

## IMPLICIT METHODS FOR STUDYING ATTITUDES: MODERN APPROACH TO RESEARCH IN SOCIAL SCIENCES

**Irina Plotka**

**Nina Blumenau**

Baltic psychology and management university college, Latvia

**Abstract.** *The aim of paper is to analyze the experience of the experimental studying of attitudes by implicit methods in social sciences. It is an experience of collaborative research of graduates and professors to develop a new tool - experimental procedures of the implicit association test and unconscious priming to measure various psychological constructs. The involvement of students into the creative atmosphere underpins the formation of a creative, competent and responsible psychologist who could learn how to work in any field of psychology. The concisely presented results of empirical research are focused on the study of ethnic attitudes, hardiness, gambling addiction and addiction to alcohol with implicit methods and self-assessment procedures. On the example of gambling addiction considered in detail, the benefits of implicit measurements were revealed. Implicit methods are successfully used not only in social psychology and its applied fields, but also in pedagogy (in revealing creative abilities).*

**Keywords:** *attitude, education, explicit method, implicit association test, unconscious emotional priming.*

### Introduction

Research of various psychological phenomena by implicit methods both in the field of social psychology, and its application areas is a new direction of research in Latvia.

Contemporary psychological research widely uses both explicit and implicit methods for measuring attitudes. The terms „explicit” and „implicit” relate to cognitive constructs and processes measured by various procedures. Some authors urge using to indicate measurements the terms „direct” and „indirect” accordingly (De Houwer, Teige-Mocigemba, Spruyt, & Moors, 2009). Direct and indirect measurements may reflect different experience or its different aspects in relation to the object of attitude, where indirect measurements do not replace but complement the results obtained through direct interviewing techniques (Greenwald, & Banaji, 1995; Rudman, 2011). Explicit methods are straight, controlled, and conscious. They are based on explicit knowledge about oneself and often do not reveal the true but socially desirable answers of participants. Implicit methods are indirect, automatic, and unconscious. Implicit methods are measurements of automatic (unconscious) evaluative reactions that come to mind spontaneously, with one presentation of the object towards which the attitude has been formed (Petty, Fazio, & Brinol,

2009, pp.3-8). They are based on the measurement of the reaction time of participants when they perform a variety of tasks and their attention is focused on performing these tasks, rather than on the object of attitude. In implicit social cognition the definition of attitude is understood as a mental link between the object of attitude and its final evaluations (attributes) which are stored in memory (Fazio, 2007).

Attitude refers to people's evaluation of a wide variety of objects, issues, and people, including the self. Both explicit and implicit methods of attitudes are commonly used.

*The aim of paper* is to analyze the experience of the experimental studying attitudes by implicit methods in social sciences.

The authors represent the experience of collaborative research of Baltic Psychology and Management College (BPMC) graduates and professors on the basis of the implicit measurement laboratory, launched for the first time in Latvia in 2006.

When teaching undergraduate psychologists there is a need to give them an opportunity to develop competencies, which allow them to engage in the process of modern psychological research, which along with the explicit methods also use implicit measurement techniques. For the formation of general scientific, instrumental, social, personal, cultural and professional competencies the undergraduate psychologists are involved in the research process which is based on teamwork to study various attitudes by modern implicit methods: the evaluative priming procedure and implicit association test (IAT). These are experimental researches, the implementation of which requires special training on the basis of existing training courses in experimental psychology, cognitive psychology, methodology of psychological research, statistical methods in psychology, computer data processing and interpretation, and psychometrics. Research is carried out by a research team - professors and undergraduates, where each performs a specific function and has an idea of what has been done by colleagues. During the research, undergraduates have mainly to study publications in English. The undergraduate curriculum also includes the study in writing articles in the format of the American Psychological Association (APA). After completion of the work there is the preparation of publications, which involves professors and undergraduates whose contribution to the research turned out to be significant. As in the process, and after its completion, undergraduates together with professors participate in international conferences. Involvement of students in the creative atmosphere develops a basis for the education of a creative, competent and responsible psychologist. Some of the graduates continue their studies in doctoral programs. In 2014 doctoral theses were successfully defended by graduates Maria Bambulyaka („The impact of emotional valence of episodic events on the implicit measurements of the ethnic attitudes”) and Elena Shaplavskaya („Research of hardiness using explicit and

implicit measures (on the basis of professions related to risk)”) - the scientific advisor: Dr. psych., BPMC's professor I. Plotka.

