассказа на основе лингвостилистического и пропозиционного анализа была описана уровневая структура имплицитных смыслов, выявлены 87 ее элементов и 66 ключевых пропозиций. Проверка согласованности экспертных оценок показала ($\alpha = 0{,}6$ для элементов и $\alpha = 0{,}67$ для пропозиций), что выбранный текст может служить адекватным стимульным материалом для изучения процесса понимания. На основе данных глубинных полуструктурированных интервью ($N = 30$) была разработана шкала количественной оценки полноты понимания текста, включающая пять уровней, каждый из которых получил содержательное описание. Новизна предложенного нами инструмента обусловлена тем, что он позволяет учесть как особенности структуры представленных в тексте смыслов, так и специфику той когнитивной деятельности реципиента, которая лежит в основе реконструкции текстового содержания.

*Ключевые слова:* текст, понимание, имплицитный смысл, уровни понимания, лингвостилистический анализ, пропозиционный анализ, глубинное полуструктурированное интервью, субъективные проекции.

## Introduction

In the field of the psychology of comprehension, numerous research strands exist, each varying in goals and employing different research methods. Among these, two primary directions can be identified. The first one focuses on the social aspects of comprehension, treating it as a feature of interpersonal/intergroup communication and a result of such communication. Here, researchers are usually interested in tools that communicants use to exchange information, and the main emphasis is placed on the impact of various situational, behavioral, and cognitive features on the efficiency of the communication process [7; 16]. Typical stimuli in such studies include real-life situations, imitations, and video recordings. The second major direction is aimed to explicate the cognitive underpinnings of comprehension. The focus here is on the cognitive processes of an individual unfolding

within their mental reality interiorized interpersonal relations and, if successful, leading to the comprehension and acquisition of new meanings [17; 27; 33]. Thus, researchers working in this field are more interested in the specifics of mental representations' build-up and functioning, patterns of cognitive processing underlying comprehension, and typical cognitive errors reducing its efficiency. This type of study usually involves various cognitive experiments.

One of specific cognitive experiments is about *text comprehension* regardless of whether the text is verbal [1; 5], iconic [20; 26], or creolized [22]. Any text implies an act of communication between its author (who imparted certain meaning into it) and its reader (who is supposed to extract this meaning). As the author's ideas are present in a text in an encoded form, a reader must identify the main information spots in a text and perform several intellectual operations that will allow him/her to 'unpack' the author's ideas, reconstruct them in his/her mental reality and, eventually, build up a semantic representation of the entire text. The more correctly these operations are implemented, the more thorough and faithful the text comprehension is.

From the cognitive psychology perspective, correct and thorough comprehension of a text or any other object is subject to two requirements. First, the recipient must represent the image with both mental images and verbal symbols. Second, the reader should be able to convert mental images into verbal symbols and vice versa without loss of any significant information [11; 34]. These two operations allow extraction of the most meaningful and context-independent features of an object, which are usually referred to as *meaning invariants*, which are essential for conceptual thinking as the most efficient form of human intelligence. Since conceptual thinking is highly dependent on socialization and targeted systemic education, it is not unusual that even adults with high psychometric IQ lack it [12].

Underdeveloped conceptual thinking, poor knowledge of the specific subject, a lack of time, and certain personal traits might prevent a person from the complete comprehension of a text. However, they may achieve partial comprehension with varied success. This is why comprehension is best described not as a binary ("got it"/"did not get it") but rather a gradual mental phenomenon. The gradual approach to comprehension was supported by many classical authors who distinguished different levels of comprehension in accordance with certain cognitive operations a recipient must perform to achieve each of these levels [12; 21; 23]. Noteworthy, cognitive behavior of recipients manifesting different levels of comprehension of a text as a string of verbal symbols corresponds to different levels of development of their symbolic operations that builds up through cultural-historical evolution of higher mental functions from their natural to cultural forms [13; 29]. Our data show that healthy adults with high education demonstrate all levels of text comprehension – from literal interpretations based on superficial facts to highly generalized abstract representations based on complex social and cultural background [35; 38]. We link it to the specificity of the comprehension process per se.

## Cognitive and emotional facets of comprehension

In contrast to a naïve view of thinking as the most abstract and 'pure' cognitive phenomenon that has nothing to do with emotional processes, there is a substantial amount of data providing clear evidence that thinking is not only linked to emotions but directly depends on them. In particular, emotions were demonstrated to serve as heuristics that direct and regulate thinking as well as provide metacognitive judgements on whether the task was successfully solved or not even before a person becomes aware of it [10]. Moreover, modulation of respondents' emotional states affects their creativity in answering cognitive tasks [39]. Therefore, comprehension as a result of thinking is also viewed as (at least) a two-fold phenomenon that incorporates cognitive and emotional aspects [30; 32].

Based on this gradual multifaceted approach, we studied the comprehension of verbal jokes as specific types of texts and described five levels of *cognitive* comprehension and three levels of *affective* comprehension [35]. Cognitive comprehension results from formal cognitive operations aimed at decoding the text's structure. This type of comprehension is a result of mental reconstruction of the key idea of the text, which is achieved through (1) identifying a polysemic keyword(s) and all its/their meanings, (2) detecting all actors/characters described in the text, (3) mental reconstruction of all semantic connections between them, (4) metacognitive control over these types of mental activity. Affective comprehension, in turn, requires the ability to develop an emotional contact with each character described in the text and depends both on (1) the emotional attachment to these characters and on (2) a differentiation between the affective reactions of the characters and those of the reader.

