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**Type of project:** PN II – ID – 2118, No. 790/2008

**Title of the project:** The influence of priming, structuring and consistency factors on attitude change - a new dual model

**Project summary:** A complex psychological phenomenon, showing the person's or group's evaluation towards different aspects of reality, the attitude is one of the fundamental concepts of psychology. Being a result of experience, the attitudes are stable, durable and polarized. Nevertheless, the lack of coherence of the theoretical approaches in defining and structuring the attitude, the methodological problems between the direct and indirect measures, the problematic attitude-behavior relation and the multiple theories of attitude change with contradictory predictive power over behavior and change, led to a decline in the interests for the study of attitude. This interest was though renewed with the apparition of the dual models in the late '90. In the study attitude there are two approaches: the European school of social representations -considers attitudes as parts of the representation and are oriented to inter-attitudinal structure and the American-Canadian approach considers attitudes as narrower concepts and focus on the intra-attitudinal structure. Direct measurements of attitude (classic scales) are subjective, the indirect measures are cost full and less explicative and the implicit measures are not very much related to the explicit measures and attitudes. There are many models of attitude function that seek to optimize the prediction of behavior from attitudes, but they are not very successful because there are many influencing factors that mediate this relation, such as personality factors and situational factors. Attitude change was a very studied topic resulting in a multitude of attitude change theories with different predictive power. A personal look on the topic of attitude structure, function and change could emphasize the existence of three categories of factors: priming/activation factors, structuring factors and consistency factors. This perspective will be used to build and test a new dual model of attitude change.

**Key words:** attitude structure, implicit and explicit measures, dual model of attitude change, attitude-behavior relation, self traits and emotions

**Members of research team:**

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**Project objectives:**

**General aim of the project:** to find a strategy of attitude change that is effective, rapid, relatively stable and applicable. The original note of the projects is situated on two levels: theoretical and methodological

## Theoretical

- We will propose a new dual model of attitude change that will take into account both the affective cognitive part and the behavioral part
- We will compare and synthesize the European and American approaches on the structure of attitudes

Methodological: we will try to increase the correlation between the implicit and explicit measures of attitude and their correlation to behavioral measures by an optimization of the measures already available.

**Aim 1-Theoretical.** We will carry out a comparative study of the two concepts from the European school (Social representations RS) and the American school (attitudes A). We will compare them on the basis a few analogies that can be observed in their study: schemata and basic cognitive schemes (RS)-attitudes as schemes or frames (A); social practice (RS)-behavior resulting from an attitude, (A); central elements, the central node (strong, resistant to change, connected, with numerous associations (RS)- accessibility, availability, attitude strength, coherence, associative model associative nodes (A); measure through association (RS)- implicit measure, automated activation (A); the importance of associations, connectivity, valence (RS)- explicit measures, polarity; nexus (RS)- associative nodes , spreading activation. (A).

**Aim 2. –Methodological.** Another difficult problem in the study of attitudes is the measurement. The direct measures are costly and easier to employ but is prone to subjectivity. The indirect measure is costly and artificial, less subjective but also less precise as to what is measured, it lacks the construct and content validity. The implicit measures have the same advantages and disadvantages as the indirect measurement, but are more precise

concerning the content of the measure. In our studies we will use both direct and indirect/implicit measures and behavioral measures in order to improve the predictive power of the attitude measures. This will be possible by comparing the different measures for different attitude objects with different valences.

**Aim 3- theoretical.** Study of the moderating factors of attitude change and the attitude – behavior relationship. The attitude–behavior relation had been very complex and the prediction of behavior from attitude is still an unsolved problem. The low attitude –behavior correlation is due to:

1. Incorrect operationalization and identification of the attitude object (for ex. the behavior towards a person (black) is inferred from the attitude towards a group of persons (blacks as a race). The same level of specificity is needed for a more accurate measure.
2. Behavior can be governed by attitudes towards different objects that those being investigated. (errors due to lab conditions, the attributes of the experimenter, the importance for the subject of the attitude being measured (Brannon, L. A. , Tagler, L. G. & Eagly, A. H. (2007), Fazio, R. H., Eiser, J. R & Shook, N. J.( 2004).
3. The self-variables that do not only mediate the attitude functioning attitude change and the attitude-behavior relation but the self is in itself an object of the attitude. Self-schemas for ex.. also very important are emotions, mood and other affective states DeSteno, D., Petty, R. E., Rucker, D. D., Wegener, D. T. & Braverman, J. (2004); Moons, W. G. & Mackie, D. M. (2007); Nabi, R. L. (2003).
4. The attitudes is stronger if it was formed from behavioral sources or from direct experience with the attitude object. There is not enough evidence concerning the relations between the new and the old attitudes and the way they interact but studies showed that people have the tendency to form new attitudes really fast. Fabrigar, L. R., Petty, R. E., Smith, S. M. & Crites Jr., S. L. (2006); Glasman, L. R. & Albarracín, D. (2006). In our studies we will focus in self and emotional factors that influence attitude change and the attitude-behavior relation we will study the three categories of factors mentioned above focusing on the activation and structuring factors and the influence of behavior in the process of increasing the attitude behavior consistency.

