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Perception and understanding of information as determinants of the investigator's professional competence

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■ **Abstract.** The experimental study is devoted to solving the problem of perception and understanding by investigators of the National Police of Ukraine of forensic information about offences presented in the form of texts. The expediency of forming the personality of a specialist investigator based on the competence approach is declared, due to which the contradiction between the professionalism of the individual and the professionalism of the activity is eliminated in the educational process. The purpose of the study was to establish correlates of understanding (sensemaking) of the forensic text by investigators in the process of its compression; personal factors that mediate the investigator's understanding of official information in the text form of the presentation. The methodological tools were based on the method of structural and functional analysis and empirical methods, systematic, teleological, and dialectical approaches that allowed analysing the dynamics of text information transformation and changes in the parameters of its mental reflection in the subject's thinking. The study established the dynamics of compression of experimental texts, features of the intensity of text compression depending on the time modes of working with it and individual characteristics of the investigator's cognitive processes – perception, memory, and thinking. The highest intensity of compression of the expanded text and the allocation of significant information is achieved in the conditions of free time working with the text. It is proved that at the initial stage of understanding a text message, the ratio between the main and concretising elements of information is a criterion of competence, and at the final stage of understanding – the intensity of sensemaking. The indicators of text compression intensity are analysed and it is revealed that under the conditions of a given operating mode, the elimination of text elements occurs more intensively than in the conditions of free time mode. It is proved that the ratio between the intensity of compression and the level of text connectivity has direct proportional relationships at all stages of compression. It is established that the process of understanding is significantly influenced by typological features of conceptual and figurative components of memory and thinking. The provisions formulated in the paper will contribute to the search for more effective methods of professional and psychological training of future investigators and improve the psychological support of investigative activities

■ **Keywords:** investigative activity; text data; material comprehension; text compression; correlates of perception; personal factors

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■ Introduction

The establishment of the National Police in Ukraine provides for the reform of professional education based on competence, acmeological, and systematic approaches. This requires rethinking scientific, theoretical, and technological experience in the investigation of offences and strengthens interdisciplinary links aimed at developing the competencies of future investigators. The structure of the professional competence of a police investigator includes a number of functional competencies, among which the key one is informational, which determines the understanding and translation of forensically important information. The carriers of this information are oral and written texts that require the investigator to be able to display, structure, comprehend, and build mental constructs. Of particular importance is understanding as a system-forming process that combines perception with knowledge, during which new concepts and systems of understanding the objects of an offence are formed.

Information about an offence is a socially significant factor, and knowledge is a personal one. That is why the development of information competence of an investigator has the following areas: the ability to understand this information, and then turn it into knowledge as a personal asset. This process is determined by the personal characteristics of the investigator and the individual style of Information work mediated by them. Theoretical, methodological, and technological studies of cognitive psychology and psycholinguistics contribute to the clarification of the latter. Understanding is prepared by analysis in its various forms and completed by synthesis. A significant contribution to the development of ideas about semantic constructs of language understanding was made by American psycholinguist D. Slobin (2017). The theoretical foundations of understanding information presented in the form of texts are established by the prominent scientist N. Chomsky (2015). He emphasised the most important social and mental contexts in the perception and understanding of textual information.

Thus, a number of studies by L.M. Kisil (2021), H. Eldridge (2019), J. Monckton-Smith *et al.* (2022) are devoted to the investigation of various methodologies of information work of investigators and forensic scientists, the collection and interpretation of evidentiary data, and their weight in the materials of criminal cases. Australian researcher L.M. Howes (2017), found that investigators do not pay enough attention to scientific research in criminal investigations. This is especially true for the procedures for collecting, evaluating, and using information about the event of an offence, as a result of which these procedures are marked by the arbitrariness of investigators and largely lose their evidentiary value in court proceedings.

The authors agree with the idea that the process of understanding the text consists in highlighting the reference nodes in it, translating the text into "one's own language", gradually rearranging it, compressing this text to simple judgments about the meaning of the message (Molyako, 2019; Miroshnychenko, 2019; Panchenko, 2022). O.V. Heina (2022) investigated aspects of presentation as a form of compression of a scientific text. The researcher analysed the key steps of preparing and conducting a presentation, and the influence of certain personal characteristics on the process of creating a presentation. It is established that teaching text compression includes the development of students' culture of working with scientific materials, improving the skills of analysing, understanding, and writing secondary scientific texts based on the structural reflection of the source text.