These two types of comprehension – cognitive and affective ones – are considered largely autonomous; however, they might still affect each other to a certain extent. Notably, in healthy individuals, higher levels of cognitive comprehension usually correspond to higher levels of affective comprehension. Furthermore, high levels of affective comprehension might compensate for the lack of cognitive comprehension, and vice versa, which results in satisfactory overall comprehension [35; 38]. Interestingly, psychiatric patients demonstrate not only lower levels of both cognitive and affective comprehension compared with healthy controls but also lower connection between these two sides of comprehension which might even lead to mutual decompensation due to disintegration of mental operations underpinning semantic processing [18].

## Subjective projections

Another illustration of the significant role emotional processes play in text comprehension is *subjective projections* that often hinder the build-up of comprehensive semantic representation and prevent reaching high levels of cognitive and affective comprehension in both healthy readers and psychiatric patients [35]. Subjective projections are distortions of the original information presented in a text that a reader is (partly) unaware of. They appear (1) when the text's content triggers some domains of a reader's personal experience related to emotionally loaded situations (current ones or those that happened in the past), values, beliefs, fears, etc., and/or (2) when the reader struggles with decoding the text's cognitive structure, which results in multiple gaps in its mental representation. To "patch" the mental representation, these gaps are filled with subjective projections, which significantly distort the text's meaning by bringing in additional, mostly irrelevant, meanings. In our previous research, we have shown that subjective projections appear in both healthy individuals [35; 43] and psychiatric patients [18; 25]. Although they are mostly destructive, in some cases they can play a more neutral role in semantic reconstruction of a text: particularly, if the reader possesses substantial metacognitive resources, which allow for monitoring and controlling over subjective projections as well as for differentiating them from the objective information provided by the text, these projections do not impair comprehension. If, however, metacognitive regulation is weak, such a control cannot be performed; in this case, subjective projections, despite being the reader's own mental production, are mistaken by him/her for an external information extracted from the text. Cognitive distortions of this type inevitably lead to inefficient comprehension [36].

## Semi-structured in-depth interviews as a tool for studying comprehension

Despite the destructive potential of subjective projections, their very emergence and their functional patterns can provide us with some important insights on *intelligence*. In particular, defining exact ways of deficient representations' build-up as well as determinants of other types of cognitive errors can suggest ways for their potential amelioration. This requires a scrupulous step-by-step online reconstruction of the reader's first-person experience underpinning the development of fully-fledged comprehension. In a natural, non-experimental setting, this experience stays hidden inside inner reality of a reader and, thus, remains unreachable for an observer. However, in purposefully organised research setting it can be explicated, at least partially, using specific research tools, such as *semi-structured in-depth interview* custom-designed for specific cognitive investigations. Semi-structured in-depth interview is one of the so-called soft methods that have recently gained huge popularity in social sciences and psychology. Soft methods differ from traditional highly standardized psychological tools by their flexibility and adaptability which enable a tight, stable and trusting contact between researchers and participants – the type of contact that can never be obtained in conventional experimental settings, sterile and impersonal [19]. Moreover, by carefully following a unique subjective logic of each participant's thinking, the researcher can obtain various details about their intellectual status, patterns of individual cognitive behavior, productive and destructive cognitive habits, self-limiting beliefs, etc.

It is only possible to meet these requirements by investing a proper amount of time in thorough examination of stimulus text at the preparatory stage of research. This preparation often includes *expert assessment* aimed at (1) a detailed description of the text's cognitive structure (including the explication of main semantic units and semantic links between them) and reconstruction of the author's main ideas and messages; (2) compiling a list of cognitive operations a reader has to undertake in order to understand these ideas and messages; (3) designing a model of an "ideal" comprehension which will be used as a reference for assessing the interpretations of the stimulus text provided by the participants later.

## A combination of psychological and linguistic approaches

We propose that the most promising approach to the expert assessment of verbal texts is a multidisciplinary one, combining both psychological and linguistic theoretical frameworks. Importantly, both psychologists and linguists agree that, first, the comprehension of a text is more than just decoding of verbal strings and includes a range of complex cognitive operations and, second, the process of comprehension as well as its result should be considered as layered, gradual phenomena.

Different researchers have proposed different models to describe the gradual nature of comprehension. Most of these models agree on using the number of meanings (and correspondences between them) extracted by the reader as an index of the text's comprehension level. Based on models used in psychology and in linguistics, at least four main criteria for distinguishing the different levels of comprehension could be posited:

1. Text's structure and cognitive operations necessary for its decoding.

2. Specificity of the meanings implied in the text by the author.

3. Cognitive behaviour of the reader.

4. Specificity of the text's meanings reconstructed by the reader.

It is not surprising that the most detailed models based on the text's structure originated in linguistics

[3; 41], although psychologists sometimes also use the same logic [21]. Another popular approach in linguistics is based on the specificity of the meanings put into the text by its author.