**Aim4: theoretical- elaboration of a new dual model of attitude change.**

A dual model that will take into account the cognitive- affective factor and the behavioral component can be more effective than one that situates at only one of these levels. There is no previous model that combines the three aspects and there is still unknown how strong the attitude behavior connection is. There is a lot of evidence as to the influence of behavior on

attitudes (cognitive dissonance) but the effect is no durable and it is not always about a simple justification for the counter-attitudinal behavior. The most effective behavioral change is to be found the cognitive-behavioral therapy which aims to change the behavioral algorithms, of action schemas. The intervention is not easy; it has to overcome resistance, failure, and difficulties and demonstrates the stability and structure of a person's constructs and action schemas. On the other hand the cognitive-behavioral approach needs to be done in a longer period of time, involves the effort and commitment of the person and several sessions of intervention. The new dual model we will propose involves the three factors mentioned above that will influence the change process in different stages of the intervention.

## **Dissemination of results.**

### **a) Studies submitted for publication**

Mihaela Boza, Ana-Maria Țepordei, Adrian Neculau. Social representations, attitudes and social cognition. *Revista de Psihologie Socială*, Iași

**Abstract.** The present article proposes a synthetic overview on the relation between the social representations theory (SRT) and social cognition, as well as on the relations between the concepts of social representation, social stereotype and attitude respectively. Avoiding a biased position, the strong points and the limitations of different models within both research paradigms are emphasized. In addition to a systematization of both divergent and convergent elements, the article emphasizes the possible advantages of an integrative approach. The main differences between the SRT and social cognition lie in the different levels of analysis that we may take into consideration and, on the other hand, in the importance of social context, social sharing, social practice etc. within the two approaches. Therefore, a theoretical perspective in terms of complementarity (rather than dissociation) might bring an epistemological advantage for the research within social psychology field.

**Key-words:** social representation, social cognition, social context, attitude, stereotype

Mihaela Boza, Andrei Holman. Use or abuse of subliminal? *Revista Română de Bioetică*, Iași

**Abstract.**

### **b) Presentations in conferences**

#### **The 11<sup>th</sup> European Congress of Psychology, 7-10 July 2009, Oslo, Norway**

Boza Mihaela, Neculau Adrian, Iacob Luminița. *The evaluation of a polarized attitude object as a function of information processing task and consistent and inconsistent priming*

**Abstract.** Objective. To assess the subjects performance in top-down TD and bottom-up BU tasks, as implicit measures of a polarized attitude object, depending on consistent or inconsistent priming. Method. A combined 4 (priming/between subjects) x 4 (task/within subjects) experimental design was used. The priming sequence contains one image (analogous A) and one word (digital D). They can be consistent or inconsistent with the subjects' attitude (negative / positive). There are 4 priming types: A+D+, A-D-, A+D-, A-D+ and a control group. 142 participants completed four tasks: two BU and two

TD. The dependent variables are reaction times and correct answers. The attitude object was conflict, negatively polarized. Results. The results showed a reversed priming effect (Glaser & Banaji, 1999) for the TD tasks. The consistent priming (A+D+/A-D-) improved the performance, and the A+D- diminished it. Conclusion. Inconsistent activation interferes with subjects performance and has reversed priming effects for polarized evaluation targets.

