The Measurement of Latvian and Russian Ethnic Attitudes, Using Evaluative Priming Task and Self-Report Methods

Maria Bambulyaka, Irina Plotka, Nina Blumenau, Dmitry Igonin, Elena Ozola, and Laura Shimane

Abstract—The purposes of researches - to estimate implicit ethnic attitudes by direct and indirect methods, to determine the accordance of two types measuring, to investigate influence of task type used in an experiment, on the results of measuring, as well as to determine a presence or communication between recent episodic events and chronologic correlations of ethnic attitudes.

Method of the implicit measuring - an evaluative priming (EPT) carried out with the use of different SOA intervals, explicit methods of research are G.Soldatova's types of ethnic identity, G.Soldatova's index of tolerance, E.Bogardus scale of social distance. During five stages of researches received results open some aspects of implicit measuring, its correlation with the results of self-reports on different SOA intervals, connection of implicit measuring with emotional valence of episodic events of participants and other indexes, presenting a contribution to the decision of implicit measuring application problem for study of different social constructs.

Keywords—Ethnic attitudes, explicit method, implicit method, priming.

I. INTRODUCTION

IMPLICIT measurements measure automatic (unconscious) evaluative reactions which come to mind spontaneously, upon the mere presentation of the attitude object. [1],[2]. They are indirect, i.e. the respondent doesn't know what is being studied. There are three different meanings that have been applied to defining implicit attitude measures: indirect, automatic and unconscious. Implicit measures are indirect in that they do not ask the individual to report his attitude like a direct measure does [3].

In addition implicit measures are said to tap into an attitude of which the person unaware, an unconscious evaluations rather than a conscious ones [4]. Implicit attitude measurements usually are carried out without controlling the influence on their participants of recent, extra-experimental, episodic events that are connected with the object of the

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attitude [1]. At this case emotional valence of attitudes and these events may not coincide. In contemporary theories of social cognition the activation of attitude in the semantic memory is understood as an autonomous automatic process (AP) [5],[6]. In cognitive psychology absolute "encapsulation" of the AP in the recent decades has been questioned [7], [28],[8]. Neumann suggested that automatic processes depend on the current "configuration of the cognitive system" - the factors of attention and intentions of a person, and are exposed to the influence of other processes that define the parameters for the implementation of the AP [8]. A number of papers presented the evidence of AP being influenced by various high-level and contextual factors. That allowed to justify the previously proposed concept of "conditional automaticity" [9], [10]. However, the potential of the impact of extra-experimental, semantically and emotionally associated with the attitude, contextually episodic factors on the automatic activation of the attitude has not yet been studied. Also little is known about the general influence of these factors on the laboratory-studied dependent variables in cognitive tasks. Coane and Balota [11] probably were the first to report of the impact of the extra- experimental seasonal factors on reaction time in a lexical decision task as a possible result of the long-term priming effect. But this work does not concern the aspects of the automatic activation of the attitudes. As an example of such factors for the study of automatic activation of attitudes, in the present work recent extra-experimental episodic events in the lives of participants are chosen, which affect the emotional valence of the implicitly measured ethnic attitude in unconscious emotional priming task, combined with the lexical decision task. It is assumed that these events and their affective components are represented in the episodic memory, while the relevant attitude is represented in semantic memory.

In Latvia ethno-psychological researches were hold mostly by using explicit measures. The procedure of unconscious emotional priming has been started to apply since 2006.

The aim of the study was twofold. First, it was the assessment of automatic (unconscious) ethnic attitudes, which are necessary to provide accuracy and adequacy of intergroup and interethnic relationship analysis. Second, we tried to find is there a connection between the reaction time in the implicit attitude measure task and affective valence of recent episodic events. The answer to this question raises the issue of long-term emotional (semantic) priming mechanisms in the context of episodic and semantic interactions, in the studies of the

nature of automatic processes and the representation of attitudes.

The present article combines five stages of experimental studies hold by authors at the period from 2006 till 2012 [12], [13], [14], [15]. Implicit research method-unconscious evaluative priming task (EPT). The procedure of EPT – is an experimental procedure, where the target stimulus is preceded on subliminal level by the exposition of preparing stimulus emotionally connected with it and distinguished by the subsequent perception mask (Fig.1).
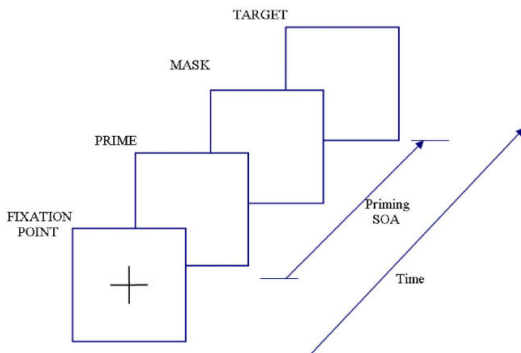

Fig. 1 Sequence of Displays

Apparatus: IBM-compatible PC, custom-made software for MS Windows XP.

II. First Stage

The first series of the experiment was conducted in 2006. Main aim of research was to evaluate the implicit ethnic attitudes and compare it with self-reported measures of ethnic identify.

Method

EPT with randomly presented intervals of stimulus onset asynchrony (SOAs) of 150 – 1000 msec. The tasks of grammatical classification including positively and negatively accented words, or target stimuli, were given to the participants. Before each stage of the task the prime – unseen word, name of the ethnic group – was given to a participant. It was suggested that the participant has the formed implicit attitude in relation to the offered ethnic group. The aim of the researcher was to expose that attitude. The reaction time (RT) of the participant was fixed. With the help of the time reaction measurement it was valuated the rate of an implicit link of the defined notion with positive or negative attitudes: respondents' position to the correspondent ethnic group. Emotional valences of target stimuli and attitudes, positive or negative, could coincide or not coincide. Assumingly, in case of valences coincidence the time of tasks fulfilment shortens [1]. In the first series of the experiment the Scales of Ethnic Identity [16] were used as explicit measures.

Participants

The sample group consisted of 158 participants. The native language for 78 of them was Russian, for 80 – Latvian.

Stimuli

The experimental scheme included: prime-stimulus for 16 ms, mask for 16 ms, and SOA 200, 500, 1000 ms. In standard procedure of priming there were used prime-stimuli "Russian", "Latvian", "American', target stimuli words from the scale of the semantic differential by Osgud. The participants' target was to define as soon as possible if the shown target word is an adjective or other part of speech and to push "YES" button if it was the adjective and "NO" button if it was not. That task demanded a rather high intellectual level of the participants.

Results 1

It was exposed that the less meaning of SOA (200 mc) complies with the highest rate of answers latency, that may indicate the inhibition influence of affective coherence of consecutively produced pares of stimuli to the processes of grammar categorization and confirms the data about the automatic character of affective priming and its short-term duration. The results indicate in favour of the proposition about the independency of emotional priming effects from the type of experimental tasks used by the participants.