Psychologists, in turn, tend to focus on readers' cognitive behaviour – a behaviour aimed at understanding complex relations between external objects and situations, as well as reader's cognitive styles and thinking patterns [31; 34]. Also, cognitive behavior is (1) aimed at the perception and processing of information necessary for problem solving; (2) grounded in and navigated by an individual's cognitive needs; (3) a behavioural manifestation of both cognitive abilities and personal traits of an individual; (4) based not on separate cognitive operations but on an integral system of an individual's cognitive resources [44]. Therefore, cognitive behaviour includes cognitive habits, heuristics, problem areas and other cognitive phenomena based not only on intellectual abilities but also affected by an individual's personality in general [Ibid.].

Previously, an approach based on readers' cognitive behaviour and cognitive operations they perform was suggested by V.I. Narolina [24]. L.E. Tumina introduced a model of comprehension based on the specificity of the text's meanings reconstructed by a reader, which includes three levels [31]. Later, O.V. Shcherbakova and E.A. Nikiforova combined these two approaches to develop a psychological technique for structured quantitative assessment of metaphorical texts' comprehension [25; 45]. Another promising combination of the above two approaches was devised by T.A. van Dijk and W. Kintch, who differentiated levels of comprehension in accordance with the text representation quality [46]. The important role that semantic structure of a text plays in its comprehension by a reader is also highlighted by researchers developing the Schema-Assembly theory [42]. This model implies that text comprehension is based on both bottom-up and top-down processes (bridging text and its reader and reader and the text, correspondingly). Indeed, considering both the specificity of the cognitive behaviour of a reader and the specificity of the text's meanings reconstructed by them seems to be the most productive approach to considering *the role of the reader* in text comprehension.

To sum up, although the various approaches to comprehension differ in their theoretical bases and suggested methodologies, there are important similarities in their view of comprehension as a gradual phenomenon. Building on this previous research, we argue that the optimal approach to comprehension is a synthetic one, which should meet the following two criteria:

1. Taking comprehension as a gradual process involving various cognitive operations based on different domains of the reader's experience and knowledge, in relation to the gradual structure of the text.

2. Considering the specificity of meanings imparted by the text's author and later reconstructed by the reader.

**Insights from texts with implicit meanings**

As a synthetic theoretical framework, we propose studying *implicit meanings* which is relevant both for assessing text-specific factors and for the analysis of readers' psychological traits. Implicitness is a feature of linguistic communication that makes the recipient aware of the relations between the unit(s) of a message that are otherwise covert, or even allows the creation of new relationships between these units [15, p. 21]. Implicit meanings are not directly represented in the text; rather, they can be explicated when a reader uses their background knowledge to match certain structures of the text with one another [15]. Some authors claim that implicitness is a basic feature of any message in natural language [28], which means that explication of implicit meanings is a prerequisite for complete comprehension of any text. This approach suggests the "possibility to use language for expressing meanings to various degrees of explicitness" [4, p. 70], and it allows considering (1) all types of unobvious/non-literal/metaphoric meanings or ambiguity and (2) the gradual structure of comprehension.

Therefore, the most informative model for studying comprehension involves *texts with complex multilayered structure of implicit meanings*. As a text of this type, in our own research we used the short story "Invisible Japanese Gentlemen" by G. Greene [14], whose Russian translation was subjected to rigorous linguistic stylistic and propositional analyses. These analyses resulted in a list of 87 independent elements of the structure of implicit meanings that were found at stylistic, syntactic, lexical semantic, textual, conceptual, and intertextual levels. In addition, we revealed 66 key propositions of the short story. Later, the results of both analyses were additionally supported by expert analyses performed independently by a sample of professional linguists (n = 8) (see [2]; Cronbach's alpha test confirmed the reliability of experts' evaluations (α= 0,6 for elements and α = 0,67 for propositions). These results clearly show that 'Invisible Japanese Gentlemen' (or at least its Russian-language version) and the structure of its implicit meanings may be well-suited to be used as stimulus material for studying the comprehension process.

Next, we conducted 30 semi-structured in-depth interviews with participants (60% females, aged 24–53, Me = 40,5, who read the G. Greene's short story for the first time) in order to to collect a range of different interpretations of the short story. Based on the results of qualitative analysis of the interpretations, we developed a scale for quantitative assessment of text comprehension [37]. Correlations between the levels of comprehension achieved by readers and various types of implicit meanings present in their verbal reports (assessed on a binary scale: "present"/"absent") can be used as a source of additional information about the comprehension process [Ibid.].

Texts with complex leveled organization of implicit meanings are a promising model for studying comprehension due to such features as:

1. Complexity that prevents automatic decoding [3] and requires a "slow-motion" mode for examining cognitive operations that underlie meaning reconstruction.

2. Potential connection between different types of implicit meanings and mental processes (both cognitive and emotional, such as comparison and detecting similarities, mental spaces build-up [26; 35; 46], development of empathic contact [1; 35], generalization [3; 41; 46], etc.); this allows a quantitative assessment of comprehension as well as a qualitative description of the reader's cognitive behaviour that remains invisible when using other types of stimuli.

3. A large variety of implicit meanings which differ from one another in terms of their structure, content and, accordingly, cognitive operations they require for interpretation. Such a variety, along with a text's redundancy, provides an opportunity for a more detailed analysis considering a broader spectrum of individual differences in text comprehension process. As a result, the obtained data allow extraction of the most typical patterns of comprehension and a rich description of cognitive strategies readers use for meaning reconstruction, as well as of common cognitive mistakes reducing the comprehension efficiency.

