

Summary

To What Extent are We Aware of Our Attitudes? Implicit Attitudes and Implicit Measures

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In this review, the aim is to familiarize readers to the concepts of implicit attitudes and implicit measures. It is also intended to speculate about the multidimensional expressions of implicit attitudes evaluated through different implicit measures. In the following parts, attitude as a concept will be discussed by emphasizing the differentiation of explicit and implicit attitudes as theoretical concepts. Subsequently, implicit measures will be introduced.

Attitude as a Concept: Implicit and Explicit Attitudes

By considering different definitions in the literature, Eagly and Chaiken (2007) provided a general definition of attitude: "...attitude as a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (pp. 598). Although cognitive, affective and behavioral components of attitude are highly underlined in the literature in this definition, there is no emphasis on the multidimensional nature of attitude. However, researchers argued that for theoretical improvements, it might be beneficial to analyze antecedents and consequences of attitudes by considering the multidimensional structure of attitude. In the literature there is no research particularly discussing implicit attitudes within the frame of three-component attitude model. Thus while focusing on implicit measures I will speculate about the question of "which implicit measure provide information about which component of implicit attitudes".

Implicit and Explicit Attitudes

Explicit attitudes are deliberative and conscious attitudes while implicit attitudes are described as attitudes outside of conscious awareness and control (e.g., Fazio, Jackson, Dunton & Williams, 1995; Greenwald & Banaji, 1995). Explicit attitudes represent 'retrieved evaluations', which are the results of deliberative cognitive processes while implicit attitudes are automatic, indirect and unconscious (or preconscious) (Devos, 2008; Petty, Fazio, & Briñol, 2009).

Research evaluating both explicit and implicit attitudes has shown that people can hold different and

even inconsistent attitudes at the implicit and explicit level (Ashburn-Nardo, 2010). The discrepancy between implicit and explicit attitudes might be especially pronounced for socially sensitive topics such as self-esteem and in-/out-group attitudes (Verkuyten, 2005). Different theoretical approaches, which are discussed below, suggest different arguments about the divergence between implicit and explicit attitudes.

Implicit and Explicit Attitudes: Theoretical Approaches

The meta-analysis demonstrated that the correlation between implicit and explicit attitudes is .24 (Hofmann, Gawronski, Gschwendner, Le, & Schmitt, 2005). Also, there are studies indicating that while explicit measures are predictive for verbal responses and deliberative behaviors, implicit measures predict non-verbal and spontaneous behaviors (Dovidio, Kawakami, & Gertner, 2002). At this point, the question is that whether these findings are proofs for the structural divergence between explicit and implicit attitudes or not. Although there is no exact answer, different theoretical approaches have been developed to explain the discrepancies between explicit and implicit attitudinal processes. Two of them will be briefly explained in this paper: The MODE model (Motivation and Opportunity as DEterminants of the attitude behavior relation) and the Dual Attitude Model.

The MODE model (Fazio, 1990) accepts automatic/implicit attitudes as the initial point of the process that causes the behavior. However, if there is a motivation to engage in deliberative, cognitive effort because of certain reason such impression management, social norms etc., and if there is an opportunity to do so, the automatic reaction is modified and the behavior reflects not the automatic process but the deliberative/controlled process. Although the MODE model remarks two different processes, these processes are accepted as the representations of one core attitude.

On the contrary, Dual Attitude Models proposes two different systems: A conscious system which is deliberative, effortful and verbal and preconscious system which is unintentional, associative and preverbal (Wil-

son, Lindsey, & Schooler, 2000). By referring to the weak relation between explicit and implicit measures and different relationship patterns of explicit and implicit attitudes with other variables, this approach defends the independence of mental representations for explicit and implicit attitudes. Greenwald and Nosek (2009) argued that the discussion of single versus dual-structure of explicit and implicit attitudes is not solvable. However, according to the authors, the discussion does not create any doubt about the necessity of studying implicit and explicit constructs.

Antecedents of Implicit Attitudes

Devos (2008) summarized the factors affecting the development of implicit attitudes under three categories: (1) Socialization and experiences (2) cultural evaluations and (3) self-related attitude objects.

Studies showing the effect of past and present experiences on implicit attitudes are categorized under socialization and experiences title. To illustrate, the study showing the effect of negative first-experiences with cigarette smoking on negative implicit attitudes towards cigarette (Rudman, Phelan, & Heppen, 2007) provide an evidence for the effect of past experiences while another study demonstrating the beneficial effect of diversity training on the decrease in implicit prejudice shows the effect of current experiences on implicit attitudes (Rudman, Ashmore, & Gary, 2001). There are also findings indicating the effect of self-related objects on implicit attitudes; e.g., the study demonstrating that assigning people into groups on the basis of trivial criteria make them evaluate their group more positively at the implicit level (Ashburn-Nardo, Voils, & Monteith, 2001). On the other hand, there are also studies showing the effect of norms, cultural evaluations in society on implicit attitudes. The study indicating that for Blacks, higher perceived discrimination led to higher implicit negativity towards in-group (Livingstone, 2002) would be an example representing this effect.

Implicit Measurement Tools

Implicit measures evaluate attitudes even though people are not aware of what the measure is assessing and/or they do not have an access to their attitudes via introspection and/or they do not have control over their responses (De Houwer, 2005; Petty, Fazio, & Briñol, 2009). In contrast, explicit measures are transparent tools and people are aware of the intention of the measure and they have generally control over their responses (Petty et al., 2009). Accordingly, researchers have always been concerned about possible biases affecting explicit measures such as strategic responses, and self-deception (Wittenbrink & Schwarz, 2007). With the recent technological developments, different types of implicit measures have been developed which promise to circumvent the effect of biases in self-reports (Devos, 2008; Greenwald & Farnham, 2000; Petty et al., 2009).