III. Second Stage

The second series of the experiment [13] was conducted in 2009. Main aim research was similar to the previous. The characteristic feature of the second series of the experiment conducted in 2009 (Plotka,) was the perfection of the methods of ethnic attitudes measurements with the procedures of direct and inverse emotional priming.

Method

We used EPT with conditions, similar of the first series. During the presentation of words or casual sequence of numbers the participants' task was to push the button as soon as possible if the word appeared and to avoid pushing if the sequence of numbers appeared. The task itself turned out to be very simple but the target words could become accented emotionally not enough for the participants from Latvia.

For the exposure of implicit attitudes the method of reaction time (RT) shift was worked out.

It was measured the absolute reaction time (RT) which was fixed in the experiment and the normalized RT. The normalization of RT was introduced in order to compare more correctly the RT of people with different psychomotor properties. The normalization of RT was special for each participant. The absolute RT in each observation was divided by the average RT received by the respondent as a result of several observations.

The affective coherence of stimuli supposes the existence of a presumed ethnic attitude. In this case, according to the tested hypothesis the fast reaction to positive stimuli reveals a positive attitude, and the fast reaction to negative stimuli reveals a negative attitude, and vice versa. The presumed attitude towards an ethnic group was investigated by analysing the shifts – the differences between the RT to the positive stimuli, on the one hand, and to the negative ones, on the other

hand (see Tables I, II) [12]. Time shift is the RT for positive stimulus minus RT for negative stimulus. For every participant both the absolute (R) and normalized (Rn) shifts were determined. Positive shifts correspond to the negative attitude to the ethnic group, negative shifts – the positive attitude. Zero shifts correspond to the neutral one. Introduction of shifts also allows clearing the data from variability of RT values, conditioned by human prognostic activity (expectation of words or character sets). The explicit methods were "Diagnostic Test of Relations" by G.Soldatova and Bogardus Social-Distance scale.

Participants

200 adults from Latvia. Native language – Russian

Stimuli.

The experimental scheme included prime-stimulus for 10 ms, mask for 150 ms, and SOA 200, 500, 1000 ms. In standard procedure of priming there were used prime-stimuli "Russian", "Latvian", "American', "Cypress", target-stimuli "Good", "Bad", "Any" and casual sequence of numbers. In the procedure of inverse priming prime- and target-stimuli exchanged the places.

Result 2

The method of measuring the ethnic attitudes with procedures of direct and reverse emotional priming was worked out. The standard and reverse procedures of priming showed similar results. The comparison of the results of implicit and explicit measures of ethnic attitude's active component showed correspondence of some aspects.

IV. THIRD STAGE

The third series of the experiment [14] was conducted in 2010. Main aim research was to study changes of implicit measurements with different intervals of SOA and their convergence with explicit measurements.

Method

In these studies we used the most standard experimental tasks in priming - lexical decision task (LDT). The tasks of lexical classification including positively and negatively accented words, or target stimuli, were given to the participants. Before each stage of the task the prime – unseen word, name of the ethnic group – was given to a participant for a short period. It was suggested that the participant has the formed implicit attitude towards the offered ethnic group. This attitude was unknown for the researcher. The aim of the research was to measure that attitude. Priming stimulus (prime), the name of ethnic group, activated an implicit attitude. The prime mask coupled prime and mask into united percept. Masking time was the SOA time during which the processing of the semantic material took place. Target stimuli let to activate the semantic level of information processing. They also were used to define the modality of the implicit attitude. Participant's motor answer was followed with the inter-stimulus period (ISI) after which the next research probe

was started. Series of implicit experimental researches included 108 probes.

Explicit methods: Index of Tolerance by Soldatova and Scales of Ethnic Identity [16].

Before the conduction of the implicit research the participants passed a trial test which let them to adapt to the regime of fast stimuli changes and to maximum speed reaction on them. Participants were announced that they take part in the research aiming the study of the peculiarities of frequently repeated words visual perception. Participants were told about true aims of the study after the complex research was finished.

Participants

144 participants. The native language for 100 of them was Russian, for 44 – Latvian. 32 men and 112 women. Ethnic groups "Russian" (participants who refer themselves to Russian culture bearers) – 100, "Latvians" (to Latvian culture bearers) - 44. Median of participants' age is 21.

Stimuli

Prime-stimulus is 10 ms, mask and SOA intervals prolongation due to mask prolongation are 51 ms - 1003 ms. Prime: "Russian", "Latvian", "French", "Chair". Target: words from the Schlosberg Scale: "love, joy, happiness, good"; "rage, disgust, contempt, evil"; "collar, cup, sofa, grass"; Set of letters (non-words): to exclude the perception of asemantic sense of used non-words the words of stimulus groups with exchanged letters come into this category. Procedure included: prime – 10 ms; cube-shaped mask (masking time is included into SOA) – 150 ms, randomly presented intervals of stimulus onset asynchrony, SOA (time of stimulus asynchrony with the regard of divisibility of screen picturing speed 8,5 ms.): 51, 85, 119, 204, 238, 510, 850, 1003 (ms.); Target – 816 ms; fixation point – 1000 ms. (Fig.1). Participant's tasks: to push "Y" key as soon as possible if the word appears, and "N" key if the letters set (non-word) appears.
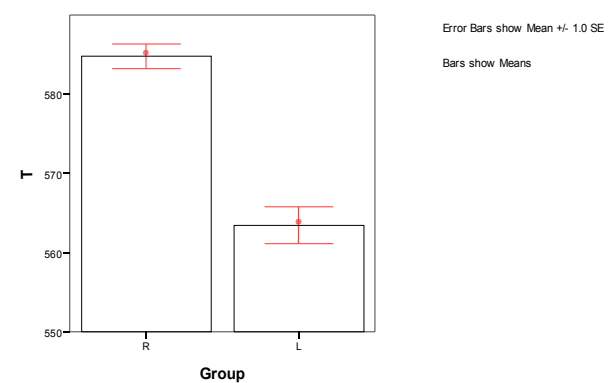
Result 3

Fig. 2 Means for the Absolute RT (T): Factor «Group»;
p=0.000≤0.001

The study of the reaction time (RT): RT is measured: for negative stimulus (T-), for positive stimulus (T+). By means of repeated measures ANOVA the study of the grade of influence of the following factors to the RT was conducted: «Group» («R», «L»); «Prime» (Russian - «R», Latvian - «L», French - «F», Chair - «C»); «SOA» (9 levels); «Stimuli» («+», «-» and «0»). The statistically significant influence of factors «Group», «SOA» and «Stimuli» to the absolute RT ($p=0.000 \leq 0.001$) was established (Fig. 2-3).