4. Layered organization of meanings which are to be interpreted. Based on this, the cognitive behaviour of a reader can be analysed at several different levels (micro contextual level, level of horizontal connections between various elements of the same text level, level of vertical connections between different text levels), which opens ways for assessment of both comprehension depth and dynamics. Through qualitative analysis of the reader's ability to detect and process different types of implicit meaning in texts (as well as the analysis of mistakes he/she commits in the process) a researcher gets an indirect access to mental operations that underpin comprehension.

## Conclusions

The combined approach we propose here can help to fill the gaps in our understanding of comprehension processes. In particular, it can provide more accurate operationalization of comprehension and open ways for linking individual differences to individual differences in choosing certain text structures as starting points for meaning explication and specifics of text's parcellation. Additionally, this synthetic methodology allows us to view the comprehension process as a successive mental processing of the text's semantic structure.

Finally, it is worth noting that one of the key open questions in comprehension research is an assessment of comprehension dynamics and underlying mental operations in real time. This issue cannot be adequately tackled without considering the individual psychological traits of a reader and the specifics of his/her cognitive behaviour – along with various textual factors. Therefore, the most promising approach to comprehension should integrate the achievements of both psychology and linguistics, allowing to study simultaneously both sides of this phenomenon. Within this approach, we suggest making use of verbal texts with complex structure of implicit meanings, as texts of this kind open ways for (1) explication of cognitive operations that belong to different levels of mental activity and provide the reconstruction of text's meaning, and (2) linking these cognitive operations to different levels of the text's structure.

### References

1. Andryushchenko E.A., Gol'shtein Ju.R., Shcherbakova O.V. Polnota ponimaniya mnogoznachnykh tekstov u lits s razlichnym urovnem emotsional'nogo intellekta i modeli psikhicheskogo [Understanding of ambiguous texts in people with different levels of emotional intelligence and Theory of Mind]. *Voprosy psihologii* [*Psychology Issues*], 2020. Vol. 66, no. 6, pp. 66—80. (In Russ.).

2. Aver'yanova V.A., Shcherbakova O.V. Mezhdu tekstom i chitatelem: instrumentarii dlya izucheniya ponimaniya implitsitnykh smyslov verbal'nykh tekstov. Chast' 1 [Between text and reader: Research framework for studying the comprehension of implicit meanings in verbal texts. Part I]. *Voprosy psikholingvistiki* [*Journal of psycholinguistics*], 2022, no. 3(53), pp. 42—61. (In Russ.).

3. Arnold I.V. *Stilistika sovremennogo angliiskogo yazyka*. [Stylistics of modern English language]. Moscow: Flinta, Nauka, 2002. 382 p. (In Russ.).

4. Babenko L.G. Obshchie metody i mekhanizmy vyyavleniya implitsitnogo soderzhaniya v yazyke i rechi [Common methods and mechanisms of identifying implicit content in language and speech]. In Vaulina, S.S. (ed.), *Semantiko-diskursivnye issledovaniya yazyka: Eksplitsitnost'/ implitsitnost' vyrazheniya smyslov.* Kaliningrad: Russian State University publ., 2006, pp. 8—19. (In Russ.).

5. Blinova E.N., Shcherbakova O.V. Vliyanie formata teksta na kognitivnuyu otsenku dostovernosti ego soderzhaniya [The impact of text's format on the cognitive

### Литература

1. *Андрющенко Е.А., Гольштейн Ю.Р., Щербакова О.В.* Полнота понимания многозначных текстов у лиц с различным уровнем эмоционального интеллекта и модели психического // Вопросы психологии. 2020. Том 66. № 6. С. 66—80.

2. *Аверьянова В.А., Щербакова О.В.* Между текстом и читателем: инструментарий для изучения понимания имплицитных смыслов вербальных текстов. Часть 1 // Вопросы психолингвистики. 2022. №. 3(53). С. 42—61. DOI:10.30982/2077-5911-2022-53-3-42-61

3. *Арнольд И.В.* Стилистика современного английского языка. М.: Флинта; Наука, 2002. 382 с.

4. *Бабенко Л.Г.* Общие методы и механизмы выявления имплицитного содержания в языке и речи / Под ред. С.С. Ваулиной // Семантико-дискурсивные исследования языка: Эксплицитность/имплицитность выражения смыслов. Калининград: Изд-во Рос. гос. ун-та, 2006. С. 8—34.

5. *Блинова Е.Н., Щербакова О.В.* Влияние формата текста на когнитивную оценку достоверности его содержания // Психологический журнал. 2022. Том 43. № 3. С. 89—101. DOI:10.31857/ S020595920020499-4

6. *Богин Г.И.* Обретение способности понимать: Введение в герменевтику. М.: Психология и Бизнес ОнЛайн, 2001. 731 с.

assessment of the information's reliability]. *Psikhologicheskii zhurnal* [*Psychology journal*], 2022. Vol. 43, no. 3, pp. 89—101. (In Russ.). DOI:10.31857/S020595920020499-4

6. Bogin G.I. Obretenie sposobnosti ponimat': Vvedenie v germenevtiku [Gaining the ability to understand: Introduction to hermeneutics]. Moscow: Psikhologiya i Biznes OnLain, 2001. 731 p. (In Russ.).