The investigator's information activity is clearly systemic in nature. The collection of information about the event of an offence is carried out from various sources – direct participation in the conduct of investigative and operational actions, the procedure for interrogating participants in the investigation, analysis of documents and printed materials, which provides for an initial assessment, systematisation, and generalisation of the information received. However, the most important stage of working with information is the mental recognition by the investigator of the most significant features of an offence, understanding its circumstances, the behaviour of participants in the event, and creating holistic model ideas about its course, which is embodied by the investigator in working notes, diagrams, and text documents provided for by procedural requirements. It is this stage that characterises the specifics of the psychological process of isolating the most significant semantic units from text media, its recombination in the internal thinking language, and further extrapolation into the text materials of the case under investigation. The information search for research on the above-mentioned stage of the investigator's work with text information showed the absence of significant scientific developments that can contribute to improving the effectiveness of the investigation and improving the relevant information competencies of the investigator of the National Police of Ukraine.

The purpose of the study was to establish the determinants of understanding the forensic text by investigators in the process of its compression; personal characteristics that contribute to the investigator's understanding of official information presented in text form. Research tasks are selected according to the purpose:

- set time parameters for text compression while understanding it;
- characterise the specifics of isolating predicates of a legal text in the process of sensemaking;

- determine the dependence of text understanding on certain personal factors.

■ Literature Review

Some studies of Ukrainian and foreign researchers give fragmentary ideas about working with information in the system of law enforcement agencies, which actualises this problem, especially in the context of optimising the information support of the process of investigating offences at the modern scientific and technological level. L. Hudachek & A. Quigley-McBride (2022) investigated the impact of pre-existing beliefs and biases on information perception and understanding. Pre-existing beliefs have been found to influence the perception and interpretation of new relevant information, especially the assessment of forensic psychologists' testimony. Since both sides of the trial involve experts who support their position, the jury must face different expert opinions. The researchers analysed how biases affect jury judgments based on congruence and non-congruence of information from different experts.

A. Arndorfer & S.D. Charman (2022) investigated the effect of various methods for assessing the reliability of witness cognition on the reliability-accuracy ratio. In their opinion, there are no significant differences in the ratio of reliability and accuracy depending on the nature of the reliability assessment – verbal and descriptive reports on reliability turned out to be the same diagnosis of identification accuracy as numerical reports on reliability. Therefore, reliability acts as a predictor of accuracy, including when the witness's confidence is achieved through open responses. Thus, it is proved that the use of any of the above-mentioned assessment techniques (scales containing either words or numbers, or a verbatim report from the words of a witness) can contribute to the reliability and accuracy of the information reflected in the testimony.

American researchers L. Carlson *et al.* (2022) identified and analysed some of the determinants of professional communication of investigative subjects that determine the effectiveness of coordinating activities for collecting, evaluating, and interpreting evidence. Special attention is paid to the information saturation of evidence and the correction of individual interpretation under the influence of communicative interaction. Canadian forensic scientists B. Snook *et al.* (2020) critically evaluate the step-by-step interview model that the Royal Canadian Mounted Police (RCMP) has implemented in Canada. They provide compelling empirical evidence that the three basic practices (minimisation of guilt, mischaracterisation of evidence, and setting leading questions) in the step-by-step interrogation model lead to distortion of evidentiary information and, consequently, jeopardise the truth-finding function in police interrogations.

In addition, the researchers concluded that the promotion and dissemination of an interrogation protocol containing dangerous or untested methods may prevent detectives and Investigators of the Royal Canadian Mounted Police from achieving their goal of obtaining voluntary statements and accurate information.

Important are the research on the use of artificial intelligence to classify types of crimes, in particular, F. Schiliro *et al.* (2021) propose an innovative approach to identifying types of crimes. They use cognitive computing-enabled neural networks (CC-CNN) that are based on unstructured text data. Training algorithms are designed to provide police investigators with support and assistance in understanding different types of crimes. Another important task of investigators is to establish the motives of criminal offences. J. Chopin *et al.* (2021) investigate the issue of unmotivated homicides. They note that such murders are characterised by a lack of a clear motive, which can create difficulties for the investigation. The authors of the study suggest analysing models of geographical mobility and other aspects associated with such murders to better understand the situation. Their study allows the identification of various mobility patterns associated with unmotivated homicides and their correlations of criminal events.

