



How Robust is the IAT?

Measuring and Manipulating Implicit Attitudes of East- and West-Germans

Ulrich Kühnen, Michael Schießl, Nadine Bauer, Nathalie Paulig, Claudia Pöhlmann & Karoline Schmidthals

Technische Universität Berlin
Institut für Psychologie
Franklinstr. 5-7
10587 Berlin

In: Zeitschrift für experimentelle Psychologie. Special Issue: Attitude Measurement using the Implicit Association Test (IAT).

Abstract

We investigated consequences of priming East-West-German related self-knowledge for the strength of implicit, ingroup-directed positive evaluations among East- and West-Germans. Based on previous studies we predicted opposite effects of self-knowledge priming for East- and West-Germans. Since in general the East-German stereotype is regarded as more negative than the West-German one, bringing to mind East-West-related self-knowledge (relative to neutral priming) was expected to attenuate ingroup favoritism for East-Germans, but to increase it for West-Germans. After having fulfilled the priming tasks, participants worked on an IAT-version in which the to be classified stimuli were East- or West-German city names (dimension 1) and positive or negative adjectives (dimension 2). Results of Study 1 showed a) that East- and West-German students implicitly evaluated their ingroups as more positive than the outgroups and b) confirmed the predictions of the priming influence. Study 2 replicated these findings as a field-experiment with more representative samples from East- and West-Germany. The results are discussed with regard to underlying processes of implicit attitudes in intergroup contexts.

The IAT: An "Attitude Pipeline"?

Why is the IAT so attractive to Social Psychologists? One of the reasons may be that it is sometimes treated as an "attitude pipeline" - it promises insights into a person's evaluations, preferences and prejudices, even when the interrogated person tries to hide his or her "true" opinions from the researcher. The authors of the IAT (Greenwald, McGhee, & Schwartz, 1998) go even one step further: Their attempt is to reliably measure evaluative associations which are introspectively not or at least not accurately identified (Greenwald & Banaji, 1995) - attitudes which in this sense are even hidden from the self. Since the very early beginnings of attitude research, Social Psychologists have dreamed of an unerring, robust attitude pipeline, in order to measure evaluations unbiased by any kind of context effects. Does the IAT make this old dream come true? In this paper, we want to argue against this

optimism. Hoping to find a robust attitude pipeline does only make sense, if we assume that people in fact do have robust evaluations, preferences and prejudices in their minds. Given the enormous number of studies of the last two decades, which have provided substantive empirical evidence that attitudes depend on contextual influences, like e.g. cognitive priming (e.g. Fazio, Jackson, Dunton & William, 1995), this assumption appears, however, to be very questionable. The present research was conducted in order to show that -just like explicit attitude measures- the IAT mirrors a person's temporary evaluations in a given context, and is, therefore, dependent on contextual influences which change the person's evaluations on the spot. To be clear about our goal from the very start: Our claim is not that the IAT measures something else but evaluations. It is rather the robustness of the IAT which we question.

Many studies on implicit attitudes have been conducted in inter-group contexts and focussed on ingroup-directed positive evaluations. For instance, Greenwald, McGhee, and Schwartz (1998) argued that the long history of Japanese-Korean antagonism provided the basis for ingroup favoritism among these groups. Consequently, they validated the IAT using samples with Japanese or Korean cultural backgrounds. In another study they investigated implicit racial prejudices of white participants against black people. Other studies examined implicit gender biases (Rudman, Greenwald, & McGhee, 1996). The IAT can also be used in order to measure ageism (Nosek, Cunningham, Banaji & Greenwald, 1999). In all these examples, participants provided more favorable evaluative associations for ingroup as compared to outgroup members. The present research is based on the assumption that if the IAT is used in such intergroup contexts, self-knowledge about the personal membership is necessarily involved. We know from research on the self (e.g. Markus & Wurf, 1987) that subtle cognitive priming can automatically bring to mind membership related self-knowledge. These temporary self-construals in turn influence subsequent self-evaluations (e.g. Hannover, 1997). Therefore, it makes sense to assume that IAT-measures - at least in intergroup-contexts - are also dependent on activated self-knowledge about the personal group membership.

In the present studies, we investigated implicit associations of East- and West-German participants toward each other. We designed an IAT-version, in which the to be classified stimuli were East- and West-German city names (dimension 1) and positive or negative adjectives (dimension 2). Based on Greenwald et al.'s findings, we expected responses to be faster, when instructions oblige ingroup city names and positive adjectives to share one response key as compared to trial sequences in which outgroup city names and positive adjectives were assigned to the same response key.