7. Bodalev A.A. Vospriyatie i ponimanie cheloveka chelovekom [Perception and comprehension of human by human]. Moscow: Pedagogika, 1982, 200 p. (In Russ.).

8. Bondarko L.V., Zagoruiko N.G., Kozhevnikov V.A., Molchanov A.P., Chistovich L.A. Model' vospriyatiya rechi cheloveka [Model of human speech perception]. Novosibirsk: Nauka, 1968. 59 p. (In Russ.).

9. Vasil'ev L.G. Lingvisticheskie aspekty ponimanija. Diss. dokt. filol. nauk. [Linguistic aspects of comprehension. Dr. Sci. (Philology) diss,]. Kaluga, 1999, 251 p. (In Russ.).

10. Vasil'ev I.A., Popluzhnyi V.L., Tikhomirov O.K. Emotsii i myshlenie. [Emotions and thinking]. Moskva: Publ. Mosk. un-ta, 1980, 192 p. (In Russ.).

11. Vekker L.M. Psikhicheskie protsessy: v 4 t. T. 2 [Mental processes: in 4 vol. Vol. 2] Leningrad: Publ. Leningr. un-ta, 1976, 339 p. (In Russ.).

12. Vygotskii L.S. Myshlenie i rech'. Psikhologija [Thinking and speech. Psychology]. Moscow: EKSMO-press, 2002, pp. 262—511. (In Russ.).

13. Vygotskii L.S. Sobranie sochinenii: v 6 t. T. 6. Nauchnoe nasledstvo [Collected works in 6 vol. Vol. 6. Scientific legacy]. Moscow: Pedagogika, 1984. 400 p. (In Russ.).

14. Grin G. Nevidimye yaponskie dzhentl'meny [Invisible Japanese gentlemen]. *Osobye obyazannosti* [*Special duties*]. Moscow: B.S.G.-Press, 2004, pp. 338—342. (In Russ.).

15. Ermakova E.V. Implitsitnost' v khudozhestvennom tekste. Diss. dokt. filol. nauk. [Implicitness in fiction. Dr. Sci. (Philology) diss.]. Saratov, 2010, 236 p. (In Russ.).

16. Znakov V.V. Psikhologiya ponimaniya: problemy i perspektivy [Psychology of understanding: Problems and perspectives]. Moscow: In-t psihologii RAN, 2005. 448 p. (In Russ.).

17. Znakov V.V., Tikhomirov O.K. Ponimanie teksta kak protsess postanovki i resheniya myslitel'noi zadachi [Text comprehension as a thinking task formulating and solving]. *Vestnik Moskovskogo universiteta. Seriya 14: Psikhologiya = Moscow University bulletin. Series 14. Psychology*, 1991, no. 3, pp. 7—21. (In Russ.).

18. Ivanova E.M., Obraztsova V.S., Grabovaya E.V., Shcherbakova O.V. Osobennosti ponimaniya yumora pri psikhicheskikh zabolevaniyakh: kachestvennyi analiz [Peculiarities of understanding humor in mental patients: a qualitative analysis]. *Voprosy psikhologi = Issues in Psychology*, 2018, no. 6, pp. 77—87. (In Russ.).

19. Kvale S. Issledovatel'skoe interv'yu [Research interview]. Moscow: Smysl, 2009, 301 p. (In Russ.).

20. Linkevich K.V. Empiricheskoe izuchenie kharakteristik ponimaniya risovannykh situatsii [Empirical study of characteristics of drawn situations comprehension]. *Uchenye zapiski universiteta im. P.F. Lesgafta* [*Scientific reports of Lesgaft University*], 2016, no. 2(132), pp. 244—249. (In Russ.). DOI:10.5930/issn.1994-4683.2016.02.132

21. Luriya A.R. Lektsii po obshchei psikhologii: ucheb. posobie dlya vuzov [Lectures on general psychology. Handbook for university students]. Saint Petersburg: Piter, 2004, 320 p. (In Russ.).

22. Merzlyakov D.E., Ignatova E.S. Psikhologicheskie protsessy ponimaniya smysla kreolizovannogo teksta pri chtenii postov v sotsial'noi seti [Psychological processes of understanding the meaning of a creolized text when reading social media posts]. *Informatsionnoe obshchestvo*, 2023, no. 2, pp. 31—39. (In Russ.). DOI:10.52605/16059921_2023_02_31

7. *Бодалев А.А.* Восприятие и понимание человека человеком. М.: Педагогика, 1982. 200 с.

8. *Бондарко Л.В., Загоруйко Н.Г., Кожевников В.А., Молчанов А.П., Чистович Л.А.* Модель восприятия речи человека. Новосибирск: Наука, 1968. 59 с.

9. *Васильев Л.Г.* Лингвистические аспекты понимания: дис. ... д-ра филол. наук. Калуга, 1999. 251 с.

10. *Васильев И.А., Поплужный В.Л., Тихомиров О.К.* Эмоции и мышление. М.: Изд-во Моск. ун-та, 1980. 192 с.

11. *Веккер Л.М.* Психические процессы. Т. 2. Л.: Изд-во Ленингр. ун-та, 1976. 339 с.

12. *Выготский Л.С.* Мышление и речь // Психология. М.: ЭКСМО-пресс, 2002. С. 262—511.