Also, predictive power of the implicit attitudes increased the popularity of implicit measures. A meta-analysis conducted by Greenwald et al. (2009) showed that for socially sensitive topics such as out-group negativity the predictive power of the Implicit Association Test (IAT) exceeded the explicit measures.

During the past two decade, different types of implicit measures, which can be categorized under three categories namely paper-pencil implicit tests, reaction-time based implicit tests, and physiological measures (Wittenbrink & Schwarz, 2007) have been developed.

Paper-Pencil Tests

These tests are low-tech tools. Participants have time to provide a response in these tests. The name-letter effect test would be a highly known example for paper-pencil implicit tests (Nuttin, 1985). In this test, if participants more positively evaluate the initial letter of their name it is accepted as an indication of high self-esteem. Stereotypic Explanatory Bias (Sekaquapete, Espinoza, Thompson, Vargas, & Von Hippel, 2003) and Linguistic Intergroup Bias (Maass, Salvi, Arcuri, & Semin, 1989) measures are the other examples in which participants make comments for stereotype consistent and stereotype inconsistent stimuli.

If we speculate about components of implicit attitude measured by paper-pencil tests, we can suggest that Stereotypic Explanatory Bias and Linguistic Intergroup Bias measures associate with cognitive and behavioral components of attitude because in these measures, stereotypes are activated and expression of this activation through verbal comments is analyzed. On the other hand, in Name-Letter Effect test, the extent to which participants like the letters is measured, thus we can say that Name-Letter effect test provides an evaluation for affective component.

Reaction-Time Based Implicit Measures

The scores on these test base on the accuracy and speed of responses during/after the presentation of particular stimuli. Spontaneous reactions toward the stimuli which occur in a few hundred milliseconds are assessed in these measures (Wittenbrink & Schwarz, 2007). Priming test and the IAT are the most popular examples of this category.

Priming test depends on the latency of judgement after the presentation of an attitude object as a prime (Fazio, Jackson, Dunton, & Williams, 1995). In this task, researchers are interested in whether participants categorize negative and positive words more quickly after the presentation of certain attitude objects such as Black and White faces. According to the researchers, results which showed that White participants were quicker to identify negative words when the primes were Black faces compared to the condition in which the primes were White faces, indicates the negative automatic associations relate with Blacks.

The other example, which also depend on automatic associations of target categories, is the IAT (Greenwald & Banaji, 1995). There are target and evaluative categories in the IAT. Participants categorize stimuli appearing in the center of the screen, to a target category (e.g. flower or insect) and/or attribute concepts (e.g. pleasant or unpleasant) as fast as possible. In different blocks, target categories were combined with attributes both in a compatible (e.g. flower and positive) and incompatible manner (e.g. flower and negative). The difference between the mean of the response latencies for compatible and incompatible blocks indicates the valance of attitudes towards the target concepts (Hofmann et al., 2005).

Some authors conclude that priming and the IAT evaluate the affective component of attitude. However, considering that these measures depend on the associations relate with attitude objects we can suggest that these measures might also evaluate cognitive component of implicit attitude. To illustrate, the IAT measuring the relative link between liberal arts and females and between science and males (Nosek, Banaji, & Greenwald, 2002) depend on gender related stereotypes so it is clear that this measure evaluates cognitive component of attitude. Consequently, depending on the content of measure, reaction-time based measures might evaluate both affective and cognitive components.

Physiological Measures

Physiological measures evaluates spontaneous responses before intentional processes change overt reactions (Ito & Cacioppo 2007). There are many examples for physiological measures, however in the current paper, two most popular measure namely skin conductance and facial electromyography (EMG) will be explained.

Skin conductance measures are easy to apply and sensitive to subtle reactions. These measures are good indicators for sympathetic arousal (Pecchinenda, 2001). However, they are not good at differentiating the valence of emotion (Cunningham, Packer, Kesek, & Van Bavel, 2009). In contrast, facial EMG detects valence of emotions. EMG is sensitive to measuring automatic, covert muscle activations which are not detectable by observers (Kappas, Bherer, & Thériault, 2000). The activity of certain facial muscles associates with particular emotions: To illustrate, while the activation on *Corrugator supercilii* muscle (knitting of the brow) associates with negative emotions such as anger and sadness and the *Zygomaticus major* muscle activity (cheek movement) relates with positive emotions such as happiness (Cacioppo, Petty, Losch, & Kim, 1986).

Physiological measures evaluates the bodily reactions of people thus we can assume that these measures provide information about the behavioral component of attitude. However, these reactions are caused by valance and intensity of emotions so it would be better to conclude that physiological measures evaluate the emotional component of attitude expressed by behavioral reactions.

Discussion

In this review implicit attitudes, as a theoretical concept, have been discussed within the frame of current debates in the literature. Also, implicit measures, which are less tolerant to social desirability effect, have been introduced under three categories namely paper-pencil tests, reaction-time based implicit measures and physiological measures. Although, all these measures are evaluated as implicit measures, lower correlations between different types of implicit measures raise doubts about the concept that these measures evaluate: Whether all measures evaluate *implicit attitude* or not. Regarding this issue, different explanations (e.g., methodological variation between different measures, content of stimuli used in specific implicit measure) were suggested by researchers. In this review, I also aim to bring another perspective by speculating about the multidimensional -cognitive, affective and behavioral- expressions of implicit attitudes evaluated through different implicit measures. It is expected that this study and further studies aiming to provide more insight into the controversial issues about implicit attitudes and implicit measures will increase our knowledge on these topics.