Research on the problems of perception and understanding of information presented in text form focuses on individual and typological features of the cognitive sphere of the individual. I. Khizhnyak & N. Lyashov (2019) discussed the features of decoding three-dimensional texts by philological students, considering their future professional activities. They emphasised the role of cognitive skills and personal characteristics in the process of perception of texts. The results of their research showed that the perception of a literary text depends on the psychological type of student and their degree of personal professional development. Although philological students have developed skills in reproducing information from large texts, their ability to understand the subtext and motives of authors and characters is less developed. This highlights the importance of studying the deep mechanisms of these processes and developing practical measures for their further development.

Thus, a number of modern studies have established the basis for determining the factors and determinants of the investigator's information activity, in particular, those facts and circumstances of offences that are revealed in the process of obtaining information from its carriers – participants in the investigation, and which is extrapolated in the form of oral or written texts. These texts in the form of documents, protocols, and records on technical devices are perceived by the investigator, re-structured, compressed,

and acquire the quality of objective knowledge about the event of the offence, and are fixed in the forms provided for by the current legislation.

■ Materials and Methods

The systematic approach facilitated an understanding of the integrity of the perception of text information, recombination and synthesis of semantic elements of the text, and the relationship and interaction of the text compression process with the personal characteristics of the investigator. The importance of considering the content characteristics and psychological essence of the investigator's information activity in the context of the category "cognition" is substantiated based on a teleological approach. The dialectical approach led to an understanding of the dynamics of text information transformation and changes in the parameters of its mental reflection in the subject's thinking. Using the method of structural and functional analysis, the parameters of mental processing of text information and the role of individual mental cognitive processes in the process of sensemaking are determined.

In addition, a number of empirical methods were used in the study. In particular:

- modified text analysis method DITEX (diagram-text-sense) by N.V. Chepeleva (2015) is aimed at determining the structure of the text and the ratio of sensemaking and concretising text elements, the effectiveness of preserving basic information and the area of text compression;
- questionnaire focused on identifying features of thinking (Questionnaire determination of..., 2022);
- G. Ebbinghaus' blank methods and Bourdon-Anfimov tables for identifying the features of perception and memory (Portnytska *et al.*, 2016).

The experimental sample was made up of 200 investigators of the Main Investigation Department of the National Police of Ukraine with 5 years of experience. Quantitative characterisation of the sample ensured compliance with the requirements of variation statistics at the level of $P \leq 0.5$. The presence of work experience in the position determined a sufficient level of information competence. This study meets all ethical standards. As a test material, 4 artificial texts with a volume of 1 200 characters each describing the plots of criminal offences were used. Each text sequentially consisted of 30 matrix (sensemaking, predicates) text elements (MTE) and a number of complementary, concretising text elements (CTE). The subjects were asked to make a synopsis of the proposed text (1st order synopsis) while preserving the meaning of the crime plot. In the future, the same subjects were asked to make the 2nd order synopsis from the original text they had already compiled.

Two series of experiments were conducted. In the first series, the time spent working with the test

was not regulated, in the second – it was set. The investigators were asked to draw up the 1st order synopsis based on the source text, and then – the 2nd order synopsis based on the compiled 1st order synopsis. The source text was removed. After working with the texts, respondents were asked to answer five control questions from each text, based on the 2nd order synopsis, and in case of difficulties in the answers – the 1st order. Synopses of all orders were analysed using the DITEX method. Abstracting was carried out with a special indicator pen, which was connected to the stopwatch. This allowed registering certain time parameters, namely: T_w – total working time with text, and T_p – time from the beginning of reading the text to the beginning of abstracting.

The mathematical framework of the study was used to calculate standard deviations, Pearson's χ^2 -criterion, and Mann-Whitney and C. Spearman correlation coefficients.

The equation describes a straight line that characterises the graph indicator of text compression intensity:

$$J = \frac{100}{KX+b'} \quad (1)$$

where $K = \alpha$; X (%) – number of eliminated text elements; b – time from the beginning of reading to the beginning of the actual compression.

■ Results and Discussion

It should be noted in advance that the assumption that the compression of a forensic text by investigators is conditioned not only by the organisation and semantic units of the text, but also by certain personal properties of the subject of understanding, and specific features of mental cognitive processes, is confirmed by some studies that reflect these considerations.