East-West-German Stereotypes and Self-Knowledge

Prejudices of East- and West-Germans are an "ideal" domain for studying implicit attitudes in many respects. First, nothing less but forty years of conflict during the cold war provide the basis for ingroup directed positive associations among these groups. In fact, although Germany was reunified ten years ago, still existing differences between East- and West-Germans as well as stereotypes and mutual prejudices are an issue for many ongoing scientific and public discussions in Germany (see e.g. Doll, Mielke, & Mentz, 1994; Piontkowski & Öhlschlegel, 1999 for reviews). On the other hand, one can assume that expressing negative attitudes toward members of the other part of Germany is regarded as politically incorrect at least in many circumstances, because it would indicate the so called "wall in the minds". Hence, the long history of the East-West conflict combined with the assumed tendency to avoid outgroup devaluation makes East- and West-Germans' attitudes toward each other an ideal domain for studying implicit social cognition. We were interested in the consequences of priming East-West-related self-knowledge for the strength of implicitly measured ingroup-favoritism.

Our predictions about the direction of the priming influence were derived from a study by Hannover (1997). She investigated consequences of subtly activating East-West-German related self-knowledge for the positivity of subsequent explicit self-descriptions. Many previous studies (see Doll, et al, 1994, for an overview) had shown that in general the East-German stereotype is more negative than the West-German one. For instance, research by Mummendey and her associates (e.g. Blanz, Mummendey, Mielke & Klink, 1998; Mummendey, Klink, Mielke, Wenzel & Blanz, 1999) investigates consequences of the assumed negative social identity of East-Germans. Based on such results, Hannover argued that priming East-West-related self-construals should have opposite effects on the

positivity of subsequent self-descriptions for East- and West-Germans. If East-West-related self-knowledge had been primed, Hannover expected the self-descriptions' valence to reflect the valence of the activated ingroup-stereotype. Thus, bringing to mind the positively associated West-German self-knowledge should increase the positivity of subsequent self-description relative to a neutral priming condition. In contrast, the activation was expected to have opposite effects on the positivity of East-Germans' self-descriptions. Priming the more negatively associated East-German self-construals should subsequently lead to less positive self-descriptions compared to a neutral priming condition. In order to test this hypothesis, Hannover had one group of participants in an experiment first describe a "typical East-German", then a "typical West-German", before describing the self¹. Hannover expected that when describing the self, these participants would in part make use of their previously activated East-West-related knowledge. Therefore, she hypothesized the valence of the self-descriptions to be assimilated toward the valence of the stereotypes. In a control group, the participants' first task was to describe the self before describing typical East- and West-Germans. The participants' self-descriptions in this condition were expected to be uncontaminated by the East-West-related knowledge. The spontaneous self-description of all participants were coded according to their valence by research assistants being blind to the hypotheses.

The results substantiated Hannover's expectation. In the neutral priming condition, East- and West-Germans did not differ significantly with respect to the positivity of their self-descriptions. However, when East-West-related self-knowledge had been primed, the West-Germans' self-descriptions were more positive and the East-Germans' self-descriptions were less positive compared to the neutral conditions. To summarize, the self-descriptions were assimilated toward the assumed valence of the activated ingroup-stereotypes, with the direction of the influence being opposite for East and West-Germans. Based on these results, we expected for the present studies that when East-West-related self-knowledge had been primed, ingroup-favoritism - even when measured implicitly - should be increased for West-Germans but attenuated for East-Germans relative to neutral priming conditions.

Experiment 1

Study 1 was conducted as a lab experiment with East- and West-German psychology students serving as participants. In a first task, participants answered some political attitude questions. East-West-related self-knowledge (EW prime) was activated by having participants then estimate the consensus for their opinions among East- and West-Germans. In the control condition (neutral prime) participants were to estimate the consensus for their own beliefs among men and women. Subsequently, participants worked on an IAT-version in which they were asked to categorize German cities as being either East- or West-German. Since we only used names of big German cities, this task was very easy for all our participants. The second categorial dimension was to classify positive and negative adjectives.

Overall, we predicted the IAT-effect, i.e. shorter response latencies in the combined blocks where ingroup city-names and positive adjectives shared one response key as compared to the sequences where ingroup cities and negative adjectives were assigned to the same key. If this effect could be observed, we would be able to test our prediction concerning the priming influence on the IAT-effect: Based on the results by Hannover (1997), we expected East-West-related priming (relative to the neutral priming) to increase the IAT-effect for West-Germans, but to decrease it for East-Germans.