### **The IVth European Conference on Developmental Psychology, 18-22 August 2009, Vilnius, Lithuania**

Boza Mihaela, Luminița Iacob. *The influence of self-schema for conflict on the attitude change towards conflict*

**Abstract.** Background. The aims of this study are: a) to build a self-schema for conflict scale b) to determine its impact on the attitude change towards conflict. For the first aim, 173 participants responded to 6 open ended questions, focusing on reactions to conflict and the attributes of a conflictive person. Participants evaluate their answers as being positive, negative or neutral. The resulting categories are used to build the self-schema for conflict scale. This scale is tested for the internal validity and reliability on 210 participants. The resulting 60 items scale (15 for conflict, 20 for pacifism, 15 filler) was built using the model of Markus (1977). **Method.** For the second part a semantic differentiator was used to measure the attitude towards conflict. It has 20 evaluative pairs, only 6 pairs are critical: good-bad, it helps-it hinders, pleasant-unpleasant, preventable-unpreventable, chance-bad luck, positive-negative. The participants are 141 females second year in psychology. They were divided in 3 self-schema categories using the scale mentioned above: pacifists, conflictive, non-schematics. The hypotheses are: a) schematics for conflict are more resistant to any attempt of attitude change; b) a combined strategy leads to more attitude change than a simple strategy. There are 4 strategies for attitude change: reframing (R) scenario(S) and their combinations (R-S/S-R). The method is experimental with a mixed repeated measures design (2 schema categories x 4 strategies x 2 test/retest). **Results.** The first hypothesis is confirmed and the second is disconfirmed. The schematics, in particular the schematics to conflict, are more resistant to attitude change. The most effective strategy is reframing, scenario is less effective and the least effective is reframing-scenario. **Conclusions.** More studies have to be done that should include a behavioral measure; the scenario technique has to be revised; the attitude change has to be retested to determine its persistence.

Dorina Sălăvăstru, Ana-Maria Țepordei. *The impact of socio-economical and school context over students' attitudes towards school violence*

**Abstract.** This study presents the results of a qualitative survey focused on the context and forms of school violence and their impact on the attitude towards school violence in Romania. The hypothesis is that the perception of school violence is influenced by the deconstruction of the social context and the multiple changes in the societal values and the school context over the years of post-revolutionary transition. The methods were: a two parts scale for school violence (ranking task for violence forms, and evaluation of these forms as their witness, victim and aggressor- respondents are 304 students) and focus groups (16 teachers/57students). The respondents are from schools placed in high risk town areas of Iasi. The results show that the most harmful forms of violence are perceived to be: physical violence, drug use, sexual aggression, and alcohol use and the less harmful but more frequent are verbal violence and bullying. As victims, the respondents reported more frequently verbal violence and thefts; as witness as well as aggressor the more frequently reported are absenteeism and verbal violence. The focus groups addressed 2 issues: analysis of school climate, and the degree of dissemination and debate of school violence topics. The results for the teachers' groups showed: lack of teacher-students

negotiation, poor relationship with the students' families, a lack of knowledge about coping strategies, and of institutional prevention programs. The students groups pointed out the lack of regulations in classroom setting, lack of support from teachers and parents, avoidance of reporting minor forms of violence, disregard for consequences and intervention. Based on these results, it was developed an intervention and prevention program for secondary and high school students. Future studies will be aimed at a more quantitative approach of school violence as well as the diversification of social background of the respondents

Holman Andrei, Neculau Adrian. *Attitude change through cognitive fluency manipulation – age effects*

**Abstract.** Background. The research attempts to integrate retrieval fluency in the theoretical framework of attitude - behavior relationships, specifically in the area of behavior-based attitude change. As such, the theoretical framework comprises the various modern views on cognitive dissonance, Fazio's associative model on attitude, as well as the concept of cognitive fluency. **Method.** We designed an experiment in which we manipulated the cognitive fluency of retrieval from the episodic memory of behaviors consonant with the attitude (low / high cognitive fluency); also, we took into account as independent variables the degree of initial attitude polarity (extreme / moderate attitudes) and participants' age (from 20 to 45 years old), and as dependent variable the degree of attitude change. **Results.** There was a main effect of retrieval fluency on attitude change, specifically attitude moderation, which was induced by remembering pro-attitudinal behaviors, but with a low cognitive fluency. Also, the results show a significant interaction between cognitive fluency and age, in the sense that the higher the age, the lesser the moderation influence of retrieval fluency on attitudes. **Discussion.** Our results point out a somewhat paradoxical effect: attitude change can be induced by past pro-attitudinal behaviors, if they are remembered with a low cognitive fluency; our view is that this low fluency is subjectively interpreted as a sign of a "lower – than – expected" objective frequency of these behaviors, and, as such, it induces a certain degree of cognitive dissonance. Also, the results suggest that the attitude strengthening effect of remembering consonant past behaviors, as it is implied by the associative models of attitude (e.g. Fazio's), is, in certain cognitive conditions, the opposite. The effect of diminishing the cognitive change induced by low retrieval fluency at higher age will be also discussed.