The specific feature of the professional language of the investigator is characterised by a tendency to consolidate, forced, in fact, the use of a limited set of language tools, and the attitude to the maximum detection of the content side of the language units of the text is manifested in syntactic compression (syntactic condensation). Syntactic compression involves maximising the amount of information per text element. It is determined that various types and methods of compression are elliptical, deictic, and universal, the choice of which is dictated by a number of conditions related to the type of text (scientific, every day, etc.), – regulated by special rules that are determined by the semantic and formal structure of the text and its sequence. The desire to eliminate redundancy, to shorten the text without losing information characterises the complex of information competencies of the investigator. A total of 30 observation units were obtained for each experimental subject.

The reliability of the data meets the requirements of variation statistics and is $P \leq 0.5$.

Analysis of the scientific work on the problems of perception and understanding of information presented in textual form on the development of D. Slobin (2017), initiated by C. Barbero (2022), in which the researcher notes that reading begins with a rather short act of perception and immediately proceeds to the act of recognising written words. This act consists of two simultaneous and parallel actions – phonological, which turns groups of letters into sounds, and lexical, which provides access to an individual thesaurus (the meaning of perceived terms). Analysing the act of reading, the researcher emphasises that in its course the reader is interested not so much in a simple understanding of the perceived signs, but mainly in determining those characteristics of texts that help classify them as works of a particular genre. The latter is provided by the activation of the mental cognitive processes of the individual – attention, perception, memory, thinking, etc. Thus, when the readers perceive (reads and understands) the text, they first imagine the meaning of the text in perspective, and then form an objective and holistic model representation of the content of what is read. Therefore, the study proved that the quality of perception and understanding of information depends proportionally on the quality of the reading process.

In earlier studies, it was found that indicators of understanding test information are the number of semantic units of the text (predicates) preserved in the final synopsis, the intensity of information compression per unit of time, and the sequence of elimination of excessive commenting information while preserving the main meaning of the text (Androsiuk, 1980). Therefore, the study attempted to identify the features of highlighting the most significant information

by the investigator (according to the text), to establish the ability of investigators to reflect it in a new text form, the features of text compression, and the specifics of understanding information in free and limited modes.

Information activities of the investigator are carried out both in conditions of limited time and in a free mode. Therefore, it was decided to check whether there are features of perception of text information depending on the mode of operation (free or set). Registration of time parameters allowed considering the compression intensity indicator J (Fig. 1). Since the number of text elements in each of the experimental texts is different, it can be assumed that the entire number of elements reflects 100% of the information. Accordingly, during the compression process, the stored and eliminated number of elements makes up some of the 100% of the information. This allows unifying the safety dimension of text elements on all graphs. The actual compression intensity is characterised by the sharpness of the straight-line BC, in particular, the angle α . The lower the value of the angle α , the more intense the text compression. The angle α varies from 90° to 0° (extreme values: no compression – instantaneous compression). The features of text compression and the specifics of understanding information are shown in Figures 1 and 2. The abscissa axis contains the amount of important information (in%) that remains in the process of shortening the text at the first (Fig. 1) and at the second stage (Fig. 2). The ordinate axis shows the duration of text synopsis. The intensity of text compression is determined by the size of the angle α , a decrease in which indicates an increase in intensity.

A direct line that characterises J is described by equation (1). The values obtained using this equation are shown in Table 1.