13. *Выготский Л.С.* Собрание сочинений: В 6-ти т. Т. 6. Научное наследство / Под ред. М.Г. Ярошевского. М.: Педагогика, 1984. 400 с.

14. *Грин Г.* Невидимые японские джентльмены. Перевод с английского В. Вебера. Особые обязанности. М.: Б.С.Г.-Пресс, 2004. С. 338—342.

15. *Ермакова Е.В.* Имплицитность в художественном тексте: дис. ... д-ра филол. наук. Саратов, 2010. 236 с.

16. *Знаков В.В.* Психология понимания: проблемы и перспективы. М.: Ин-т психологии РАН, 2005. 448 с.

17. *Знаков В.В., Тихомиров О.К.* Понимание текста как процесс постановки и решения мыслительной задачи // Вестник Московского университета. Серия 14: Психология. 1991. № 3. С. 7—21.

18. *Иванова Е.М., Образцова В.С., Грабовая Е.В., Щербакова О.В.* Особенности понимания юмора при психических заболеваниях: качественный анализ // Вопросы психологии. 2018. № 6. С. 77—87.

19. *Квале С.* Исследовательское интервью. М.: Смысл, 2003. 301 с.

20. *Линкевич К.В.* Эмпирическое изучение характеристик понимания рисованных ситуаций // Ученые записки университета им. П.Ф. Лесгафта. 2016. № 2(132). С. 244—249. DOI:10.5930/issn.1994-4683.2016.02.132

21. *Лурия А.Р.* Лекции по общей психологии: учеб. пособие для вузов. СПб.: Питер, 2004. 320 с.

22. *Мерзляков Д.Е., Игнатова Е.С.* Психологические процессы понимания смысла креолизованного текста при чтении постов в социальной сети // Информационное общество. 2023. № 2. С. 31—39. DOI:10.52605/16059921_2023_02_31

23. *Морозова Н.Г.* О понимании текста // Известия АПН. 1947. №7. С. 191—240.

24. *Наролина В.И.* Психолого-педагогические факторы стимулирования познавательной и коммуникативной активности в развитии понимания иноязычного научного текста: дис. ... канд. психол. наук. М., 1985. 186 с.

25. *Никифорова Е.А., Щербакова О.В.* Понимание многозначных текстов в норме и у пациентов с невротическими расстройствами // Психология XXI века: системный подход и междисциплинарные исследования. 2017. С. 134—140.

26. *Осорина М.В.* К вопросу о качественной и количественной оценке уровней понимания изобразительного текста // Вестник Санкт-Петербургского университета. Психология. 2014. №. 3. С. 21—36.

27. *Петровский В.А.* Индивидуальность и саморегуляция: опыт мультисубъектной теории // Мир психологии. 2007. № 1(49). С. 13—30.

28. *Пешкова Н.П.* Имплицитность в тексте: препятствие vs. стимул и условие понимания // Вопросы психолингвистики. 2009. № 9. С. 219—231.

29. *Сахаров Л.С.* О методах исследования понятий // Культурно-историческая психология. 2006. Том 2. № 2. С. 32—47.

23. Morozova N.G. O ponimanii teksta [On text comprehension]. *Izvestiya APN*, 1947, no. 7, pp. 191—240. (In Russ.).

24. Narolina V.I. Psikhologo-pedagogicheskie faktory stimulirovaniya poznavatel'noi i kommunikativnoi aktivnosti v razvitii ponimaniya inoyazychnogo nauchnogo teksta. Diss. kand. psikhol. nauk [Psychological and pedagogical factors of stimulating learning and communicative activity in developing the ability to understand scientific texts in foreign language. Ph.D. (Psychology) Thesis]. Moscow, 1985, 186 p. (In Russ.).

25. Nikiforova E.A., Shcherbakova O.V. Ponimanie mnogoznachnykh tekstov v norme i u patsientov s nevroticheskimi rasstroistvami [Comprehension of ambiguous texts in healthy people and neurotic patients]. *Psikhologiya XXI veka: sistemnyi podkhod i mezhdistsiplinarnye issledovaniya* [*Psychology 21st century: systems approach and cross-disciplinary studies*], 2017, pp. 134—140. (In Russ.).

26. Osorina M.V. K voprosu o kachestvennoi i kolichestvennoi otsenke urovnei ponimaniya izobrazitel'nogo teksta [On the problem of quantitative and qualitative assessment of understanding]. *Vestnik Sankt-Peterburgskogo universiteta. Psikhologiya = Saint Petersburg University bulletin. Psychology*, 2014, no. 3, pp. 21—36. (In Russ.).

27. Petrovskii V.A. Individual'nost' i samoregulyatsiya: opyt mul'tisub"ektnoi teorii [Individuality and self-regulation: experience of the multi-subject theory]. *Mir psikhologii* [*World of psychology*], 2007, no. 1(49), pp. 13—30. (In Russ.).

28. Peshkova N.P. Implitsitnost' v tekste: prepyatstvie vs. stimul i uslovie ponimaniya [Implicitness in text: hindrance or prerequisite for understanding]. *Voprosy psikholingvistiki* [*Journal of psycholinguistics*], 2009, no. 9, pp. 219—231. (In Russ.).

29. Cakharov L.S. O metodakh issledovaniya ponyatii [On the tools for studying concepts]. *Kul'turno-istoricheskaya psikhologiya = Cultural-historical psychology*, 2006. Vol. 2, no. 2, pp. 32—47 (In Russ.).

