Representation of Mental States: Associative Level

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Abstract: The study presents and discusses the results of the scientific study concerning the associative level of mental state representation. It describes the current status of mental state representation problematic, empirical procedure and methods as well as the results of the study concerning the explicit and implicit components of the associative level of mental state representation. Explicit verbal associative links of mental states with life situations are described in the study as well as the regularities and the features of implicit association of mental pain, joy, sadness, delight, depression situations and the communication with friends. It was shown that mental states are inextricably and associatively related with the situations of life activity both explicitly and implicitly. Typical, atypical and uncertain (unformed) associative relations of situations with mental states as well as the gender features of mental state implicit associations with the situations of life activity: a clear differentiation in the relation "a situation, a mental state" is revealed among male representatives. The most pronounced association with situations is presented by mental conditions opposed by sign and value and characterized by a high or a low degree of mental activity.

Key words: Mental representation, mental states, explicit and implicit associations, the situations of life activity, degree

INTRODUCTION

Many modern studies characterize the appeal to reflexive aspects of different mental phenomena, to their representations. The study of the representations is performed when an original (i.e., a represented thing) is not available due to limited or absent teaching opportunities (Kubryakova and Demyankov, 2007).

The feature of mental representations study is that they may be considered as a process (the process of display, representation) and as a result, a unit (the description of the experience within the picture of the world). The first approach distinguishes a procedural, a dynamic aspect of mental representation (Blatt et al., 1997; Kemp, 1998; Lukowitsky and Pincus, 2011), its cognitive functions (Cooper, 1990; Geller et al., 2010).

On the other hand, a mental representation may be understood as the internal structures developed in the course of a man's life, where the developed world, society and personal picture are represented (Andreeva et al., 1998). This paradigm of mental representations allows to consider the organization and the content of a man's representations, both verbal and image ones (Bascoe et al., 2009; Lotto et al., 2006; Savadori et al., 2001).

A special place is provided for the research of ideas about the inner mental life of a man. Here, we study the presentations and knowledge of mental phenomena, the subjective description of life experiences. There are some works in which an appeal to the mental representation of emotion images, to the structures of knowledge about emotions, presentation and display of emotions at different levels of consciousness (Dorfman,1997; Prusakova and Sergienko, 2002). However, there is not enough works, the purpose of which is the integral study and the description of mental representation content and structure concerning mental states.

In accordance with our ideas mental representations gain a hierarchical structure over time: it is possible to determine their associative, evaluation, conceptual and figurative levels or components. The description of these levels (components) with respect to the notion of mental states is a fundamental problem that should be solved in the course of a comprehensive empirical study performance.

The purpose of this research was the study of mental state representations, the description of its explicit and

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implicit components. The objective of the associative level empirical research concerning the mental representation of mental states was the revealing of explicit and implicit associative relations in the context of the relationship "a situation, a state".

It should be noted that Isard (2000) in his conception of differentiated emotions pointed to a fairly clear correspondence of emotional states to certain types of life situations. A situation is the trigger of a mental state: in the process of a particular life situation experiencing its semantic evaluation takes place and a certain attitude to it is generated. The result of it is the emergence of a certain positive or a negative, a balanced or an unbalanced state.

MATERIALS AND METHODS

Total 64 students of the Kazan Federal University at the age of 17-25 (23 males and 41 females) were involved in an empirical study. The method of free association experiment and the Implicit Association Test (IAT) proposed by Greenwald, McGhee, Schwartz was used.

During a free associative experiment the explicit associative relations of twenty six mental states with the situations of life activities were studied and the semantic-associative areas of mental states were reconstructed, taking into account a situational component. The questionnaire was used in which subjects were proposed to refer to their experience and write in what life situations they experience the mental state of contemplation, fatigue, excitement, serenity, anguish, uncertainty, joy, pity, pleasure, jealousy, sympathy, love, expectations, exhaustion, remorse, falling in love, loneliness, commitment, joy, indecision, happiness, compassion, excitement, vitality, inspiration.

The second part of the study was conducted using the experimental technique of IAT, which allows to identify implicit (automatic, unconscious) associations, stereotypes, attitudes and passions (Greenwald *et al.*, 1998).

A positive feature of IAT Method is that it prevents attempts of the tested persons to use the strategies of self

representation. It may measure their implicit (unconscious) associations even among those subjects who prefer not to express their relationship.

In choosing this method for our study was determining the position of the qualitative features of mental representations that can not give conscious control. In addition, it was important to explore the possibilities of using the method in the study of IAT associative level of representation of mental states, its implicit components.

The experiment studied the associative relations of such situations as quarrel and chatting with friends who have balanced and unbalanced mental states: joy, heartache, cheerfulness, sadness, depression, excitement. The components of semantic fields within these situations and conditions, reconstructed on the basis of prior experiments were taken as stimulating words. A part of the test is shown in Table 1.