Fig. 3 Means for the Absolute RT (T): Factor SOA; $p=0.000 \leq 0.001$

The statistically significant influence of factors «SOA» ($p=0.000 \leq 0.001$), «Stimuli» ($p=0.000 \leq 0.001$) and factors interaction GROUP * PRIME ($p=0.023 \leq 0.05$) to normalized RT was established (Fig. 4-5).
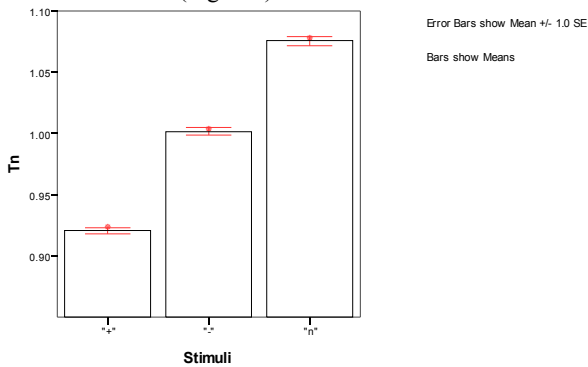

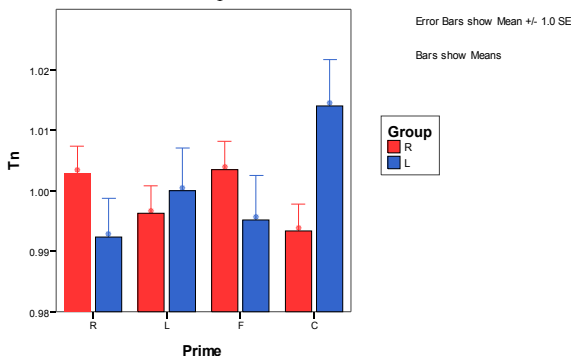Fig. 4 Means for Normalized RT (Tn): Factor «Stimuli»; $p=0.000 \leq 0.001$

Fig. 5 Means for the Normalized RT (Tn): Factors' «Prime» and «Group» Interaction; $p=0.000 \leq 0.001$

The analysis of the RT shifts. By the means of ANOVA the influence of the following factors to the RT shift was investigated: «Group» («R», «L»); «Prime» (Russian - «R», Latvian - «L», French - «F», Chair - «C»); «SOA» (9 levels). The statistically significant influence on the shifts of RT (absolute and normalized) was not found. This made it possible to introduce general criteria for determining the attitude to the ethnic group over all observations, for example, the first and third quartiles Q1 and Q3.

Determination of the attitude to the ethnic group by the shifts:

If the shift is less or equal Q1, then the presumed attitude is positive.

If the shift is equal or exceeds Q3, then the presumed attitude is negative.

If the shift is between Q1 and Q3, then the presumed attitude is neutral.

On Fig. 6 the Boxplots on variable R (absolute shift) are shown. One can see the big number of extreme meanings. On Fig. 7 a fragment of the Boxplots on variable R (absolute shift) is shown. Horizontal lines correspond to the first and third quartiles (Q1 and Q3). The participants with indications lying inside a horizontal strip (between Q1 and Q3) relate to those whose attitudes have not been formed yet. The participants with indications lying above the horizontal strip (higher than Q3) have negative attitudes. The participants with indications lying under the horizontal strip (lower than Q1) have positive attitudes. Considering a big number of extreme values on Boxplots, a rather big number of indications are situated out of the horizontal strip.
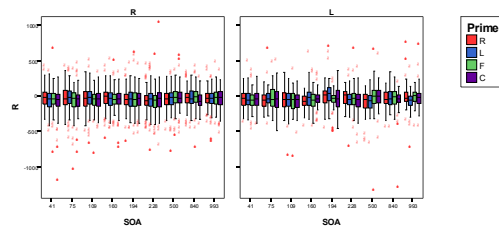

Fig. 6 Boxplots. RT' Shifts (R) Depending on the Group (R - Russians, L - Latvians), Prime (R - Russian, L - Latvian, F - French, C - Chair) and SOA
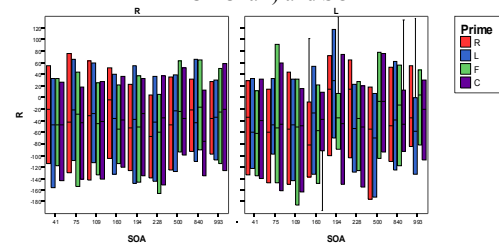

Fig. 7 Fragment of Boxplots (Fig. 6) RT' shifts (R)

It was established that for the definition of attitudes according to the RT one can use any kind of shifts: either absolute or normalized. The error does not exceed 4, 41%.

The study of the attitude to the ethnic groups is on the basis of priming. Distributions of the participants by SOA times depending on groups and priming stimulus are resulted in Fig. 8.
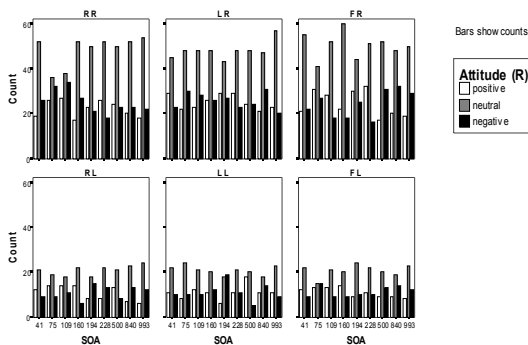

Fig. 8 Distribution of Participants' Attitudes by SOA Time. (RR-«Russians to Russians», LR -«Russians to Latvians», FR - «Russians to French», RL - «Latvians to Russians», LL - «Latvians to Latvians», FL - «Latvians to French »)

Attitude – "Russians" to "Russians": Statistic significance was found only for SOA 228 msec. A share of "Russians" with the positive attitude to "Russians" exceeds the share of "Russians" with the negative attitude to "Russians" ($p \leq 0.05$). In the limits of description statistics only, on a subconscious level the attitude to their ethnic group is negative (it is interesting to look at SOA 194 and 228 msec, where everything is vice versa). On a conscious level the attitude is negative too. This tendency to negative ethnic identity among Russians in Latvia is confirmed by other research works [12], [14].

Attitude – "Russians" to "Latvians": Statistic significance was found only for SOA 228 msec. The share of "Russians" with the positive attitude to "Latvians" exceeds the share of "Russians" with the negative attitude to "Latvians" ($p \leq 0.01$).

Attitude – "Russians" to "French": Statistic significance was found for SOA 228, 500, 840, 993 msec. For SOA 228 msec. the share of "Russians" with the positive attitude to "French" exceeds the share of "Russians" with the negative attitude to "French" ($p \leq 0.01$). For SOA 500, 840, 993 msec. the share of "Russians" with the negative attitude to "French" statistically the share of "Russians" with the positive attitude to "French" ($p \leq 0.01$, $p \leq 0.01$, $p \leq 0.05$).

Attitude – "Latvians" to "Latvians": Statistic significance was found for SOA 194 and 500 msec. For SOA 194 msec. the share of "Latvians" with the negative attitude to "Latvians" exceeds the share of "Latvians" with the positive attitude to "Latvians" ($p \leq 0.01$). For SOA 500 msec. the share of "Latvians" with the positive attitude to "Latvians" exceeds the share of "Latvians" with the negative attitude to "Latvians" ($p \leq 0.01$).