*Methods:*

- Introduction to the research carried out by using the experimental procedure of unconscious emotional priming;
- Introduction to the research carried out by using the implicit association test (IAT).

### **Researches using the procedure of unconscious emotional priming**

Priming is a type of unconscious or implicit memory, which refers to the effects of prior impact and can be expressed in rapid identification of subsequent words or objects at low signal. The procedure of unconscious emotional priming – 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. Unconscious emotional priming procedure became applicable for the research of ethnic attitudes in BPMC since 2006. In the period from 2006 to 2013, the authors (Irina Plotka, Dmitry Igonin, Nina Blumenau) together with BPMC undergraduates conducted and published four stages of experimental research.

The aim of all stages of research was to assess the automatic (unconscious) ethnic attitudes.

In the period 2006-2012, there have been several series of experiments which were attended by 952 participants.

*The general aim* of all stages of the study was the assessment of automatic (unconscious) ethnic attitudes.

*Implicit research method* was the procedure of unconscious emotional priming.

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

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 researcher was to measure that attitude.

The Stimulus Onset Asynchrony (SOA) is the time period between the first stimulus (prime) is exposed and the second stimulus (target) is presented.

The reaction time (RT) of the participant was fixed. 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 fulfillment shortens (Fazio, Sanbonmatsu, Powell, & Kardes, 1986). With the help of the

RT measurement the rate of an implicit link of the defined notion with positive or negative attitudes was evaluated: participants' attitude towards the corresponding ethnic group

Four variants of tasks for participants were used:

- I. Classification of target words of Osgood semantic differential scale for nouns and adjectives - 2006 (Plotka, Igonin, & Blumenau, 2008, 2010);
- II. Categorization of words and number combinations: the procedure of direct and inverse priming - 2008 (Plotka, Igonin, & Blumenau, 2009);
- III. Lexical decisions (identification of words and non-words - meaningless strings of letters - 2009, 2010, 2011 (Plotka, Igonin, Blumenau, Bambulaka, & Ozola, 2010; Plotka, Igonin, Blumenau, Bambulaka, Ozola, & Simane, 2011; Plotka, Blumenau, & Bambulyaka, 2012b; Plotka, Blumenau, Igonin, & Simane, 2012a, Plotka, Blumenau, Igonin, Simane, & Bambulak, 2013b, Plotka, Igonin, Blumenau, & Simane, 2013c).);
- IV. Classification of target words by their emotional valence - 2012, 2013 (Plotka et al., 2013b; Bambulyaka, Plotka, Blumenau, & Igonin, 2013).

To determine the valence of ethnic attitudes in variants I-III the method of reaction time shifts was used. As the reaction time shift the authors used the difference in the time of reaction for positive and negative target stimuli:  $R = RT(+)-RT(-)$ . In this case, positive shifts (above the third quartile Q3) would comply with negative attitudes, negative shifts (below the first quartile Q1) – with positive attitudes. On the basis of experiments in variant III, using the ANOVA, it was found that none of the factors (prime, goal, ethnic group, SOA (Stimulus Onset Asynchrony), valence of target stimuli) affect the reaction time shifts. This provided an opportunity to enter the criteria for determining attitudes: Q1 and Q3 shifts. Of 14,416 observations in 2009-2011, it was found that the shifts  $R$  less than  $122 \pm 5$  ms correspond to positive emotional attitudes and the shifts more than  $45 \pm 2$  ms - negative attitudes. The relative error does not exceed 5%. The authors also applied different normalization of reaction time and shifts. It has been found that it is not necessary. Shift method allows rapid assessment of chronometric correlates of participants' implicit attitudes.

In variant IV the method of determining the valence of ethnic attitudes was changed. The authors called it a modified method of shifts. It proved to be more accurate and took into consideration the "baseline". The modified shift was named the difference:

$$RR = (RT_- - RT_+) - (RT_{0-} - RT_{0+}), \quad (1)$$

where  $RT_-$  and  $RT_+$  - reaction time to negative and positive target stimuli, respectively, in the presence of prime, and  $RT_{0-}$  и  $RT_{0+}$  - reaction time to

negative and positive target stimuli, respectively, in the absence of prime („baseline”). The attitude is positive if  $RR \geq Q_3$ . The attitude is negative if  $RR \leq Q_1$ . The attitude is neither positive, nor negative („middle”) if  $Q_1 < RR < Q_3$ .