## Research synthesis

In relation with the main objectives proposed for the initial phase of the project, the investigation in 2009 was mainly theoretical. At a conceptual level, it has been investigated the research stage regarding the actual problematic of the relationship between attitudes and other connected concepts, trying also to establish original and relevant criteria of comparison between the theoretical research directions previously identified. From a methodological point of view, there have been studied the implicit (for example IAT) and explicit (scales) measurement of attitudes, these ones being compared also with specific techniques from research on social representations or social stereotypes.

Each of the two directions of theoretical investigation ended up in a specific theoretical study and their main ideas are summarized below.

## **Social cognition vs. Social representations theory**

Both directions are a “structure of knowledge” type of approach on social thinking. Similar to social representations, schemas and categories were interpreted as internalized social knowledge which leads to and facilitates social information processing, both of them being conceptualized as engrams having an internal organizational structure (Fiske & Taylor, 1991; Moscovici, 1981, 1984). Thus both social representations and social schemas, seen as internalized social information, have similar processing functions; they are organized and memorized conducting the selection, the meaning and the evaluation of social knowledge.

There are also similarities between schemas and social representations regarding their structure and function. Just like schemas, the representations are thought to be built up from interdependent and hierarchical elements (Abric, 1984). As schemas are organized around a prototype or exemplary, representations are organized around a nucleus or core. It wouldn't be difficult to conceptualize the cognitive scripts or the schemas of events in terms of social representations, as defined by Moscovici. Cognitive scenarios are certain knowledge structures based on consensus and social custom and people rely on them when setting their objectives and planning their future.

The same thing can be said about social stereotypes. Both social categories and the stereotypes invoked by them are social representations, having all the characteristics described by Moscovici (1981, 1984, 1988): they are symbolic, affective and ideological representations of social groups, they are widely shared and they appear and spread in a specific social and political environment of a given historical moment. Despite these aspects, social cognitive research gives little information – in fact almost none – on sharing stereotypes. In contrast, research on social representations focus almost exclusively on sharing. Stereotypes are shared through language, through various mass media communications and also through social roles and norms (Stangor & Schaller, 1996). Taking into account that many studies on stereotypes were based on their automatic activation, one can find some interesting convergent points between social representations research and the literature on automaticity. If social representations are shared, collective and close to “common sense”, then it is more likely that they are automatically activated exerting upon the judgment an influence that the person is unaware of. In contrast, culturally salient information is more likely to be processed consciously than automatically, due to its new and distinctive characteristics.

Although there are similarities between social representations and the social schemas models, they still remain two distinct and different approaches (Moscovici, 1988). The models

in social cognition give little information on the social origins of schemas and categories. They have been conceptualized by the social cognitive approach more in an individualist manner, meaning that schemas are considered to be cognitive structures existing in the individuals' minds. Although the social representations theory gives little information on the processes involved in acquiring and developing the representations, it contrasts with the models in social cognition by clearly placing the study of the cognitive structures within a social conditioning context.

While both theories suggest that, once acquired, these cognitive structures may become resistant to change, they differentiate by the accent placed on how flexible and dynamic representations and schemas are during their development and their contextual use. The model of basic cognitive schemas (Rouquette, 1994) is a SR model that can illustrate the major importance of the context in elaborating and changing a representation. Having as a starting point the structural perspective on SR which proposes a binary hierarchical structure of the representation (central core and peripheral elements), the author states that the central core can have two components: a normative one engaged in evaluation, and a functional one which makes the link to practice/behavior. The change of a SR doesn't take place automatically when practices change, but only when the social context is perceived as irreversible. One can notice here the major role played by the social context in which a social representation emerges and changes.

### **Attitudes and social representations**

According to the LOR (Greenwald 1988, Levels-Of-Representation) the attitude is found on four of the five levels: (attribute), object, category, proposition, and schema. This leads to imprecision in defining and measuring attitudes. The situation can be resolved through two strategies: narrow the attitude field by a strict definition (which is currently done in most attitude research especially in USA and Canada) or an integration in a broader model focusing both on structural and inter-attitudinal relations or relations of attitude to other concept (super ordinate or subordinate), approach currently employed by the European school of social representations.

It has been considered that the field of social representations, having sociological origins, should remain in the area of collective phenomena, whereas the concept of attitude, having a more individual connotation, suits better the psychological research. Nonetheless there were and still are reconciling positions coming mainly from Europe. As seen above, one can link the concept of representation to other related concepts as cognition (De Rosa, 1995) or script (Moscovici, 1986).