Attitude – "Latvians" to "Russians": Statistic significance was found for SOA 194, 228 and 993 msec. For SOA 194 and 228 msec. the share of "Latvians" with the negative attitude to "Russians" statistically the share of "Latvians" with the positive attitude to "Russians" ($p \leq 0.05$). For SOA 993 msec. the share of "Latvians" with the negative attitude to "Russians" statistically significantly exceeds the share of "Latvians" with the positive attitude to "Russians" ($p \leq 0.01$).

Attitude – "Latvians" to "French": Statistically significant distinctions are not discovered.

Comparison of explicit and measures of ethnic attitudes. The study of modality of the explicit attitude using the methods of „Ethnic Identity Types" was conducted on the scales „ethno-nihilism", „ethnic indifference", „positive ethnic identity", „ethno-egoism", „ethno-isolationism", „ethno-fanaticism" and extended scales „hypoidentity" and „hyperidentity". The study of the ethnic tolerance was conducted using the scales of the „Tolerance index" method: „ethic tolerance", „social tolerance" and „tolerance as a personal trait".

For results comparison the coefficients of correlation, frequency analysis, non-linear regression analysis were used.

The comparison of the results of ethnic attitude's affective component measuring with the use of the experimental procedure of unconscious priming and examined explicit methods showed the correspondence only in some aspects. The correlation analysis found the following relationships:

„Russians" to „Latvians": positive monotonous relationship of reaction time shifts with the positive ethnic identity ($rS = 0.219$, $p = 0.029 \leq 0.05$, $N = 100$ and $rS = 0.229$, $p = 0.022 \leq 0.05$, $N = 100$). I.e. the worsening of the attitude of Russians" to „Latvians" and increasing of the positive ethnic identity and vice versa.

„Latvians" to „Russians": negative monotonous relationship between absolute shifts and general index of tolerance ($rS = -0.371$, $p = 0.015 \leq 0.05$, $N = 42$ and $rS = -0.360$, $p = 0.019 \leq 0.05$, $N = 42$). I.e. the worsening of the implicit attitude and lowering of tolerance.

Latvians" to „Latvians": negative monotonous relationship ($rS = -0.325$, $p = 0.034 \leq 0.05$, $N = 43$ and $rS = -0.320$, $p = 0.036 \leq 0.05$, $N = 43$) which shows the lowering of the level of tolerance as a personal trait while worsening of the implicit attitude (shifts increase).

Comparison with the Scales of Ethnic Identity by Soldatova showed the maximal number of coincidences: Hypoidentity tendencies – 69,4%; Hyperidentity tendencies – 72,4%; Tendencies of positive ethnic identity – 57,5%.

Comparison with the scale of the method „Tolerance index" by Soldatova showed the substantial influence of SOA on coefficients of correlation.

During the research the changes of results of implicit measures in the parameters of automatic and controlled reactions were exposed. Possible variants of discrepancy in the results of explicit and implicit measures are considered. The presence of correspondence between explicit and implicit measures shows that the processes of emotional priming influence high level processes of semantic (grammar) processing which are involved during the implementation of the experimental task. The data found during the researches

give the opportunity to speculate about the nature of implicit attitudes and their relations with explicit attitudes.

V. FOURTH STAGE

The forth series of the experiment [15] was conducted in 2010. Main aim research was similar to third one – to study changes of implicit measurements with different intervals of SOA and their convergence with explicit measurements. Main idea was to compare explicit and implicit measurement of ethnic attitudes not only for Latvian Russian and Latvian, but also for Estonian Latvian and Estonian.

Method

We used EPT with LDT application. Explicit methods: Scale of Ethnic Identity [16].

The reaction time (RT) of the participant was fixed. Emotional valences of target stimuli and attitudes, positive or negative, could coincide or not coincide. With the help of the RT measurement it was valuated the rate of an implicit link of the defined notion with positive or negative attitudes: respondents' position to the correspondent ethnic group: "to oneself" – towards one's own ethnic group, "to the neighbour" - towards neighbour ethnic group, "to the other" - towards alien ethnic group.

Hypothesis: A fast reaction to a positive stimulus reveals a hidden positive attitude. A fast reaction to a negative stimulus reveals a hidden negative attitude (Table I). The hypothesis is based on the assumption suggested by Fazio that in case of positive attitudes to an object; the object's exposure accelerates further cognitive processing of positive stimulus (adjectives) [1].

TABLE I
HYPOTHETIC CONFORMITY OF THE RT AT POSITIVE OR NEGATIVE STIMULI AND THE PRESUMED ATTITUDE TO THE ETHNIC GROUP

	RTs	
	Rapid	Slow
Positive stimulus	Positive attitude	Negative attitude
Negative stimulus	Negative attitude	Positive attitude

For the exposure of implicit attitudes the method of RT shift was worked out [13], [14]. Reaction time shift R was defined as the difference between RT to a positive stimulus and RT to a negative stimulus. The rule for finding the valence of attitude follows Table I and the definition of the shift Table II: negative RT shifts correspond to positive attitudes; positive shifts correspond to negative attitudes.

TABLE II
CONFORMITY OF THE RT SHIFT AND THE PRESUMED ATTITUDE TO THE ETHNIC GROUP

	Reaction time's shift T+ - T-		
	Positive	Null	Negative
Hypothetical attitude to ethnic group	"Negative"	"Neutral"	"Positive"

To compare implicit and explicit measures we used following indexes of attitudes measuring by EPT (attitude) and explicit technique of ethnical identity type (Table III).

TABLE III
THE CONFORMITY OF ATTITUDES AND SCALES OF ETHNIC IDENTITY

Attitude		PEI	Hypo identity	Hyper identity
"To oneself", "To neighbour"	Positive	High		
	Neutral	Medium		
	Negative	Low		
	Negative or Neutral		High	
	Negative			High

Participants

312 participants. Ethnic groups: „Russians from Latvia" — 161, „Latvians" — 74, „Russians from Estonia" — 41, „Estonians" — 36 Median age — 23 years old. Ethnic groups "Russians" - participants who refer themselves to Russian culture bearers. "Latvians" - to Latvian culture bearers. "Estonians"- to Estonians culture bearers.

Stimuli

Prime-stimulus is 10 ms, mask and SOA intervals prolongation due to mask prolongation are 51 ms - 1003 ms. Prime: "Russian", "Latvian", "Estonian", "French", "Chair" or. Target: words from the Schlosberg Scale: "love, joy, happiness, good"; "rage, disgust, contempt, evil"; "collar, cup, sofa, grass"; Set of letters (non-words): to exclude the perception of asemantic sense of used non-words the words of stimulus groups with exchanged letters come into this category. Procedure included: prime – 10 ms; cube-shaped mask (masking time is included into SOA) – 150 ms, randomly presented intervals of stimulus onset asynchrony, SOA (time of stimulus asynchrony with the regard of divisibility of screen picturing speed 8,5 ms.): 51, 85, 119, 204, 238, 510, 850, 1003 (ms); Target – 816 ms; fixation point – 1000 ms. (Fig.1). Participant's tasks: to push "Y" key as soon as possible if the word appears, and "N" key if the letters set (non-word) appears.