Method

Participants

The study was conducted as a lab experiment at one West-German (Technical University of Berlin) and one East-German (Friedrich-Schiller-University of Jena) university. 71 psychology undergraduates (48 female; 23 male) participated in exchange for course credit. All participants had lived all their lives in that part of Germany, where they now studied. 34 students were West-German, 37 East-German. The mean age of the West-German sample was 27 years; East-Germans were 24 years old on average. Both, East- and West-Germans were randomly assigned to the two priming conditions.

Material

East-West-Priming

All participants first filled out a questionnaire including three attitudinal questions. For each question two answering options were provided. The first question addressed whether secondary school should be finished with the Abitur after the 12th grade. Participants were asked to decide whether they personally preferred to reduce the duration of German schools to 12 years, or to keep the status-quo. The second attitudinal issue was whether school subjects like math and physics should be taught for boys and girls separately or together. The third question was whether it should be possible to reduce social welfare benefit under specific circumstances.

All three issues do not necessarily need to be interpreted as being related to East-West-German differences. However, it is plausible to ask participants whether they would expect East-West-differences concerning these issues or not. This "ambiguity" with regard to the East-West-issue was necessary, because depending on the experimental conditions, participants were subsequently asked to judge either how East- and West-Germans would answer these question (EW-prime condition), or how men and women would answer them in general (control condition). To give an example, participants in the EW-prime condition were asked: "Now we would like you to think of 100 randomly chosen East- and 100 randomly chosen West-Germans. How many of the East-Germans would answer the question concerning the reduction of the duration of secondary school in the same way as you have just done? How many of the West-Germans would answer this question in the same way?" The same estimates were assessed concerning all three attitude questions. In the control condition, participants were asked how many of 100 randomly chosen men and women would agree with their opinion, thus not mentioning the East-West-issue at all.

East-West-Related IAT

In order to assess the participants' implicit attitudes toward their respective in- and out-groups, we used an adapted IAT-version, which was constructed according to the steps of the original version as described in more detail in Greenwald et al. (1998). In our IAT version, the two classification tasks used were names of big German cities (e.g. Cologne, Munich, Dresden, Leipzig etc.), which had to be categorized as "East-German" or "West-German". The second categorial task was to classify evaluatively unambiguous adjectives (e.g. pretty, happy, disgusting, cruel) according to their valence as either "positive" or "negative". The adjectives had been pretested in order to make sure that they were not associated with the East- and West-German stereotype. A total of 40 city names (20 East-, 20 West-German) and 40 adjectives (20 positive, 20 negative) were presented.

Procedure

When the participants came to the lab, they first received the attitude questionnaire as described above. After they had answered the three attitude questions, they were asked to estimate the



consensus for their personal choices among either East- and West-Germans (in the EW-prime condition) or among men and women (in the control condition). Subsequently, they proceeded working on the IAT. The program started with a tutorial, in which snakes and flower names were presented in the middle of the screenⁱⁱ. After this warm-up task, the relevant sequences for the present study began. The order in which the stimuli during one sequence were presented was randomized for each participant. In the first sequential block, the names of 40 big German cities appeared as stimuli on the screen and had to be categorized as being "East-German" or "West-German". In the next sequence, the participants' task was to classify 40 adjectives according to their valence as being "positive" or "negative". Half of the participants were asked to use the left key for positive adjectives, while the other half was to use the right key for identifying positive words. The third trial block constituted the first combined classification sequence. Both, city names and adjectives were presented during this block. Depending on which key positive and negative adjectives had been assigned to during the second trial, participants either had to press the same response key to identify East-German cities and positive adjectives (and consequently the other key to answer "West-German" and "negative") or East-German cities and negative adjectives, therefore using the other response key to identify West-German cities and positive adjectives. In the fourth block, only adjectives were presented again. This time the responses "positive" and "negative" were assigned to the response keys opposite to the assignment in the second block. The last trial block consisted again of a combined classification sequence, during which both city names and adjectives were presented. As in the first combined sequence, the same response key was to be used for West-German cities and positive adjectives, consequently assigning the answers "East-German" and "negative" to the other key. The combined assignment was opposite to the one used during the first combined trial block. Hence, in one combined sequence East-German cities and positive adjectives shared one response key, while in the other East-German cities and negative adjectives were assigned to the same response key, with the order of these sequences being balanced between subjects. After participants had fulfilled the last combined block, they were debriefed, thanked and dismissed.