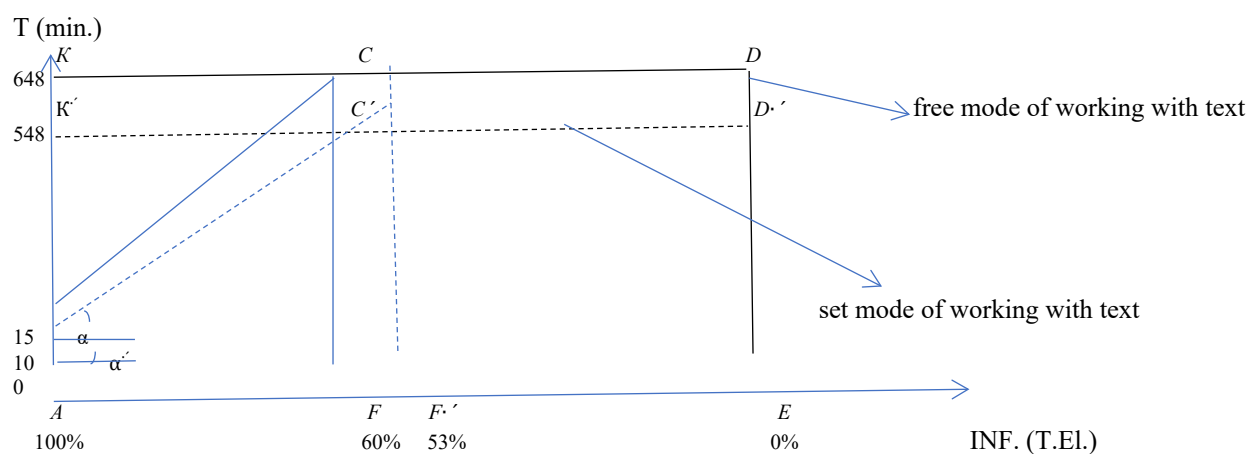


Figure 1. Graph of the intensity of Text 1 compression (1st order synopsis)

Source: developed by the authors

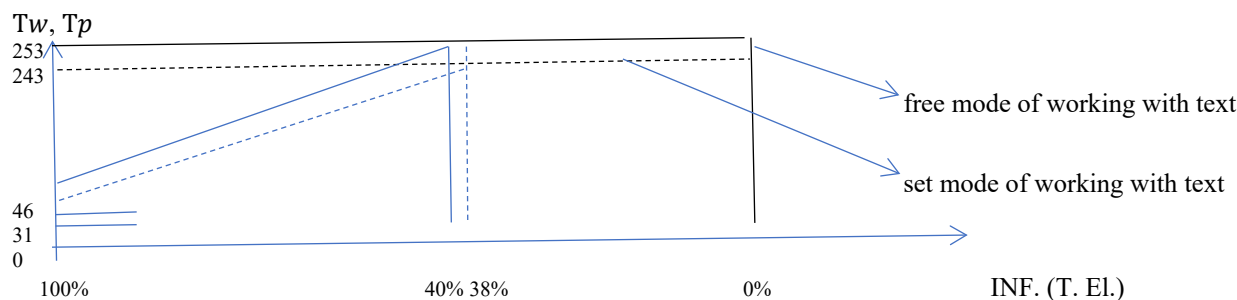


Figure 2. Graph of the intensity of Text 2 compression (2nd order synopsis)

Source: developed by the authors

Table 1. Intensity of text compression in different time modes of operation

Work mode	Synopsis 1				Synopsis 2			
	Text 1	Text 2	Text 3	Text 4	Text 1	Text 2	Text 3	Text 4
Free	0.49	0.44	0.52	0.56	1.53	1.42	1.58	1.86
Set	0.68	0.63	0.80	0.97	1.95	1.94	2.30	3.23

Source: developed by the authors

Rectangles *AKCF* and *FCDE* characterise the volumes of eliminated and stored information at the corresponding compression stages. Analysis of the intensity of compression text elements in the conditions of free and given modes revealed that when compiling the 1st and 2nd order synopses, the intensity is in all cases higher in the given mode of working with text than in the free mode. The sequence of increasing the intensity from the lowest to the highest remains stable at each stage and in both modes of operation:

Text 2 → *Text 1* → *Text 3* → *Text 4*

This order fully corresponds to the order of arrangement of experimental texts as the integrity and semantic completeness increase. Under the conditions of a given mode, the intensity of compression increases in all cases, but this is due to the completeness and depth of understanding. This is evidenced by an average increase of 9-13% in the number of incomplete and erroneous answers to control questions. The analysis of successively compiled synopses 1 and 2 showed that the reason for this is the false elimination of text elements of some semantic levels, based on which the development and verification of sensemaking hypotheses takes place, as a result of which the information contained in abbreviated text elements falls out of the hypothesis formation scheme, is not transferred to the next stage of compression and the semantic connections of the text as a whole are broken. When compressing in a given mode, the weight of the written component *T_w* increases, *T_p* decreases, which results in an increase in the compression intensity.

Comparative analysis *J* under different time regimes revealed that while at the first stage of

compression the intensity is much higher in the given mode, and thus the volume of text abbreviations is larger, at the second stage the measured indicators are almost levelled out, which can be explained by the fact that under the conditions of a limited time, the following operations must be performed at the first stage of compression:

- reading of the text;
- definition of the scheme, “skeleton” of the text (structural analysis);
- determination of the hierarchy of text sense-making elements and their interrelations (semantic analysis);
- formulation of sensemaking hypotheses;
- development of syntactic abbreviations;
- exteriorisation of text in the form of a synopsis 1;
- control and redistribution of time between the above operations.