The subjects have to perform 15 tasks, the number of stimulating words in a block made 30. The performance of each task took about 20 sec. The aim was to perform correct associations with stimulating words and set target conceptsas soon as possible. The difference in the speed of the third and fifth assignment execution within each test is defined as an Implicit Associative effect (IAT effect).

The following hypotheses were tested: whether the assignments will be implemented with different speeds (will IAT effect be revealed). It was supposed that different amount of stimulating words will be associated in each task. This amount depends on the ease or difficulty of association. Where the associated concepts are presented easily, the most part of the task will be performed and fewer errors will be allowed compared with the tasks that contain difficultly associated with each other.

The hypotheses introduced in research are based on the premise that the relationship in the context of "a situation-a mental state" is stored in memory in the form of the association between the expression (an image) of one object (a situation) and an expression (a way) of another object (a mental state).

Table 1: An exemplary variant of Implicit Association Test (IAT)

1	2	3	4	5
Communication	Sadness	Communication	Communication	Communication
Quarrel	Cheerfulness	Sadness	Quarrel	Sadness
		Quarrel		Quarrel
		Cheerfulness		Cheerfulness
Offence	Sorrow	Sadness	Offence	Sadness
Scandal	Smile	Walk	Scandal	Walk
Conversation	Comedy	Quarrel	Conversation	Quarrel
Walk	Melancholy	Comedy	Walk	Comedy

Under a target term "communication" the concept of "communication with friends" is encoded. The black dots indicate the predetermined target concepts and associative relations, the white dots demonstrate the correct version of stimulating words with target concepts

RESULTS AND DISCUSSION

During the study, it was found out that the situations of life activity are associated with the states (of a certain sign, intensity, duration, etc.) as explicitly so as implicitly.

The situations of life activity which are experienced by certain mental states were set during the first associative experiment. The state of fatigue is related to the end of a working or a school day (51.6% of respondents). Love is experienced often in a family (38.7%). Joy is felt in a good company (35.5%). Remorse is experienced when you have to lie (35.5%). People feel themselves tired after a hard mental work (32%). The examination excitement is experienced (22.6%), the reporting to the public (22.6%) and the inspiration after watching a movie, reading a book or listening to the music (19.4%). Indecision takes place when new people appear (19.4%). Compassion is associated with physical and emotional pain of another person (19.4%). You may feel lonely when you are alone at home (19.4%). The interest arises during some classes at a university (19.4%), at a meeting with friends (19.4%). The sadness is experienced when a loved one is absent (19.4%). Jealousy is experienced when your favorite/loved one talks with another person (19.4%). Waiting is shown in the situation where you have to wait a vehicle at a bus stop (19.4%). Delight is felt when they receive or give a gift (16%). Satisfaction is experienced in a situation when you aresatisfied with the work done (16%). The state of meditation is associated with the problem solution situation (16%). The pleasure is experienced when your stomach is full (12.9%). Sympathy is felt if you like the character of a person (12.9%). People are joyful when they meet friends (12.9%) and happy when everything proceeds according to a plan (12.9%) or receive a gift (12.9%). Vivacity is felt after gymnastics (12.9%). Pity is felt when homeless animals are observed (12.9%). Peace of mind is associated with a situation where a person is alone at home (9.6%) or when he listens to a good music (9.6%). The uncertainty is experienced when a man holds his speech during a seminar (9.6%) and at new acquaintances (9.6%). With regard to love could noone could see a general trend.

In the course of an experiment performance using IAT procedure the significant implicit associative relations were revealed in the context of "a situation-a mental condition."

The speeds of various tasks and blocks execution concerning an implicit association test proved to be different. It was reflected in a number of associated stimulating words and correctly executed
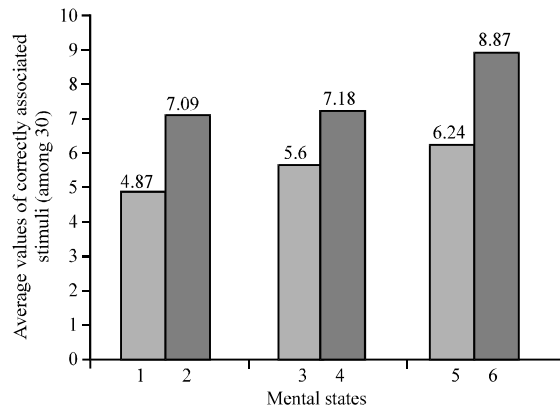