Result 4

The Study of the Reaction Time: Using ANOVA the study of influence of the following factors on the reaction time was carried «Group» (2 levels: «RU», «LV» in Latvia or «RU», «EST» in Estonia); «Prime» (4 levels: Russian-«R», Latvian-«L» (or Estonian—«E»), French-«F», Chair-«C»); «SOA» (9 levels); «Target» (2 levels: «+», «-»).

In the sample from Latvia by means of ANOVA statistical significant influences of the factors «Group» (F=54.77; p=0.000<0.001), «SOA» (F=15.05; p=0.000<0.001) and «Target» (F=348.91; p=0.000<0.001) on the reaction time were revealed.

In the sample from Estonia by means of ANOVA statistical significant influences of the factors (F=140.19;

p=0.000<0.001) and «Target» (F=37.51; p=0.000<0.001) «Group» on the reaction time were revealed (Fig.9-11).

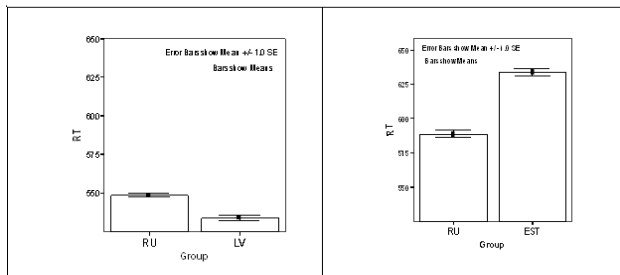Fig. 9 Means of RT (ms). Influence of the Factor „GROUP".
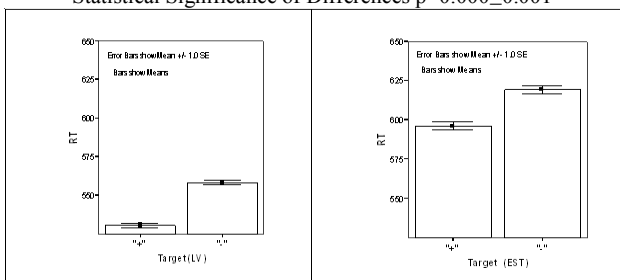Statistical Significance of Differences p=0.000≤0.001

Fig. 10 Means of RT (ms). The Influence of the Factor „Target".
Statistical Significance of Differences p=0.000≤0.001

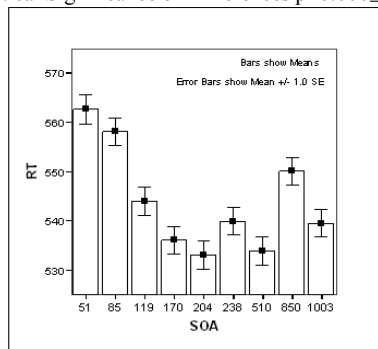Fig. 11 Means of RT (ms). The Influence of the Factor „SOA".
Statistical Significance of Differences p=0.000≤0.001

The study of the RT's shifts: By means of ANOVA the study of the RT's shifts influence on following factors was conducted («Group» (2 levels: «RU», «LV»); «Prime» (4 levels: Russian-«R», Latvian -«L», French-«F», Chair- «C»); «SOA» (9 levels)). Statistical significant influences on the RT's shifts are not found. Therefore, it is possible to introduce general criteria for determination the valence of attitudes in all observations, i.e. the first and third quartiles (Q1 and Q3) and of RT's shift variable. The shifts exceeded Q3 conform to negative attitudes, shifts less than the Q1 conform to positive attitudes.

The definition of the attitude to the ethnic group based on the shifts: To define the attitude towards the ethnic group the shift variable was divided on the quartiles for all measurements on the high, medium and low indices: if the shift is low or equal to Q1, the attitude is positive; if the shift

exceeds or equal to Q3, the attitude is negative; if the shift is between Q1 and Q3, the attitude is neutral.

The study of the ethnic attitudes based on priming: The distribution of the latencies responses based on SOAs depending on ethnic group and prime stimulus are shown on the Fig.12-13. Statistically significant SOA's cases are underlined. The frequency analysis for the attitudes, by means of Pearson Chi-Square and angular transformation of Fisher was conducted.
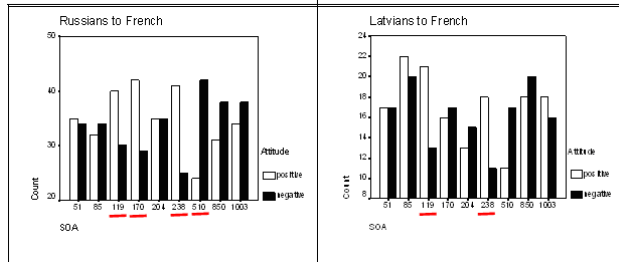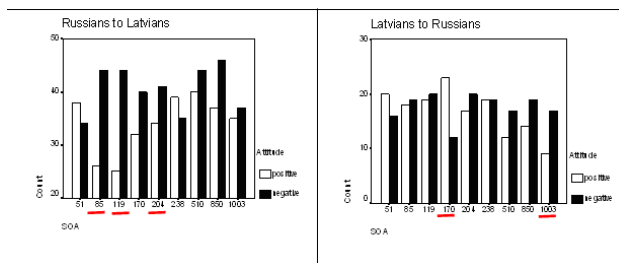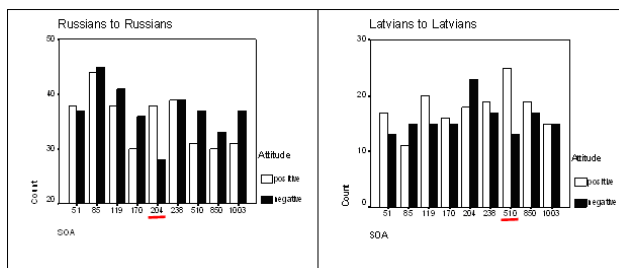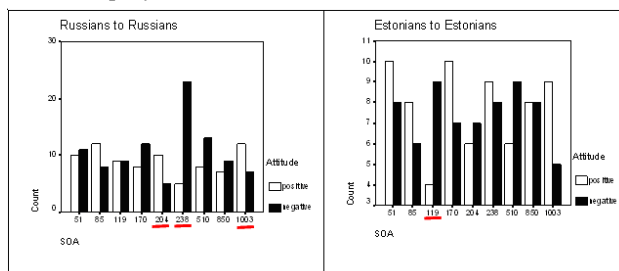
The sample from Latvia

