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METAMEMORY JUDGMENTS AS PREDICTORS OF MAKING DECISIONS ABOUT PERFORMANCE OF THE PROCESS OF HAPTIC PATTERNS IDENTIFICATION AND NAMING

Основна мета дослідження полягала у визначенні ролі метакогнітивних суджень у здійсненні вибору, щодо вірності ідентифікації тактильних патернів. У даній статті розглянуто процеси сприймання, ідентифікації та найменування тактильних патернів. Визначено особливості сприймання форми та власливостей поверхні, внутрішні та зовнішні детермінанти процесу ідентифікації тактильних об'єктів, феномен метапам'яті, ретроспективні судження впевненості (retrospective confidence judgments) та судження про відчуття знання (feeling of knowing judgments) у процесі ідентифікації.

Ключові слова: тактильний номінативний процес, метапам'ять, метакогнітивні судження, судження ретроспективної впевненості, судження про відчуття знання.

Основная цель исследования заключалась в определении роли метакогнитивных суждений в осуществлении выбора, относительно правильности идентификации тактильных паттернов. В данной статье рассмотрены процессы восприятия, идентификации и наименования тактильных паттернов. Определены особенности восприятия формы и свойств поверхности, внутренние и внешние детерминанты процесса идентификации тактильных объектов, феномен метапамяти, ретроспективные суждения уверенности (retrospective confidence judgments) и суждения о чувствах знания (feeling of knowing judgments) в процессе идентификации.

Ключевые слова: тактильный номинативный процесс, метапамять, метакогнитивные суждения, суждения ретроспективной уверенности, суждения о чувствах знания.

The main aim of the study was to determine the role of metacognitive judgments in making choices regarding rightness of tactile pattern identification. This article describes the processes of perception, identification and tactile patterns naming. The features of the perception of shape and surface properties, internal and external determinants of the tactile identification process, metamemory phenomenon, retrospective confidence judgments and judgments about feeling of knowing in the identification process.

Key words: *haptic naming process, haptic identification, metamemory, metacognitive judgments, retrospective confidence judgments, feeling of knowing judgments, pattern properties, accuracy.*

In the process of literature review, it was established that the tactile naming process consists of: (a) object identification, which takes place when a person is trying to identify an object as an item from a particular class of objects or a set of inherent features of the object that is being identified; (b) name activation, where the appropriate names are being matched with the similar objects that already exist in memory; (c) the articulation of one of these names as an overt response (Jonsson, 2005).

In the scope of metamemory, the research focuses on two types of metamemory judgments about haptic identification and naming, namely *Feeling of Knowing judgments* (FOKs) (i.e., predictions of the future retrieval or recognition of a currently unrecalled memory) and *Retrospective Confidence judgments* (RCJs) in retrieved answers (i.e., how confident a person is that some retrieved information from memory is correct).

In the experiment, the monitoring aspect refers to the abovementioned metamemory judgments, and generally our work is focused on these judgments, haptic identification and naming processes. In the further research, we may observe the interference phenomenon in the identification process, as far as competition and substitution of stimuli in haptic identification may reduce the FOKs accuracy and the ability to name items correctly, as well as an increase in identification time. As an example, such difficulties may appear in case of identification of features of repoussage surface and similar surface of glass (smoothness, similar weight etc.).

Confidence judgments can also be made with respect to predictions (Murphy & Winkler, 1971). Realism in judgments means that the answers that were asserted to be correct to a certain extent (e.g. 60% sure) in the long run prove to have the corresponding proportion of correct answers (i.e. 60% correct). Overconfidence means that the level of confidence judgments is higher than the level of their accuracy and vice-versa (Jonsson, Allwood,

2002). In addition, many studies find that most people are underconfident about their judgments about the accuracy of their memory in sensory and perceptual tasks (Bjorkman, Juslin, & Winman, 1993). In the current experiment, we will examine the confidence judgments in haptic pattern identification, and we may observe the phenomenon of underconfidence according to the previous researches. In the process of identification, the person who operates the larger amount of relevant tactile features is likely to be more accurate and to have a higher rate of realism in RCJ.