Although most of the European positions are critical, placing representation at a super ordinate level in relation to cognition and related concepts, there are also exceptions: the theory of basic cognitive schemas (Rouquette, 1994, Guimelli, 1994) and Codol's opinion (1989) which places representation at a subordinate level in relation to cognition. The most concluding position regarding the relation between the two concepts it was offered by Moscovici (apud Moliner & Tafani, 1997) since the beginning. When someone learns and represents something, this happens only after taking a position towards that something and according to that position. This means that attitudes precede representations and any object of representation is also the object of an attitude. Jasper and Fraser state that social representations are structured sets of attitudes which are shared by the members of a social group.

Although social representations can't be simply equivalent to attitudes, they have, without any doubt, an evaluative dimension. As Moliner & Tafani (1997) show, the shared knowledge encapsulated in social representations enables also the expression of evaluative judgments in ways that seem to be based more on the objective characteristics of the target than on subjective opinions. Emphasizing that social representations can have multiple evaluative components has a special interest in this context. Moliner and Tafani assert that, even in a situation where there is a general social consensus towards the positive or negative nature of every component of a social representation, attitudes towards the object of that representation may still be different if those attitudes are based on different components of the representation.

Reviewing different structural models of attitudes and SRs, one can notice the same problem in all cases. The binary models – Rouquette's SCB model, Moliner's bidimensional model and Pratkanis & Greenwald's social-cognitive model – ignore or put in brackets the behavioral aspect. Tripartite models include this aspect but give no explanation of the factors which determine the translation of a SR or attitude into behavior. This is a common weak point of both theories. But another common point is that both approaches emphasize the influence of behavior/practice upon attitudes/representations.

Attitudes and SRs have common functions. A crucial function of representations and attitudes (as they are traditionally understood) is that they represent mechanisms of transmitting and communicating social knowledge and beliefs. Communication and interaction are social processes relatively neglected by the functionalist approaches of attitudes. Another social function of social representations and beliefs is to play an explicative role in the individual's orientation in the social world. Having a social-constructionist accent,

social representations are elements used to build and therefore to understand social reality. Although some critics suggested that the concept of social representation is strongly related to the traditional construct of attitude (Jahoda, 1988), Moscovici draws attention on the fact that social representations are not mere attitudes towards social objects. The concept of social representation was invested with an epistemological statute different to that of the traditional construct of attitude, statute that recuperates the social, cultural and collective accent.

### **Methodological similarities and differences**

Another convergent aspect between attitudes and SRs is suggested by the methodology used in the SRs research based on free associations. The tradition of associative learning models tells us that attitudes are propositional networks (Eagly & Chaiken, 1993). This propositional characteristic consists of the association between an attitudinal object or belief and its related attributes (Fishbein & Ajzen, 1975). The attitude towards an object is determined by the beliefs related to that object. The structural approach of SRs can be seen as a type of network model, thus enabling the link between this approach and the classical models of attitudes such as *the theory of reasoned action* or *the associative models*. The associative nature of SR is indicated both by the definition of the concept and by the research methods within this field. In this way one can consider the SR similar to attitude, seen as a structural and associative model which links the object to its evaluations retained in memory.

Fraser (1994) shows that attitudes have been used mainly as a measurement of inter-individual differences. This aspect can be noticed from the way in which most of scales measuring attitudes are constructed. For example, when elaborating a Likert scale an item analysis is required in order to include in the scale those items that differentiate the best among respondents. This procedure makes it impossible to measure the consensus (a central aspect of an SR), therefore certain methods used in attitudes research are inappropriate for the SRs research. Tafani & Souchet (2002) assert that even though measures in attitudes research are focused on emphasizing inter-individual differences, they “implicitly imply that the subjects do not differ in their cognitive representation of the object, but only in its evaluation” (Jaspars & Fraser, 1984, p. 111).

Fraser (1994) supposes that if we studied through measures specific to attitudes (more quantitative and experimental) attitudinal structures rather than isolated attitudes and if we determined to what extent these sets of attitudes are shared within a group, one could say that we study SRs. The author thinks that research on SRs would have much to gain from such an approach, both for its research methodology and for better scientifically proving that these beliefs/ideas/evaluations (either seen as attitudes or as SRs) are really socially shared.