Fig. 12 The distribution of the latencies responses based on SOAs depending on ethnic group and prime stimulus in Latvian sample
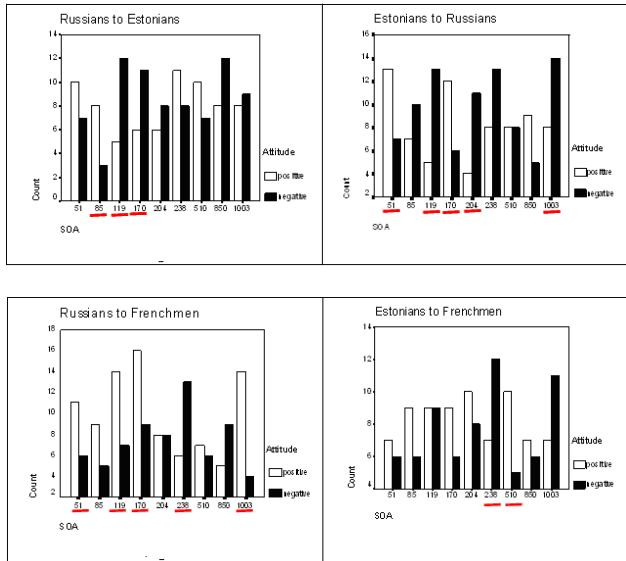
The sample from Estonia

Fig. 13 The distribution of the latencies responses based on SOAs depending on ethnic group and prime stimulus in Estonian sample

The study of conformity of unconscious priming measure and explicit technique by Soldatova: The results of comparisons are reflected on the Fig. 14-19.
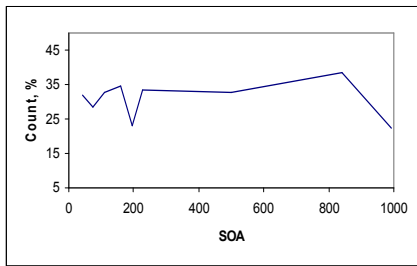
In Latvia

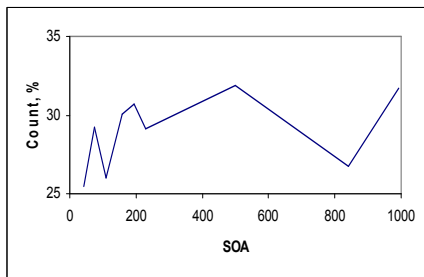Fig. 14 Hypoidentity – Negative Attitudes: "To neighbour"

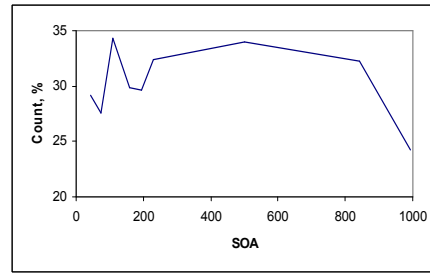Fig. 15 Hypoidentity – Negative and Neutral Attitudes: "To oneself"

Fig. 16 Positive Ethnic Identity – Congruent Attitudes: "To oneself" and "To neighbour"
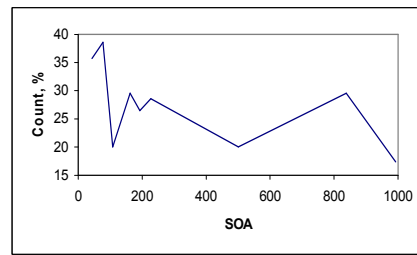
In Estonia

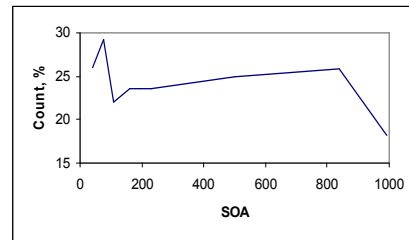Fig. 17 Hyperidentity – Negative attitudes: "To neighbour"

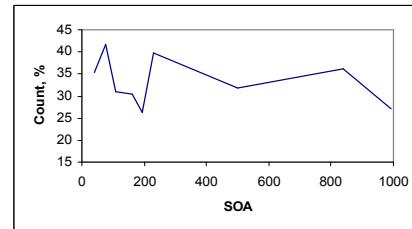Fig. 18 Hypoidentity – Negative and neutral attitudes: "To oneself"

Fig. 19 Positive ethnic identity - congruent attitudes: "To oneself" and "To neighbour"

On this stage of research we found, that the RT for positive target stimuli is less than for negative target stimuli (Fig.10). This result was observed at all previous measurements as well [13],[14]. It was found that the means of RT for positive target stimulus presented at the experiment is less than the means of RT for negative ones. This fact resembles the effects observed during some types of explicit tests based on semantic information. For example, verification of parity of numbers is faster in the case of presentation of even numbers, rather than odd numbers; verification of the fact, whether the presented noun denotes animate or inanimate object is faster if the noun

denotes animate object [17]. The findings show that such effects are observed also in the task of unconscious emotional priming, when presented target verbal stimuli are affectively ambivalent and primed with affectively connected with them other verbal stimuli previously presented on subliminal level. This phenomenon must be considered in the studies with the use of the above procedure and is worth of a special research.

The results, obtained in the experiment pointed out on ambiguous attitudes on the different SOAs. These results may be induced us to address to the problem of the influence of episodic memory (EM) and semantic memory (SM) on the expressed attitudes towards the ethnic groups. Any attitude (or attitude's components) can be presented as by information encoded in SM, as by information encoded in EM. In the EM the information about the concrete cases, taken place in a certain place and time is encoded. Traces of EM and SM differ by their qualities; in the EM the traces disappear faster, but have stronger effect. It can lead to the fact that generalized attitude towards an object, which is represented as an attitude in SM, can be changed under the influences of specific episodic traces. These influences can have inhibitory or activating influence depending on the level of accomplishment and coincidence of emotional valence of attitudes' representation in SM and EM. The pattern of these influences and an interaction of information from different parts of memory, relevant to the attitude, should define the effects of responses latency at different SOAs.

VI. FIFTH STAGE

The fifth series of the experiment was conducted in 2011. According to results of 4th stage experiments, the question of the present study was following: is there a connection between the reaction time in the implicit attitude measure task and affective valence of recent episodic events? The answer to this question raises the issue of long-term emotional (semantic) priming mechanisms in the context of episodic and semantic interactions, in the studies of the nature of automatic processes and the representation of attitudes.

Method

Implicit measures were made using EPT with LDT. Separately was controlled the presence of participants with the recent critical, autobiographical events connected with the attitudes and their affective valence. For this aims, post test questionnaire included a description of a possible 10 affectively significant inter-ethnic situations with a scale to assess their affective valence, how long ago was the situation (one to three weeks) and affective strength. It was made for assessing the presence and extent of the emotional impact of the recent incidents, involving inter-ethnic relations. After the experimental task, the participants were administered the questionnaire. The experiment lasted approximately for 15 min.

Participants

The participants were 176 undergraduate students from two ethnic groups: "Russians" (N=111) and "Latvians" (N=65)

recruited from Baltic Psychology and Management university college and several other higher schools in Riga.