Experimentally we investigated the haptic naming process and the process of haptic identification in the scope of metamemory judgments as a predictors of performance. In an experimental research, we established intercorrelations between a naming process, process of identification and metamemory judgements: *judgments of retrospective confidence* and *judgments about feeling of knowing*; influence (mnemonic pre-conditions) of presence in memory of greater or less amount of relevant to every pattern descriptions on the level of calibration (intercorrelations between judgments about confidence and to the process of naming); role of external stimulation (external pre-conditions), such as the amount of variants of nominations in the process of haptic identification and metamemory judgments; differences in the naming process, process of haptic identification, level of calibration and cognitive validity between solid and granular patterns.

According to the results, it appeared that the respondents are overconfident in the process of naming; notably, the level of calibration is low, which did not confirm our hypothesis that the level of confidence is understated in the process of the name. In the discussion, we defined a range of reasons that can contribute to it (e.g. perceptual curvature, experience of identification of other modalities and other). Experimentally, influence of the mnemonic pre-conditions (amount of the adopted descriptions) was not confirmed on the level of calibration of metamemory judgements. However, the experimental data can be confirmed by researches of judgements about confidence in the different areas of metacognitive psychology. There appeared the phenomenon of self-confidence, for example, during memorizing text information of Jonsson A., Allwood C. (2002) individual differences in the cognitive capabilities of Pallier G., et al. (2002) naming process in olfactory (olfactory and taste) modality of Jonsson F. (2005) and other.

In a group of *two variants of nominations* there appeared no cross-correlation between certainty of identification and metamemory judgments,

which is why we drew a conclusion that the respondents did not use their metacognitive abilities at this condition, but at other pre-conditions. In a group with four variants of nomination we defined that the perspective validity and a level of calibration is high, which is why we drew a conclusion that, with the increase of external weight, the respondents call to their metacognitive capabilities and mnemonic pre-conditions more, that is why the estimation of validity and calibration becomes more precise.

These data have given us an opportunity to suppose that the respondents did not use their metacognitive abilities while estimating of weight of future identification and did not make judgments on aim cognitive level. However, the perspective validity in a group with *four variants of nominations* is high enough; differences are insignificant ($F < 1$), and an index of correlation of gamma is moderate $G = .30$. The results verify that external stimulation is an important factor; however, for judgments about the future process of identification, the external stimuli come forward as a factor of external weight at the estimation of level of present information. For predicting the productivity of memory, external stimuli cause external difficulty in estimating the rate of information (Koriat, 2000.). Therefore, respondents estimated the level of future identification effectively with the presence of external terms.

The multivariable analysis of variance showed that the statistically-meaningful differences between granular and solid patterns exist only between a number of the adopted descriptions. A conclusion was made that, while identifying granular patterns, it was much harder for the respondents to distinguish inherent descriptions through likeness. Nevertheless, a copula was found between judgments through imperfection of procedural phase. Therefore, the prospect of further researches is dividing the amount of descriptions into groups after the middle rationing (3 and 6) and realizing the intercorrelations between certainty of the name, certainty of identification and metamemory judgments. Increasing variants to four and eight nominations for realization of intercorrelations and confirmation of present results and conclusions is another option. One more possible prospect in selecting the respondents with good perceptual capabilities (e.g., by the low threshold of sensitiveness) for confirmation of a hypothesis that our mnemonic indicators and metamemory possibilities are at a high level, and that certainty of identification of calibration and cognitive validity depends on passing of processes at the perceptual level.

Thus, *FOKs* and *RCJs* can both act as predictors of metamemory performance. According to them, people can predict and calibrate

themselves at process of identification and naming. However, we established that people are overconfident in their metacognitive capabilities in general, and this is caused not only by their specialties, but by external conditions too. Quantity of variants of answers was the reason of the low predictive validity of *FOKs*, like in case of *RCJs* at calibration with haptic identification accuracy.

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