Results

Only the response latencies of the combined sequences were analyzed. Response latencies for false classifications were excluded from the analysis. Since it is thinkable that the two combined sequences differed with respect to the reliability of the measurementⁱⁱⁱ, we computed Cronbach's Alpha scores for the two order conditions separately. The combined sequence in which West-German cities and negative adjectives were assigned to the same response key (and consequently East-German cities and positive adjectives to the other one), reached an Alpha of .95, if it was done as the first combined block. If participants fulfilled this combined sequence as the second one, it reached an Alpha of .89. The other combined block, in which instructions obliged participants to use the same response key for West-German cities and positive adjectives reached an Alpha of .88, if done first, and an Alpha of .91, if run as the second combined sequence. Hence, all Alphas scores indicated highly reliable data, irrespective of the order of the combined blocks.

We expected that those combined blocks in which the same response key had to be used in order to identify ingroup city names and positive adjectives were the compatible ones, while the remaining blocks were assumed to be incompatible. Responses in the compatible blocks were expected to be faster than in the remaining incompatible trial blocks^{iv}. In the following we will refer to the combined block in which East-German cities and positive adjectives were assigned to the same response key while West-German cities and negative adjectives shared the other response key as "East/positive + West/negative". Accordingly, the other combined sequence will be referred to as "West/positive + East/negative".

In order to test this hypothesis, we averaged response latencies in the two combined blocks and submitted them to a 2 (participants' origin: East- versus West-German) X 2 (combination of blocks: 'East/positive + West/negative' versus 'West/positive + East/negative') X 2 (order of presentation of the combined trial blocks) ANOVA. The combination of blocks was the only factor being varied within participants. Since the order of presentation of the combined blocks did not have any significant effect on the data, it was excluded from the analysis. The remaining 2 X 2 ANOVA revealed a highly

significant interaction effect of participants' origin and the combination of trials, $F(1, 69) = 24.12$; $p < .001$. Figure 1 shows the results. As expected, East German participants were faster, when the answers "East-German" and "positive" shared one response key ($M = 1083$ ms) than if "West-German" and "positive" were obliged to the same key ($M = 1221$ ms). The reverse pattern was found for West-Germans: They responded faster, if "West-German" and "positive" were assigned to the same key ($M = 1242$ ms) than if "East-German" and "positive" were associated answers ($M = 1413$ ms). Thus, both groups were faster, if their ingroup and positive adjectives were assigned to the same key than if the respective outgroup and positive adjectives shared one response key. As expected, the IAT-effect was observed. Obviously, those blocks were compatible, in which ingroup cities and positive adjectives were assigned to the same key, but incompatible, if outgroup city names and positive adjectives shared the same response key. Thus, both groups implicitly evaluated their ingroup as more positive than the respective outgroup.

In addition to the predicted interaction effect, an unexpected main effect for the participants' origin was found. East-German participants responded faster ($M = 1152$ ms) than West-Germans ($M = 1327$ ms); $F(1, 69) = 6.43$; $p = .01$.

Since the first analysis showed the expected IAT-effect, we followed Greenwald et al.'s (1998) steps of analysis and subtracted the mean latencies for the compatible block from the mean latencies for the incompatible sequence for each participant. The higher this score, the more pronounced a person implicitly favors the ingroup over the outgroup. These IAT-scores (see Table 1, upper half) were submitted to a 2 (origin) X 2 (priming condition) ANOVA, which revealed the expected significant interaction of the two factors; $F(1, 67) = 7.13$; $p = .01$. For West-Germans priming East-West-related knowledge increased the IAT-effect ($M = 218$ ms) relative to the control group ($M = 40$ ms). As expected, the opposite pattern was observed for East-Germans. For them, priming East-West-related cognitions resulted in less pronounced ingroup-favoritism ($M = 90$ ms) than neutral priming ($M = 283$ ms).

Discussion

As predicted, both groups showed pronounced IAT-effects, revealing ingroup favoritism. If the same response key was to be used for identifying ingroup city names and positive adjectives, the responses were substantially faster, than if outgroup cities and positive adjectives shared the same response key.