In each experiment explicit methods were used as well. The greatest preference was given to the technique Scales of Ethnic Identity (Soldatova, 1998, pp.189-193), as it was the most suitable for the research of correspondence between some results obtained with its help and the results of the emotional unconscious priming procedure. On average, there were about 30% of matches, the number of which depended on the SOA.

One reason for matches may be related to the impact of recent autobiographical events associated with the content of attitudes. These results 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.

Experiments of 2006-2013 are adequately represented in the publications of the authors (Plotka et al., 2008, 2009, 2010; Plotka, et al., 2011; Plotka et al., 2012a; Plotka et al., 2012b; Plotka, Blumenau, Igonin, Bambulaka, Ozola, & Simane, 2012c; Plotka, et al., 2013b; Plotka, et al., 2013c; Bambulyaka, Plotka, Blumenau, Igonin, Ozola, & Shimane, 2012; Bambulyaka, 2014).

### **Researches using the implicit association test (IAT)**

Since 2012, various versions of the IAT have been developed for research of attitudes towards:

- Gambling (Plotka, Igonin, Blumenau, Simane, Lutikova, & Morozova, 2013a);
- Alcohol (Plotka, Blumenau, Igonin, Simane, Bondarevska, & Krasone, 2013d);
- Hardiness (Shaplavska, 2013a; Shaplavska, Plotka, Blumenau, & Kruzite, 2013b; Plotka, Shaplavska, Blumenau, Igonin, & Kunavin, 2013e; Plotka, Shaplavska, Blumenau, & Igonin, 2014a; Plotka, Blumenau, Igonin, & Shaplavska, 2014b; Shaplavska & Plotka, 2014)

- Theft (Šīmane, Plotka, Blūmenau, & Igoņins, 2013a);
- Violence (Šīmane, Plotka, Igonin, & Blumenau, 2013c; Šīmane, Plotka, Blūmenau, & Igoņins, 2014a; Simane-Vigante, Plotka, Blumenau, Igonin, 2014b; Simane, Plotka, & Nartisa, 2014b; Simane-Vigante & Plotka, 2014d);
- Consumer behavior (Urbane, 2014).

Implicit association test (IAT) is an implicit attitude measure in which participants perform a series of categorization tasks on computer for a set of words representing an attitude object (e.g., words such as ant, fly, and grasshopper representing the attitude objects of insects) and for a second set of intermixed words, selected to be highly evaluative in nature. In one phase of the test, the computer response key used to indicate membership in the specified category is the same as that used to indicate a positive word. In a different phase, the key used to indicate membership in the specified category is the same as that used to indicate a negative word. If attitudes are positive, judging the target words should be faster when the same response key is used for category membership and positive words than when the same response key is used for category membership and negative words. Negative attitudes produce the opposite pattern (APA, 2009).

Let us present the results of a pilot research.

*The aim* of research was to identify the valence of attitudes to gambling using implicit and explicit measurements in none-problem social gamblers, who regularly visit gaming establishments and people who do not go to the gaming establishments.

*Method.*

*Participants* – 50, male, the age 18-45, Mdn=31,5 years old. The participants consisted of two groups: „Gamblers” (N=25) and „Non-Gamblers” (N=25). „Gamblers” were selected from casino visitors at least once a week. All of them belong to category of „non-problem social gamblers”, who are employed or learning.

*Research methods*

1. Modified Single-Category IAT (SC-IAT) (Plotka, et al., 2013a) was designed based on the design of the classical IAT (Karpinski, & Steinman, 2006);
2. Self-reported procedure Gambling Attitudes and Beliefs Scale (GABS) (Breen, & Zuckerman, 1999) GABS- Gambling Attitudes and Beliefs Scale, adapted N.Lutikova, M.Morozova, I.Plotka (Plotka, et al., 2013a).

Experimental procedures of the IAT allow us to measure the effect of hidden implicit preferences of verbal and visual stimuli (categories), that reflect the content of the construct of gambling and attributes that have a positive and negative valence.

*Stimulus.* The target categories were presented in verbal form – game for money, and in visual form – 6 pictures with gambling theme, covering different types of gambling.