Different methods have been used for measuring the central core and the peripheral elements (Flament, 1994b; Moliner, 1994). These methods consist of two steps: generating words associated with the object of representation (revealing their salient character) and their evaluation by the respondent as related to the association with the other generated words and their valence. This method allows the evaluation of both salience and similarity and also the evaluation of associativity based on the sense. These criteria allow the distinction between structure and contents. These methods are well-known in the structural approach of attitudes, which looks for the associations among different elements of attitudes. For example, the method of paired comparison, used in SRs to differentiate between the nucleus and the periphery, is similar to the methods used in attitudes for constructing the Thurstone scale based on comparative judgment. Equally, the similitude analysis is similar to the methods of multidimensional scaling used in attitudes research.

### **Explicit vs. implicit in measuring attitudes**

Direct measurements of attitude (classic scales) are prone to some self-evaluative bias such as subjectivity and self presentation strategies so researchers have sought for new ways of indirect measurement of attitudes (such as the error-choice method and the measurement of physiological activity) which will not allow to subjects to guess explicitly what is being measured.

Another category of measurements are the implicit measures (e. g. Implicit Association Test) based on associative and socio-cognitive models of attitude structure and function. There is a lot of controversy as to the conceptualization and measurement of the two types of attitudes. Explicit attitudes were shaped in a manner consistent with fast-changing processes, were affected by explicit processing goals, and uniquely predicted more deliberate behavioral intentions. Conversely, implicit attitudes reflected an associative system characterized by a slower process of repeated pairings between an attitude object and related evaluations, were unaffected by explicit processing goals, uniquely predicted spontaneous behaviors, and were exclusively affected by associative information about the attitude object that was not available for higher order cognition. The main concern today in the attitude measurement is to increase the correlation between the implicit and explicit measures. (Nosek, B. A. & Smyth, F. L., 2007; Payne, B. K., Burkley, M. A. & Stokes, M B., 2008)

A very controversial issue is the use of subliminal stimuli in psychological and medical research. Now, there is substantial evidence that the unconscious is not identifiably less flexible, complex, controlling, deliberative, or action-oriented than its counterpart.

The social psychology research into priming and automaticity effects investigated the ways in which the higher mental processes such as judgment and social behavior could be triggered and then operate in the absence of conscious intent and guidance. Therefore, these studies have operationally defined the unconscious influence as lack of awareness not of the stimuli that provoked the behavior, but of the influence or consequences of those stimuli. This research, in contrast with the cognitive psychology tradition, has led to the view that the unconscious mind is a powerful influence over such higher mental processes (Bargh, 2008). In fact, recent experimental evidence points to a deep and fundamental dissociation between conscious awareness and the mental processes responsible for one's behavior. That research has proceeded somewhat independently in social psychology (Dijksterhuis & Bargh, 2001; Wilson, 2002), cognitive psychology (Knuf, Aschersleber, & Prinz, 2001; Prinz, 1997), and neuropsychology (Frith, Blakemore, & Wolpert, 2000; Jeannerod, 1999), but all three lines of research have reached the same general conclusions: action tendencies can be activated and triggered independently and in the absence of the individual's conscious choice or awareness of those causal triggers.

Yet the priming and the patient studies do complement and support each other in demonstrating the same two principles: a) that an individual's behavior can be directly caused by the current environment, without the necessity of an act of conscious choice or will; b) this behavior can and will unfold without the person being aware of its external determinant.

Recently, two streams of research in social psychology have converged on the idea that complex social behavior tendencies can be triggered nonconsciously. One line of research focuses on ideomotor action or the "perception-behavior link", finding that mental content activated in the course of perceiving one's social environment automatically creates behavioral tendencies (Prinz, 1997, apud Bargh 2005). The automatic perception-behavior link results in default tendencies to act in the same way as those around us (Dijksterhuis & Bargh, 2001 apud Bargh & Morsella, 2008).

The second stream of research has shown that social and interpersonal goals can also be activated through external means (as in priming manipulations), with the individual then pursuing that goal in the subsequent situation without consciously choosing or intending to do so or even being aware even of the purpose of his or her behavior. Ferguson (2008) showed that the nonconscious activation of a goal in memory led to increased positive implicit attitudes toward stimuli that could facilitate the goal. This evaluative readiness to pursue the nonconscious goal emerged even when participants were consciously unaware of the goal-relevant stimuli.

Several lines of cognitive neuroscience research support the idea of dissociation between conscious awareness and intention, on the one hand, and the operation of complex motor and goal representations on the other (Prinz, 2003). Most authors studying the influence of subliminal stimuli agree that although concept activation and primitive associative learning could occur unconsciously, anything complex requiring flexible responding, integration of stimuli, or higher mental processes could not.