This situation does not contribute to the implementation of an individual type of work with the text. The reading time is reduced, as evidenced by the reduction *T_p* in comparison with the free mode of operation, as well as the analysis of electrooculograms of respondents, structural analysis is carried out exclusively in connection with paragraph dissection of the text. In the absence of such external schematisation criteria (Text 3), structural analysis is difficult. The hierarchy of elements by the level of information significance becomes erroneous – MTEs are not evaluated as such, and, on the contrary, CTEs are distinguished as supporting sensemaking hypotheses, semantic inter-element and inter-paragraph links are broken. The process of writing a synopsis, being in a certain way a function of the individual pace of writing, is almost impossible to reduce in time. Therefore, a smaller number of characters can

be registered per unit of time. This partly explains the increase in syntactic abbreviations.

In the conditions of free operation, an individual style of working with text is implemented. The need to control the time required for text processing is reduced. This contributes to a thorough structural and semantic analysis. It becomes possible to re-read the text, and, consequently, to mentally recombine text elements in order to find out their relationships and semantic significance. An increase in the recombination of elements of sensemaking contributes to the development of more hypotheses. Structural analysis is carried out in combination with semantic analysis, which results in the development of a complete formal and semantic plan of the text. At the second stage of compression, the elimination of discrepancies between *J* in limited time modes is caused by the fact that at this stage the meaning of the text is generated as a single whole and its design is made in the form of an external record. Verification of sensemaking hypotheses and generation of adequate or erroneous (which is subjectively not recognised as such) meaning occurs in fairly stable time intervals. Some individual stylistic features of working with text information revealed in the study made it necessary to analyse the role of certain personal components and thinking in the process of sensemaking.

When studying the time parameters of compression and the features of abstracting, attention is drawn to significant individual differences, which turned out to be quite difficult to explain by the features of experimental texts and differences in the initial level of knowledge of respondents. There is reason to assume that the determining factor of differences is an individually developed method of processing a text message, which depends on the characteristics of mental processes involved in the activity of understanding. An additional study was conducted to test this assumption. Using standardised methods, individual typological features of perception, memory, and thinking of investigators were determined, and then correlations between these features and temporal compression indicators were calculated. Correlation between *T_w* and the predominance of analytical or synthetic perception is low (respectively $r^s = 0.32$ and $r^s = -0.42$) and indicates that in general, *T_w* in both groups of respondents have approximately the same with a tendency to increase in the group with a dominant analytical type of perception.

The predominance of imaginative or logical components of memory and thinking differentially affected the nature of the compiled synapses and the time spent working with the text. The relationship between indicators of the predominance of imaginative or verbal logical memory and *T_w* for Texts 1, 2, 3, and 4 is insignificant. It was statistically significant only in Text 1 ($r^s = -0.42$, $p \leq 0.05$). This indicates that

in the case of an equal ratio of figurative and conceptual components of Text 1, information processing is carried out based on mnemonic activity, in particular, on its figurative component, a different nature of dependence is found between *T_w* and the prevailing type of thinking: Text 1 $-r^s = -0.06$, Text 2 $-r^s = -0.55$, $p \leq 0.01$; Text 3 $-r^s = 0.43$; $p \leq 0.01$; Text 4 $-r^s = -0.66$; $p \leq 0.01$. When the prevailing theoretical and conceptual information in the text coincided and, accordingly, the expressive indicators of the respondents' logical and conceptual thinking, the understanding of the texts became easier, which was expressed in a reduction in the duration of text processing and an increase in the number of correct answers to control questions. This allowed for the conclusion that the integrative indicator of the corresponding level of isomorphic structure of the synopsis and the time spent on its compilation acts as an indicator of individual differences between the subject who perceives and understands the text.

When perceiving text information, the criteria for the effectiveness of meaning formation are the intensity of text compression and the ratio of the main and concretising text elements. This means that at the initial stage of understanding textual information, the relationship between predicates (main elements) and concretising elements of information is a criterion of competence, and at the final stage – the intensity of message sensemaking. The study by O.V. Heina (2022) provides a list of features of presentation as one of the types of compression of a scientific text, analyses the main stages of preparing and conducting a presentation, and the impact of certain personal properties on its creation. It is proved that compression training is the development of a culture of working with scientific text, improving the skills and abilities of understanding, analysing scientific text, and writing a secondary scientific text based on the disclosure of the semantic structure of the original source text.