Groups were created depending on the following criteria of ethnic identity: language, culture and origin. In total, there were male - 54 and female - 122 participants, in age group 19-50 (Me=25).

Stimuli

The same as in the 3rd and 4th stage of study.

Results

Reaction time studies with the impact of episodes. 2.8% of all (19 008) observations, which were outside the range of reaction time (RT) 160 - 1264 ms were omitted, including 0.3% of the RT $\leq$ 160 ms and 2.5% greater than 1264 ms (RT's mean +3 SD). Since ethnic attitudes were determined by shifts of RT, then the neutral prime ("chair") and the neutral target stimuli were not considered (Fig. 20). The distribution of the data does not match the normal distribution.
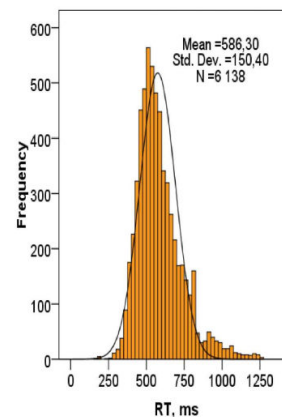

Fig. 20 Histogram with Normal Curve

Using ANOVA the study of influence of the following factors on the reaction time was carried out:

«Group» («RU» - Russians, «LV» - Latvians); «Prime» (two levels: Russian-«R», Latvian-«L»); «SOA» (9 levels), «Target» (two levels: «+» - affectively positive words, e.g. love; «-» - affectively negative words, e.g. rage); Episodes «EM» (three levels: «positive», «neutral», «negative»).

There were statistically significant influence of the factors «SOA» (F = 4.02; p = 0.000 $\leq$ 0.001) and «Target» (F = 145.00; p = 0.000 $\leq$ 0.001), «EM-1» (F = 8.80; p = 0.000 $\leq$ 0.001) and the interaction of factors, "EM-1" and the «Group» (F = 9.49; p = 0.000 $\leq$ 0.001) (Fig. 20-24). The statistical significance of differences between the mean values for different factors is established using the Scheffe's multiple comparison procedure.

The study of the reaction time shift: For the exposure of implicit attitudes the method of RT shift was worked out [15]. Latencies response is shown on the fig.21. RT's shift R was defined as the difference between RT to a positive stimulus and RT to a negative stimulus. The rule for finding the valence of attitude follows in the description of previous calculation. By means of ANOVA the study of the RT's shifts influence

on following factors was conducted «Group» («RU», «LV»); «Prime» (Russian-«R», Latvian -«L», French-«F»); «SOA» (9 levels); Episodes «EM» («positive», «neutral», «negative»). Statistical significant influence on the RT's shifts is not found. Therefore, it is possible to introduce general criteria for determination the valence of attitudes in all observations, i.e. the first and third quartiles (Q1 and Q3) and of RT's shift variable. The shifts exceeded Q3 conform to negative attitudes, shifts less than the Q1 conform to positive attitudes. The shares of participants with different attitudes to the ethnic groups were compared. Fisher's angular transformation and Pearson's Chi-square criterion were employed.
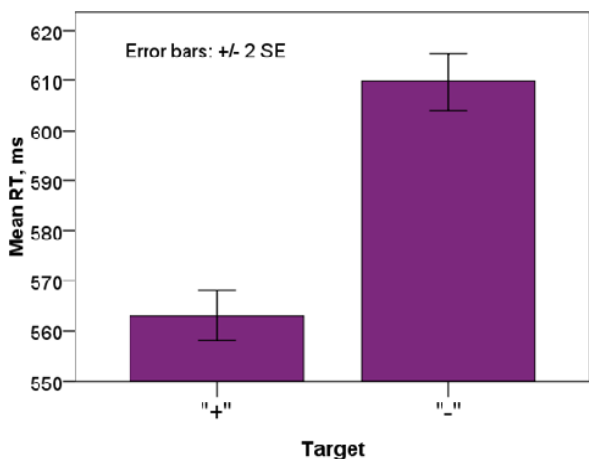

Fig. 21 Means of RT. The Influence of the Factor „Target"

It was found that the means of reaction time for positive target stimuli presented at the experiment are less than the means of reaction time for negative ones (F=205.68; p=0.000≤0.001) (Fig.22).
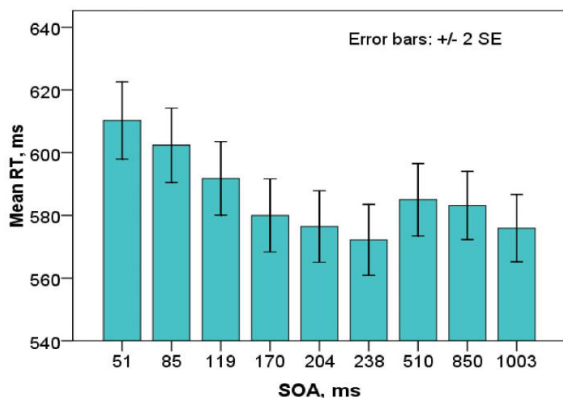

Fig. 22 Means of RT. the Influence of the Factor „SOA"

Statistical Significance of Differences is shown in the Table IV.

TABLE IV
STATISTICAL SIGNIFICANT DIFFERENCES ON THE DIFFERENT SOAS

$RT_{51} \triangleright RT_{119}$ (Scheffe 3.56; p = 0.001 ≤ 0.001);	$RT_{85} \triangleright RT_{119}$ (Scheffe 3.55; p = 0.018 ≤ 0.05);
$RT_{51} \triangleright RT_{170}$ (Scheffe 3.56; p = 0.000 ≤ 0.001);	$RT_{85} \triangleright RT_{170}$ (Scheffe 3.55; p = 0.000 ≤ 0.001);
$RT_{51} \triangleright RT_{204}$ (Scheffe 3.57; p = 0.000 ≤ 0.001);	$RT_{85} \triangleright RT_{204}$ (Scheffe 3.55; p = 0.000 ≤ 0.001);
$RT_{51} \triangleright RT_{238}$ (Scheffe 3.57 p = 0.000 ≤ 0.001);	$RT_{85} \triangleright RT_{238}$ (Scheffe 3.55; p = 0.000 ≤ 0.001);
$RT_{51} \triangleright RT_{510}$ (Scheffe 3.57; p = 0.000 ≤ 0.001);	$RT_{85} \triangleright RT_{510}$ (Scheffe 3.56; p = 0.000 ≤ 0.001);
$RT_{51} \triangleright RT_{850}$ (Scheffe 3.56; p = 0.021 ≤ 0.05);	$RT_{85} \triangleright RT_{1003}$ (Scheffe 3.54; p = 0.000 ≤ 0.001);
$RT_{51} \triangleright RT_{1003}$ (Scheffe 3.56; p = 0.000 ≤ 0.001);	