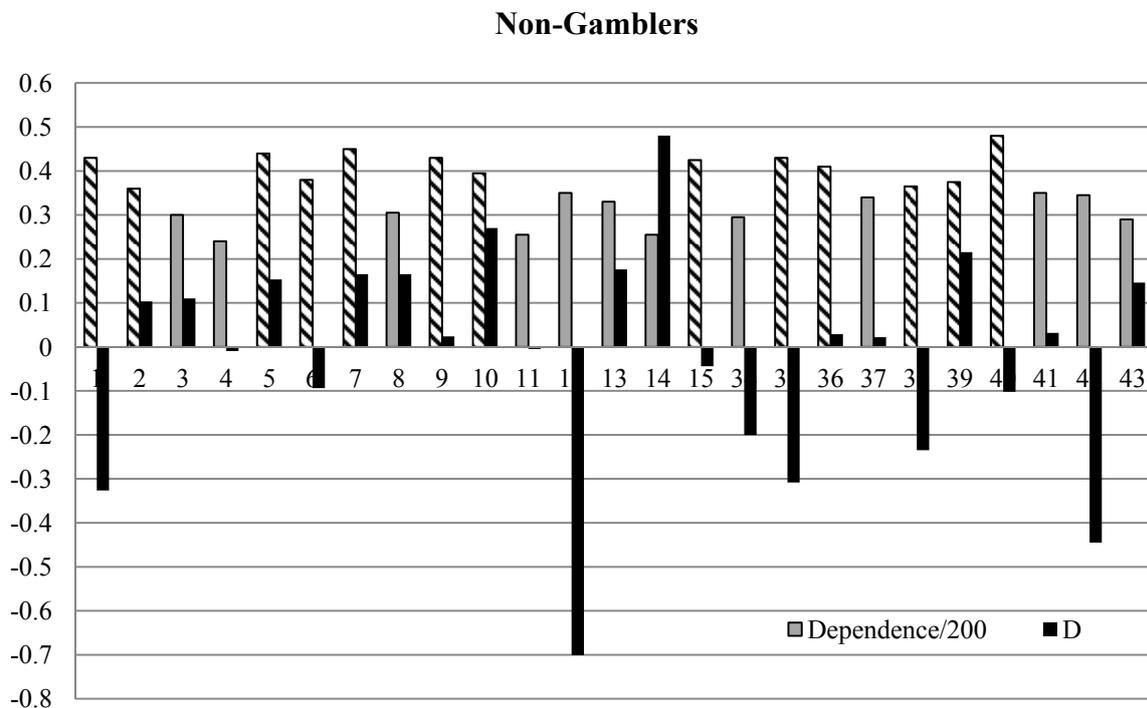
“Unpleasant” attributes: Terrible, Bad, Humiliating, Calamitous, Hideous, Catastrophic, Abusive, Discouraging, Disappointing, Nasty, Gloomy.

“Pleasant” attributes: Awesome, Excellent, Wonderful, Marvelous, Excellent, Pleasant, Grandiose, Attractive, Amazing, Fascinating, Impressive.