Naturally, in order to improve these and other indicators of perception of text information, investigators need to organise correctional and developmental work, the priorities of which should be exercises for the development of thinking and speech and awareness of the motivation for using cyberspace. This is also confirmed by the findings of Ukrainian researchers. N. Akimova *et al.* (2022) investigated the understanding of texts on the Internet by young consumers. The relevance of this type of research is determined by the specific features of communication in cyberspace, which consists in a significant reduction in textual information, which, in some cases, actually consists of predicates. In this paper, it is stated that the success of understanding internet texts by young people at the stage of interpretation according to the diagnostic study data was found at the level of 16.3% of the content load. It is also determined by

the factors of the Internet orientation of the individual and mental and speech development.

The adequacy of assessing the intelligibility of internet texts is also related to the level of mental and speech development and the Internet orientation of the individual. The consistency of emotional attitudes at a young age is more determined by the specifics of internet texts than by the subjective factors analysed, and the correlations found are insignificant. As a result of the ascertaining study, it was revealed that the most difficult thing in understanding Internet texts for young people is the coordination of emotional attitude, forecasting by illustration (from 14.8% of correct forecasts), and interpretation of the semantic load of texts (from 16.3% of the content of texts are interpreted).

In another study, N. Akimova & K. Aleksandrenko (2019) found that the level of experience most significantly affects the understanding process at the reception stage, directing user activity and the accuracy of their expectations. With the accumulation of experience using the Internet, stability and attention switching improve, the level of performance in a virtual environment increases, and the accuracy of predicting the content of texts increases by an average of 15.0%. At the stage of interpretation, with the accumulation of experience, the adequacy and completeness of the interpretation of Internet texts improves by almost 10.0%. However, Internet texts are difficult to interpret rationally: experienced users were able to correctly interpret only a quarter of the dominants, while random users – only a sixth. Even less important is the level of experience and internet activity at the stage of emotional identification, neither the assessment of comprehensibility nor the consistency of emotional attitudes are almost independent of the experience of using the Internet.

The results of the intensity and performance of text compression are important, depending on the predominance of analytical or synthetic thinking in the individual. In the category of experienced investigators, it was found that there are no clear differences. In general, there is a slight increase in the intensity of information processing in investigators with different characteristics of synthetic thinking. American researchers, B.A. Spellman *et al.* (2022), suggest that the success of an investigator's cognitive activity largely depends on the specific features of thinking and reasoning. That is why the effectiveness of investigative activities correlates with the intensity of using structural and logical schemes of mental processing of information about the event of an offence and evaluating evidence. In the same context, the authors of the handbook "Introduction to Forensic and Criminal Investigations" by J. Monckton-Smith *et al.* (2022) propose a productive methodology for the development of core skills and understanding of issues related to

the process of criminal investigation. Consistent study of gnostic models of individual stages of investigation allows activating the cognitive processes of the personality of future investigators, which leads to the development of appropriate methods of investigative activity. The final goal of training is the ability to create a model representation of a criminal event, considering the cognitive potential of the investigator and the factors of uniqueness of the offence.

L. Tereshchenko & S. Gladys (2022) formulated a problem, namely, identifying factors that contribute to the assessment of the truthfulness of written texts, especially in connection with the investigator's determination of untruths in the testimony of witnesses and suspects. They suggested that the content and form of false statements, regardless of language, are influenced by a number of common mental factors. They can be indicated by the following signs: less emotional, sensory, and spatial detail; shorter length of false texts than true texts; fewer mentions of the speaker's identity; and actualisation of different concepts in true and false texts. In their opinion, psycholinguistic studies of lying must necessarily consider the linguistic and cultural context, since the significance of a large proportion of verbal signs of lies identified in English-language studies has not been confirmed on new language material. That is, the existing English-language methods of analysing the falsity of the text need to be tested in a different linguistic and cultural environment.

Therefore, after analysing other studies on the analysis of the process of information processing, it is noted that the degree of compression of the text depends on the type of thinking of the person, and there is a slight increase in the intensity of information processing in investigators with synthetic thinking. It is determined that the success of the investigator's work significantly depends on the features of thinking and reasoning. The paper also highlights the methodology for developing skills and understanding the problems of criminal investigation, which helps activate the cognitive processes of investigators. In addition, it is clarified that the analysis of the falsity of written texts is an important aspect of research in the field of criminal investigation, and the consideration of linguistic and cultural context is necessary in psycholinguistic research.