More importantly, however, this IAT-effect was sensitive to our experimental manipulation. As predicted on the basis of the results by Hannover (1997), activating East-West-related cognitions had opposite effects on the strength of the IAT-effect for East- and West-Germans. While priming East-West-knowledge (relative to the neutral priming) increased the IAT-effect for West-Germans, it had an attenuating effect on the strength of ingroup-favoritism for East-Germans.

Experiment 2

Study 2 was designed with two goals. First, we were interested in whether similar results could be obtained with a more heterogeneous and representative sample than the student populations from Study 1. We conducted a field-experiment with passers-by in several East- and West-German cities. Second, in order to test the generality of the results from Study 1, we changed the priming procedure. This time we used Hannover's priming technique, which had proved to be effective for priming East-West-related self-knowledge. Hypotheses were the same as in Study 1.

Method

Participants

The study was conducted as a field-experiment with 62 passers-by in the inner city areas of several East- and West-German cities serving as participants^v. The study was conducted in Hamburg, Munich, Würzburg, and Frankfurt/ Main for the West-German sample. East-Germans participated in Chemnitz, Cottbus and Jena. West-German participants were 31.4 years old on average, East-Germans 30.6. The sample included 29 women and 33 men.

Procedure and Material

In order to prime East-West-related self-knowledge, we adopted the procedure from Hannover (1997). In particular, half of the participants were asked first to describe a typical East-German and a typical West-German person (of course, in balanced order), and finally they were to describe themselves. Based on Hannover's results, participants in this condition can be assumed to use the previously primed East-West-category as a basis for their self-descriptions. In the control condition, participants were first asked to describe themselves, and subsequently they characterized a typical East-German and a typical West-German person (again in balanced order). Since the self-descriptions in this condition were generated first, they can be expected to be uncontaminated by the subsequent East-West-description task. Hence, the East-West-category was activated in all conditions. Only when it was mentioned before the self-description task, participants were assumed to use it as a basis for their self-construals. After participants had finished these description tasks, they worked on the IAT-version as described in Study 1.

Results and Discussion

As in Study 1, we computed Cronbach's Alpha scores for the two order conditions separately. Alpha for the combined sequence in which West-German cities and negative adjectives were assigned to the same response key (and consequently East-German cities and positive adjectives to the other one), was .90, if this sequence was done first. As the second combined sequence, it reached an Alpha of .88. The sequence in which the same response key had to be used for West-German cities and positive adjectives reached an Alpha of .88, if done first, and an Alpha of .89, if run as the second combined sequence. As in Study 1, all Alpha scores indicate satisfyingly reliable data.

We will present the results according to the steps of analysis followed in Study 1^{vi}. As a first step, we tested whether East- and West-Germans implicitly evaluate their ingroups as more favorable than the respective outgroup. For each participant, two mean latencies of the combined sequences were computed. "East/positive + West/negative" represents the mean latencies for the block, in which East-German cities and positive adjectives shared one response key; "West/positive + East/negative" accordingly represents the block, where West-German cities and positive adjectives were assigned to the same response key.

In order to test the first hypothesis, we submitted these scores to a 2 (participants' origin: East- versus West-German) X 2 (blocks: East/positive + West/negative versus West/positive + East/negative) X 2 (order of presentation of the combined trial blocks) ANOVA^{vii}. Both participants' origin and the order of presentation of the combined blocks were manipulated between participants, while the remaining factor was varied within subjects. As expected, we found a highly significant interaction effect of participants' origin and the combination of blocks, $F(1, 58) = 65.6$; $p < .001$. As shown in Figure 2, East Germans were faster, if East-German cities and positive adjectives shared one response key ($M = 1230$ ms) as compared to the "West/positive + East/negative"-trial ($M = 1422$ ms). The reversed pattern was observed for West-German participants ($M_{\text{West/positive + East/negative}} = 1326$ ms; $M_{\text{East/positive + West/negative}} = 1537$ ms). Again, participants responded substantially faster, if ingroup city names and positive adjectives shared one response key as compared to the sequence in

which the same key had to be pressed in order to indicate ingroup city names and negative adjectives. Therefore, we can conclude that the blocks in which ingroup city names and positive adjectives shared the same response key were the evaluatively compatible ones. As a next step, we subtracted the mean latencies for these compatible blocks from the mean latencies in the incompatible sequences (see Table 1, lower half). According to the procedure of analysis followed in Study 1, we next submitted these IAT-scores to a 2 (participants' origin) X 2 (priming) ANOVA. The only significant effect was the predicted interaction; $F(1, 58) = 4.5$; $p = .04$. As in Study 1, the East-West-priming increased the IAT-effect for West-Germans ($M = 278$ ms) relative to the neutral priming condition ($M = 148$ ms). The opposite pattern was observed for East-Germans. Priming East-West-related cognitions attenuated ingroup favoritism for them ($M = 154$ ms) compared to the neutral priming condition ($M = 233$ ms). Thus, the results of Study 1 were replicated.