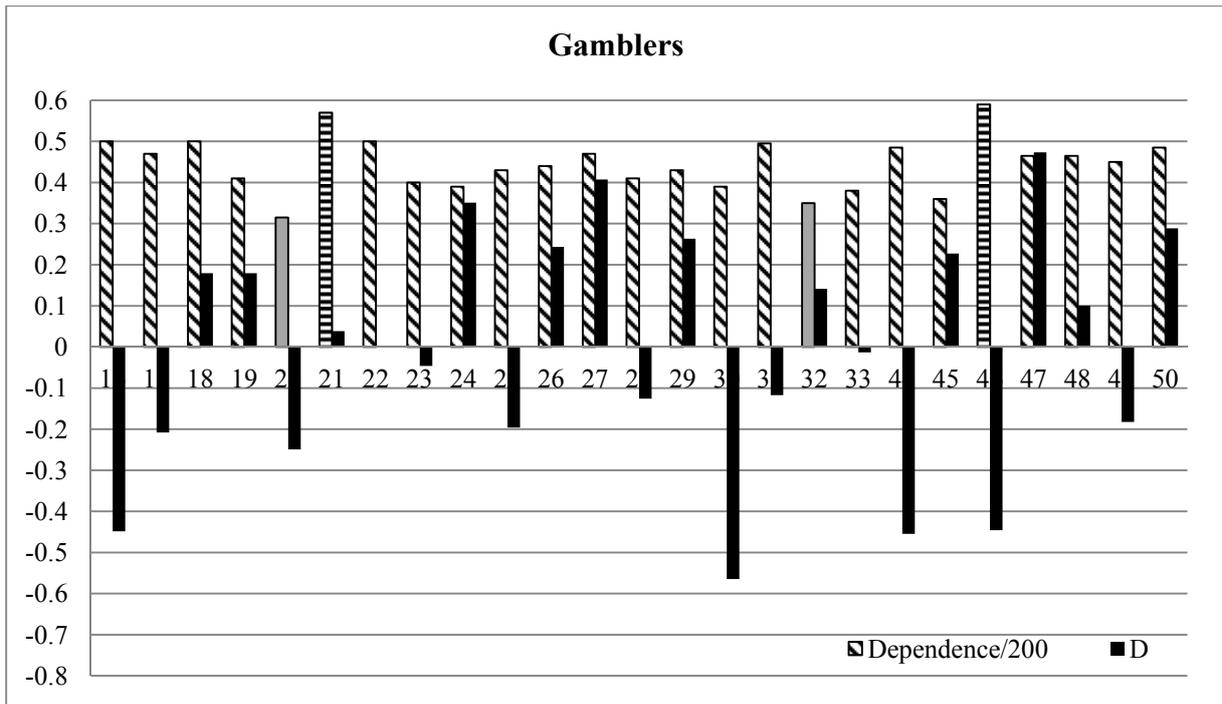
*The main results.*

Figures 1-2 show the results of measurements of gambling with the explicit method GABS (levels of gambling addiction: gray bars - neutral, bars in diagonal stripes - high, in horizontal stripes - critical) and IAT (black bars: 0.15 - small effect 0.35 of gambling addiction - average effect, 0.60 - high effect). To visualize the variable „Dependence”, measured explicitly, the results have been divided by 200. The horizontal axis indicates the codes of participants. Groups „Gamblers” and „Non-Gamblers”.

From the figures it is possible to detect that the measured attitudes of gambling with SC-IAT are ambivalent. That is, the results of the implicit attitude measurements toward gambling must be treated with great caution. The existence of negative D-scores, obtained with the help of IAT, does not mean that there is no gambling addiction present. It rather suggest the internal desirability (being ready) to deal with the gambling addiction.



**Figure 1. The results of attitudes towards gambling measured with explicit method GABS. Group “Non-gamblers”. Taken from (Plotka et al., 2013a)**



**Figure 2. The results of attitudes towards gambling measured with explicit method GABS Group “Gamblers”. Taken from (Plotka et al., 2013a)**

*Main conclusions.* Analysis of individual cases detected that the measured attitudes towards gambling with SC-IAT and self-reported procedure are positive and negative (Fig.1-2). It was found that the degree of both positive and negative, implicit attitudes are approximately the same in the group of social gamblers as well in the group of non-gamblers. According to the authors, the ability to measure attitudes toward gambling implicitly, gives an idea of the fact, how high are the chances for the individual either not to get addicted to the game or get rid of already formed gambling addiction. If the implicit attitudes towards gambling are positive, according to Braver, the chance decreases (Bravers, Cleeremans, Hermant, Tibboel, Kornereich, Verbanck, & Noel, 2013; Plotka et al., 2013a).

Also it has been found that explicitly measured by GABS attitudes towards gambling were more expressed in the group of “Gamblers”

### Conclusions and Discussion

The aim of the paper to analyze the experience of the experimental studying of attitudes by implicit methods in social sciences was achieved. The results of theoretic analysis showed the essence of implicit methods: the unconscious emotional priming procedure and implicit association test.

The authors reviewed the experience of pilot researches related to the study of ethnic attitudes using the procedure of unconscious emotional priming for different types of tasks to participants. Original calculation methods of attitudes' correlates were shown: the method of shifts and modified method of shifts; as

well as an idea of influence of the episodes of varying emotional valence on the implicit measurement of ethnic attitudes.

The researches presented the experience aimed at the study of attitudes towards gambling addiction, alcohol, hardiness, theft, violence, and consumer behavior with the help of specially designed experimental procedures of the implicit association test. They were illustrated with the research of attitudes towards gambling with the implicit association test and self-reported measures and showed the advantage of implicit methods. On the example of gambling addiction considered in detail, the benefits of implicit measurements were shown: revelation of negative implicit preferences.

Implicit research methodology is certainly promising, not only in social psychology and its application areas, but also in marketing, political science (behavior in the elections), health psychology, pedagogy (revealing creative abilities), and the study of antisocial behavior. Implicit methods are successfully used not only in social psychology and its applied fields, but also in pedagogy - in revealing creative abilities.

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