30. Tikhomirov O.K., Vinogradov Yu.E. Emotsii v funktsii evristik [Emotions and their functions of euristics]. *Psikhologicheskie issledovaniya = Psychology studies*. Moscow: Publ. MGU, 1969, no. 1. pp. 3—24. (In Russ.).

31. Tumina L.E. Pritcha kak shkola krasnorechiya: ucheb. Posobie [Fable as a school of eloquence]. Moscow: Publ. LKI, 2008. (In Russ.).

32. Ushakov D.V. Sotsial'nyi intellekt kak vid intellekta [Social intelligence as a type of intelligence]. In Lyusin D.V., Ushakov D.V. (eds.), *Sotsial'nyi intellekt: Teoriya, izmerenie,*. Moscow: IP RAN, 2004, pp. 11—28. (In Russ.).

33. Tsvetkova L.S. Mozg i intellekt: narushenie i vosstanovlenie intellektual'noi deyatel'nosti [Brain and intelligence: Intelligence disorders and their recovery]. Moscow: Publ. MPSI; Voronezh: Publ. NPO «MODJeK», 2008, 424 p. (In Russ.).

34. Shcherbakova O.V. Fenomen ponimaniya kak intrapsikhicheskii mezh"yazykovoi obratimyi perevod (na primere komicheskikh tekstov) [Phenomenon of understanding as mental reversible transformation (evidence from comical texts)]. *Vestnik Sankt-Peterburgskogo universiteta. Seriya 12. Psihkologiya. Pedagogika. Sotsiologiya* [*Saint Petersburg University bulletin. Series 12. Psychology*]. *Pedagogy. Sociology*. 2008, no. 4, pp. 215—225. (In Russ.).

35. Shcherbakova O.V. Kognitivnye mekhanizmy ponimaniya komicheskogo. Diss. kand. psikhol. nauk. [Cognitive Mechanisms of Comical Texts' Understanding. PhD (Psychology) Thesis.]. Saint-Petersburg, 2009, 82 p. (In Russ.).

36. Shcherbakova O.V. Informatsionno-energeticheskaya organizatsiya nekotorykh patternov metakognitivnoi regulyatsii [Information and energy structure of some patterns of metacognitive regulation]. Vestnik Sankt-Peterburgskogo universiteta Seriya 12. Psikhologiya. Pedagogika. Sotsiologiya

30. *Тихомиров О.К., Виноградов Ю.Е.* Эмоции в функции эвристик Психологические исследования. М.: Изд-во МГУ, 1969. № 1. С. 3—24.

31. *Тумина Л.Е.* Притча как школа красноречия: учеб. пособие. М.: Изд-во ЛКИ, 2008. 368 с.

32. *Ушаков Д.В.* Социальный интеллект как вид интеллекта / Под ред. Д.В. Люсина, Д.В. Ушакова // Социальный интеллект: Теория, измерение, исследования. М.: ИП РАН, 2004. С. 11—28.

33. *Цветкова Л.С.* Мозг и интеллект: нарушение и восстановление интеллектуальной деятельности. М.: Изд-во МПСИ; Воронеж: Изд-во НПО «МОДЭК». 2008. 424 с.

34. *Щербакова О.В.* Феномен понимания как интрапсихический межъязыковой обратимый перевод (на примере комических текстов) // Вестник Санкт-Петербургского университета. Серия 12. Психология. Педагогика. Социология. 2008. № 4. С. 215—225.

35. *Щербакова О.В.* Когнитивные механизмы понимания комического: дис. ... канд. психол. наук. СПб., 2009. 82 с.

36. *Щербакова О.В.* Информационно-энергетическая организация некоторых паттернов метакогнитивной регуляции // Вестник Санкт-Петербургского университета. Сер. 12 Психология. Педагогика. Социология. 2012. № 3. С. 103—114.

37. *Щербакова О.В., Обольская В.А.* Между читателем и текстом: инструментарий для изучения понимания имплицитных смыслов вербальных текстов. Часть 2 // Вопросы психолингвистики. 2023. № 1(55). С. 112—127. DOI:10.30982/2077-5911-2023-55-1-112-127

38. *Щербакова О.В., Образцова В.С., Грабовая Е.В., Чан Р.В., Иванова Е.М.* Понимание юмора у здоровых людей и пациентов с психическими заболеваниями: когнитивный и эмоциональный компоненты // Вопросы психологии. 2018. № 4. С. 92—102.

39. *Isen A.M.* An influence of positive affect on decision making in complex situations: Theoretical issues with practical implications // Journal of Consumer Psychology. 2001. Vol. 11. № 2. P. 75—85. DOI:10.1207/S15327663JCP1102_01

40. *Kneepkens E.W.E.M., Zwaan R.A.* Emotions and literary text comprehension // Poetics. 1995. Vol. 23. P. 125—138. DOI:10.1016/0304-422X(94)00021-W

41. *Leech G. N., Short M.* Style in fiction: a linguistic introduction to English fictional prose. London: Pearson Education, 2007. 425 p.

42. *McClelland J.L., Rumelhart D.E., PDP Research Group.* Parallel distributed processing: Explorations in the microstructure of cognition. Vol 2: Psychological and biological models. Cambridge, MA: Bradford, 1986. 632 p.