A remarkable fact was the affectively meaningful for the participants recent extra-experimental events effect on RT (Fig. 23), regardless of the emotional valence of these events.
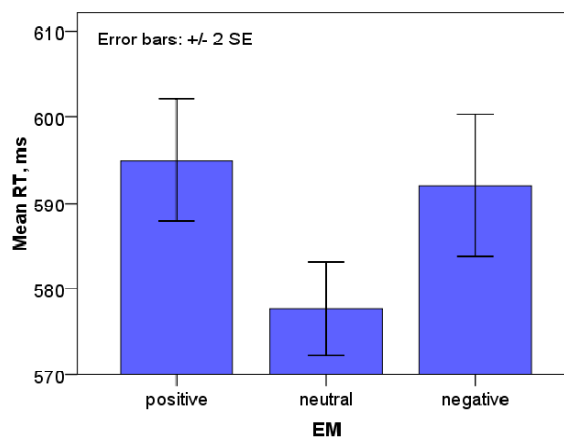

Fig. 23 Means of RT. the Influence of the Factor „Episodes". RT Higher at Positive and Negative Episodes than at Neutral (t=3, 91, p≤0,001 and t=2,90, p≤0,01 accordingly)

The fastest RT is registered for the group of participants, who did not inform about such events or their affective significance was denied by them. This suggests that the presence of recent affectively significant episodic events creates an obstacle to the activation of the automatic attitude. In this case the presence of a relevant episodic activation can exert an inhibiting influence on the activation of the attitude irrespective of correspondence of the sign (positive or negative) of the episodic activation to the affective valence of the attitude. If this assumption is valid, then either the stage of an obligatory check for the presence of pertinent episodic traces of events or the assumption about the inhibiting influence of the relevant episodic activation on the activation

of the attitudes should be added to a cognitive model of attitudes.

The positive events in contrast to the data by Coane and Balota [11], slowed not speeded lexical decisions for the relevant words. This may be due to differences in experimental tasks used and the nature of extra-experimental events. At the same time, the result may be due to differences in the degree of formation of the participants' ethnic attitudes. In this case, for those of them, who are sensitive to inter-ethnic relationship factors and who have informed that corresponding recent events took place, a high degree of ethnic attitude formation can be assumed present. Other participants may possess less formed ethnic attitudes, and corresponding events had no expected affective effect on them. Control over the relevant factors will facilitate the testing of this hypothesis in the following studies.

The nature of interaction of the "ethnic group" factors and the "episodes" ones (Fig. 24) requires further investigation of the reasons why the valence of the episodes has different effects on RT in different ethnic groups. Further study of the connection of the recent relevant extra-experimental events and implicit measures of attitudes will allow to develop new concepts of mental representation of attitudes, which will take into account the interaction of the newly acquired episodic experience and previously acquired experience, which is automatically activated in semantic memory.
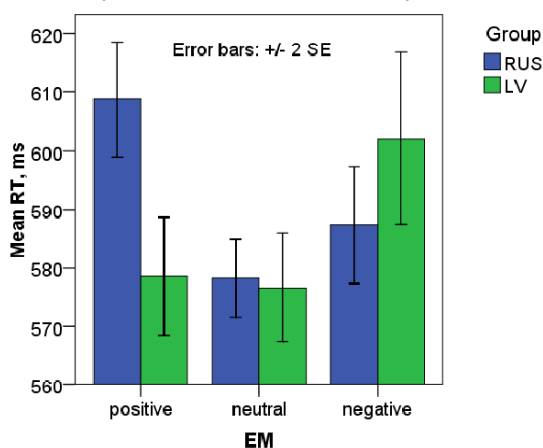

Fig. 24 Means of RT. ihe Influence of the Factors „Episodes*Group"

This is also important for understanding the significance of implicit measures of attitudes.

VII. DISCUSSION

In these researches initially our purpose was to study of possibility to use implicit methods of measuring for understanding of ethnic attitudes. Implicit methods are widely used for the study of racial attitudes; we draw our attention on ethnics, as an example of cognitive construct, which has different access levels. During researches we used works of Fazio, B. Wittenbrink, Devine, P. G., Greenwald, A. G., and other researchers of implicit attitudes [1], [27],[19], [20], [21].

Studying correlations of direct and indirect methods of measuring and questions, we examined the questions related to mechanics of the implicit measuring – cognitive processes of stimulus information treatment, its conformity. Therefore, as shown in the article, beginning with measuring of ethnic attitudes, on this stage we are concentrated on the study of influence of the emotionally constrained episodic events with chronometric correlations of attitudes. We searched implicit correlations of ethnic attitudes at first in different experimental tasks (1-2 stage), after using the different intervals of SOA (3 stage), trying to compare the results of Latvia`s population measuring to the population of Baltic region` other countries - Estonia (4 stage). Due to the results of these researches, we accomplished the attempt to study the influence of episodic memory events on the results of the implicit measuring (5 stage).

The implicit measuring is actively studied in a modern scientific environment. New data about psychometric indexes of implicit methodologies show that EPT, probably, befits for research of cognitive constructs mechanisms, while for the study of ethnic relation it is more appropriate to apply IAT [22]. However, the ethnic relation of Latvia`s population corresponds to some theoretical developments in area of implicit and explicit measuring correlation, for example, APM [21]. Received results show the ambiguousness of direct and indirect measuring correlation, which also corresponds to data, presented in reviews. The results received by implicit methods [21] in many cases show weak correlation with the results received by explicit methods, that forces researchers to talk about existence of implicit – explicit dissociation and leads the formation of many fundamentally different opinions about the nature of explicit and implicit constructs. Researches in this area and its results within the framework of certain theoretical paradigm assist the increase of information level and decline the indeterminacy in the area of implicit researches. Prime-effects are not studied well, so the influence mechanisms on its distribution are discussed [22], [23].

EPT is sensible to the hindrances during research that reduces internal co-ordination and research reliability as compared to explicit indexes [18], and complicates possibility of reproducing of determined effects [24]. This phenomenon is aggravated also by that similar researches were not accompanied by the systematic testing with the use of procedural variables and corresponding strategies of results analysis. So, for example, it is unknown, whether it possible to falsify answers in case of evaluation priming using, and what mathematical methods are more sensible to the results of the similar measuring [25].

It is not defined also, what method of reaction time research is most appropriate - base line reaction or control of reaction on different primes [26].

Therefore we avoid simple interpretation of obtained data, because modern science does not exactly know the nature of implicit measuring and its co-operation and measuring based on self-reports [22].

In relation to explicit measuring, in the period of above mentioned researches cycle, we establish the changes of

modality of ethnic attitudes. So, among Russians in Latvia the signs of ethnic nihilism are noticed, thus in both types of measuring, among Latvians the indexes of ethnic fanaticism are increased significantly.

Researches of episodic events emotional valence on the results of the implicit measuring are topical scientific issue, which allows better understand nature of attitudes. Researches of J.H. Coane, D. A. Balota indicate the presence of «seasonal» priming – influence of episodic memory activity on implicit measuring [11]. We determine the braking effect of recent episodes on the results of measuring, as compared to neutral stimulus. In future researches, we hope to get more complete and exact description and understanding of determined data.

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