Fig. 1: Mean values of correctly associated stimulating words (among 30) in a situation of "communication with friends": Mental states, 1) Sorrow; 2) Fun; 3) Depression; 4) Delight; 5) Heartache; 6) Joy
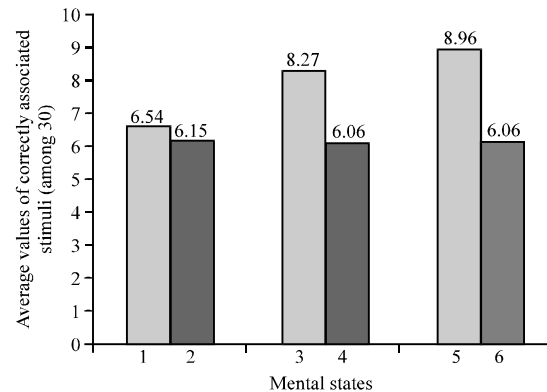

Fig. 2: Mean values of the correctly associated stimulating words (30) during a "quarrel" situation. Mental states: 1) Sorrow; 2) Fun; 3) Depression; 4) Delight; 5) Heartache; 6) Joy

tasks. The most informative and significant were the third and the fifth task in each of three test units. The findings of the experiment are presented by Fig. 1 and 2.

The implicit associative effects were revealed in the context of relations between such mental states as sadness, joy, depression, excitement, heartache, joy within the situation of chatting with friends. It is clear that there is significant relation of this situation with the mental state of joy, cheerfulness, delight. The greatest effect was observed in the third section of the test, where implicit associative relations of such mental states as heartache and joy were studied within the situation of chatting with friends.

Were found implicit associative effects in the context of relations between such mental states as sadness, joy, depression, excitement, heartache, joy and the situation of quarrel. The relation of this situation with such states as sadness, depression, heartache is expressed clearly. Most of all implicit associative relations appeared in the context of the relationship "quarrel-depression" and "quarrel- mental pain".

In accordance with the correlation analysis (statistical comparison of indicators according to Student t-test) between the samples chatting with friends, a quarrel, 4 of 6 differences have the following degree of reliability $p = 0.001$, $2-p = 0.05$.

An important regularity is observed: the situation chatting with friends is implicitly associated with positive mental states, the situation of quarrel is associated with negative states.

There differences in implicit associative effects were revealed depending on the level of a mental state energetic activity. The greatest difference is observed between positive and negative mental states of high and low mental activity and the lowest is between the mental states of an average mental activity. These findings support the the assumptions put forward in previous research (Alekseeva, 2012) concerning the lower diffirentiation of average mental activity states in the subjective consciousness. The most pronounced association with situations have the mental states opposed to each other by sign and value and characterized by high or low energy component.

The gender features of mental state implicit association with the situations were revealed. Implicit associative effects among men are greater than among women. The difference in the implicit association effects among male and female test subjects is in the range of 0.34-1.21. This suggests that a clear differentiation in the relations "a situation-a mental state" occurs between male representatives.

Summary: During the scientific study of the associative level representation concerning the mental states the explicit verbal associative relations of mental states with life situations are described as well as the laws and the features of the implicit association concerning the states of mental pain, joy, sadness, delight, depression with the situations of quarrels and chatting with friends.

These empirical findings of associative level study concerning the mental representation of mental states, its explicit and implicit components contribute to the construction of a unified theoretical model of representations about a mental state, the description of their content and the reconstruction of their structural organization.

CONCLUSION

Permanent and stable found explicit and implicit relations were revealed in the context of "life activity situation-mental state". The situation chatting with friends is implicitly associated with the positive states of cheerfulness, delight and joy. The situation "quarre" is implicitly related with such negative states as sadness, depression, heartache.

The mechanism that allows a person indirectly and implicitly differentiate certain situations with certain conditions is set. In the subjective picture of the world, the image of each situation takes a certain place, it is associated with certain mental states. An associative unity of a mental state and a situation is developed in the process of life activity, it reflects the gained subjective experience. The updated situational image in the mind defines the update of a specific mental state and vice versa, an updated image of a state makes the actualization of such situation with which it is related.

The differences in associative relations between situations and the states of different signs and mental activity level are revealed. The most pronounced association with situations have the mental states opposite in sign and value and are characterized by a high or a low degree of mental activity.

The gender features of mental state implicit association with the situations of life activity are revealed. They appeared in the quantitative and qualitative differences of empirical research results concerning male and female subjects. Males representatives have a more pronounced differentiation within the relation "a situation a mental state".

The typical, atypical and uncertain (underdeveloped) associative relations of situations and mental states are revealed. Typical associative relations may be described as inherent ones for the majority of respondents, they are signified and verbalized. Atypical (or special) associative relations reflect individualrelationships exhausted to a certain subjective experience. Uncertain associative links indicate immature relationships at the time of the study in the associative context "a situation, a mental state".

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