43. *Rivin D., Shcherbakova O.* Understanding of comical texts in people with different types of attitudes towards humour: Evidence from Internet memes // The European Journal of Humour Research. 2021. Vol. 9. №. 2. P. 112—131. DOI:10.7592/EJHR2021.9.2.456

44. *Shcherbakova O.V.* How do our mental and personal experience mediate intellectual efficiency? Intellectual competencies as patterns of individual cognitive performance // Вестник Санкт-Петербургского университета. Психология. 2017. Vol. 7. № 1. С. 43—54.

45. *Shcherbakova O.V., Nikiforova E.A.* Fables comprehension in healthy adults: Does IQ matter? // Psychology. Journal of the Higher School of Economics. 2018. Vol. 15. № 2. P. 222—230. DOI:10.17323/1813-8918-2018-2-222-231

46. *Van Dijk T.A., Kintsch W.* Strategies of discourse comprehension. NY: Academic Press, 1983. 389 p.

[*Saint Petersburg University bulletin. Series 12. Psychology. Pedagogy. Sociology*], 2012, no. 3, pp. 103—114. (In Russ.).

37. Shcherbakova O.V., Obol'skaya V.A. Mezhdu chitatelem i tekstom: instrumentarii dlya izucheniya ponimaniya implitsitnykh smyslov verbal'nykh tekstov. Chast' 2 [Between the reader and a text: Research framework for studying the comprehension of implicit meanings in verbal texts. Part II.]. *Voprosy psikholingvistiki* [*Journal of Psycholiguistics*], 2023, no. 1(55), pp. 112—127. (In Russ.). DOI:10.30982/2077-5911-2023-55-1-112-127

38. Shcherbakova O.V., Obraztsova V.S., Grabovaya E.V., Chan R.V., Ivanova E.M. Ponimanie yumora u zdorovykh lyudei i patsientov s psikhicheskimi zabolevaniyami: kognitivnyi i emotsional'nyi komponenty [Humor comprehension in healthy people and mental patients: cognitive and affective components]. *Voprosy psikhologii* [*Psychology Issues*], 2018, no. 4, pp. 92—102. (In Russ.).

39. Isen A.M. An influence of positive affect on decision making in complex situations: Theoretical issues with practical implications. *Journal of Consumer Psychology*. 2001. Vol. 11, no. 2, pp. 75—85. DOI:10.1207/S15327663JCP1102_01

40. Kneepkens E.W.E.M., Zwaan R.A. Emotions and literary text comprehension. *Poetics*. 1995. Vol. 23, pp. 125—138. DOI:10.1016/0304-422X(94)00021-W

41. Leech G. N., Short M. Style in fiction: a linguistic introduction to English fictional prose. London: Pearson Education, 2007, 425 p.

42. McClelland J.L., Rumelhart D.E., PDP Research Group. Parallel distributed processing: Explorations in the microstructure of cognition: in 3 vol. Vol. 2. Psychological and biological models. Cambridge, MA: Bradford, 1986. 632 p. DOI:10.7551/mitpress/5237.001.0001

43. Rivin D., Shcherbakova O. Understanding of comical texts in people with different types of attitudes towards humour: Evidence from Internet memes. *The European Journal of Humour Research*, 2021. Vol. 9, no. 2, pp. 112—131. DOI:10.7592/EJHR2021.9.2.456

44. Shcherbakova O. How do our mental and personal experience mediate intellectual efficiency? Intellectual competencies as patterns of individual cognitive performance. *Vestnik Sankt-Peterburgskogo universiteta. Psikhologiya = Saint Petersburg University bulletin. Psychology,* 2017. Vol. 7, no. 1, pp. 43—54.

45. Shcherbakova O.V., Nikiforova E.A. Fables comprehension in healthy adults: Does IQ matter? *Psychology. Journal of the Higher School of Economics*. 2018. Vol. 15, no, 2, pp. 222—230. DOI:10.17323/1813-8918-2018-2-222-231

46. van Dijk T.A., Kintsch W. Strategies of discourse comprehension. NY: Academic Press, 1983. 389 p.

***Information about the authors***
*Olga V. Shcherbakova,* PhD in Psychology, Leading Research Fellow, Faculty of Psychology, Saint Petersburg State University, Saint Petersburg, Russia, ORCID: https://orcid.org/0000-0002-9200-4310, e-mail: o.scherbakova@gmail.com

*Varvara A. Obolskaia,* Research Engineer, Faculty of Psychology, Saint Petersburg State University, Saint Petersburg, Russia, ORCID: https://orcid.org/0000-0001-6723-5339, e-mail: varavery@gmail.com

***Информация об авторах***
*Щербакова Ольга Владимировна,* кандидат психологических наук, ведущий научный сотрудник факультета психологии, Санкт-Петербургский государственный университет (ФГБОУ ВО СПбГУ), г. Санкт-Петербург, Российская Федерация, ORCID: ORCID: https://orcid.org/0000-0002-9200-4310, e-mail: o.scherbakova@gmail.com

*Обольская Варвара Андреевна,* инженер-исследователь факультета психологии, Санкт-Петербургский государственный университет (ФГБОУ ВО СПбГУ), г. Санкт-Петербург, Российская Федерация, ORCID: https://orcid.org/0000-0001-6723-5339, e-mail: varavery@gmail.com