■ Conclusions

Thus, the study attempted to determine the essence of abstracting as a type of compression of text, and analyse its types and stages, including features inherent in the note-taking process. Summarising the results of the study of cognitive features of information competence of investigators in the context of perception, processing, and understanding of textual information, which has a significant share in the procedure

for investigating offences, there is the presence of a number of important factors of predetermination of the cognitive component by some personal properties of subjects, as well as differentiation of the process of sensemaking depending on the time parameters of working with information. In particular, the process and effectiveness of understanding text information by investigators are determined by the intensity of compression and the dynamics of working with text. In turn, the cognitive process itself is mediated primarily by individual parameters of creativity and typological features of symbolic and imaginative thinking. Partial correlates of understanding include personal factors of practicality, insight, self-regulation, and radicalism. Consideration of the identified patterns serves as the basis for developing special cognitive competencies and criteria for evaluating practical skills in the education system of future police investigators. The analysis of the compression intensity indicator convincingly proves that the elimination of text elements in the conditions of a given operating mode in all cases occurs more intensively than in the free time mode. However, this accelerated elimination is achieved at the expense of the adequacy of understanding.

The compression intensity indicator allows characterising the coherence of the material presented in the text under study. The ratio between the compression intensity and the level of text connectivity is directly proportional at all stages of compression. Further studies of the process of information processing and sensemaking by investigators in conditions of intense activity are promising, corresponding to the modern realities of the work of law enforcement agencies. The experiment allowed identifying the duration of mental information processing and the time spent on graphic design of compressed texts, which in the future will help analyse the parameters of sensemaking. Research on the understanding of online texts among young people also points to the possibility of optimising online messages. The obtained data should be considered in the training of higher educational institutions and improving the information competence of investigators.

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■ Conflict of Interest

None.

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Сприймання та розуміння інформації як детермінанти професійної компетентності слідчого

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■ **Анотація.** Експериментальне дослідження присвячено розв'язанню проблеми сприймання та розуміння слідчими Національної поліції України криміналістичної інформації про правопорушення, поданої у формі текстів. Декларовано доцільність формування особистості фахівця-слідчого на засадах компетентнісного підходу, завдяки якому в освітньому процесі усувається суперечність між професіоналізмом особистості та професіоналізмом діяльності. Метою дослідження було встановлення корелятивів розуміння (смыслоутворення) криміналістичного тексту слідчими в процесі його компресії; особистісних чинників, які опосередковують розуміння слідчим службової інформації в текстовій формі подання. Основу методологічного інструментарію становили метод структурно-функціонального аналізу й емпіричні методи, а також системний, телеологічний та діалектичний підходи, що дали змогу проаналізувати динаміку перетворення текстової інформації та зміни параметрів психічного її відображення в мисленні суб'єкта. У дослідженні встановлено динаміку компресії експериментальних текстів, особливості інтенсивності згортання тексту залежно від часових режимів роботи з ним й індивідуальних особливостей пізнавальних процесів слідчого – сприймання, пам'яті, мислення. Найвищої інтенсивності стискання розгорнутого тексту й виокремлення значущої інформації досягають в умовах вільного часу роботи з текстом. Доведено, що на початковому етапі розуміння текстового повідомлення співвідношення між основними та конкретизаційними елементами інформації є критерієм компетентності, а на завершальному етапі розуміння – інтенсивність формування смислу інформації. Проаналізовано показники інтенсивності згортання тексту й виявлено, що в умовах заданого режиму роботи елімінація елементів тексту відбувається інтенсивніше, ніж в умовах вільного часового режиму. Доведено, що співвідношення між інтенсивністю згортання та рівнем зв'язності тексту має прямі пропорційні зв'язки на всіх етапах компресії. Встановлено, що на процес розуміння суттєво впливають типологічні особливості понятійних та образних компонентів пам'яті й мислення. Сформульовані в статті положення сприятимуть пошуку ефективніших методів професійно-психологічної підготовки майбутніх слідчих і вдосконаленню психологічного супроводу слідчої діяльності

■ **Ключові слова:** слідча діяльність; текстові дані; розуміння матеріалу; компресія тексту; кореляти сприйняття; особистісні фактори