General Discussion

The implications of the present studies are twofold. First, they show that even after 10 years of living in one reunified country, East- and West-Germans still have strong preferences for their in- as compared to the respective outgroup. In both studies, strong IAT-effects indicating ingroup-directed positive evaluations were observed. Study 1 showed this effect among psychology students, hence research participants who were about 10-15 years old, when Germany was reunified. Study 2 showed similar results with a more natural and heterogeneous sample, which supports the ecological validity of the results.

For our theoretical question even more important is the second implication of the present research. The IAT was shown to be sensitive to subtle contextual influence which primed relevant self-knowledge. Since evaluative judgements are made on the spot, implicit attitudes -just like explicit evaluations- reflect the configuration of evaluative cognitions in a given context. If a context variable changes such evaluations (e.g. by cognitive priming, as shown in the present case) the observed IAT-effects reflect these changes. If the IAT is used in inter-group contexts, participants' self-knowledge about the personal group membership is necessarily involved. The strength of ingroup-directed positive evaluations consequently depends on the present configuration of self-knowledge being associated with the group-membership in question.

Our prediction about the direction of the priming influence were based on the results by Hannover (1997). We tested the hypothesis that priming East-West-related self-knowledge had opposing effects on the strength of ingroup-favoritism for East- and West-Germans. As predicted, for West-German participants the IAT effect was more pronounced after East-West related priming than in the neutral priming condition, with this difference being reversed for East-Germans. This result is in line with Hannover's (1997) finding that the valence of explicit self-descriptions was assimilated toward the positivity of activated stereotypes of East- and West-Germans.

Although our hypotheses were derived from previous findings, we admit that the underlying cognitive mechanisms of our findings remain somewhat speculative. For the sake of the discussion about the IAT to which this present special issue contributes, we elaborate on our speculations in more detail. To our minds, the IAT is best regarded not as a judgmental, but rather as a behavioral indicator of evaluations. If a category is evaluated as being positive or negative, participants' impulsive (i.e. uncontrolled) behavioral tendency is to press the corresponding key. What triggers the IAT-effect is then the compatibility of this impulsive behavioral reaction toward the target category and the deliberative behavioral response to the evaluative classification task.

Since most people evaluate themselves positively most of the time, the IAT can be used as an implicit self-esteem measure (see e.g. Greenwald & Farnham, in press). However, these self-evaluations depend on the valence of information being used to construe identity in a given situation. If this information is generally evaluated negatively (as in the present case the East-German stereotype), the resulting self-construal "Me as an East-German" includes negative connotations. Consequently, the general impulsive behavioral tendency to respond with "positive" toward the self, is reduced in this case. If, however, the self is construed on the basis of more positive information (for example on the basis of the positively associated West-German stereotype) the general tendency to respond with "positive" toward the self is even increased.

However, one may doubt that the observed effects are due to temporary changes in the construal of the self. Wouldn't it be sufficient to attribute the results to the activation of general (i.e. non self-related) knowledge about the East- and West-German stereotype? Our specific self-related interpretation of the results is substantiated by the fact that in the second study East-West-related cognitions were primed in all conditions. Participants in all conditions described a typical East- and West-German person. The reduction of the IAT-effect for East-Germans and the increased IAT-effect for West-Germans was observed, only if the self was described after this general knowledge had been activated. Thus, activating East-West-related knowledge affected the IAT in the predicted direction only if it was subsequently used as a basis for construing the self, supporting our speculations about the underlying cognitive mechanisms of the present results. This result also implies that the East-West-stereotype will result in undesired social interaction, particularly if people use this category as a basis for self-identification. Consequently, political and educational programs against the "wall in the minds" will most likely be effective, either if they train people to develop self-construals which are different from the East-West-category, or if the evaluative connotations of these self-stereotypes are changed.

As reported, we predicted and found asymmetric consequences of priming East-West-related self-knowledge for East- and West-Germans as compared to the neutral priming conditions. Therefore, the adequate tests are the comparisons of the neutral and the relevant priming conditions, as we have reported. The results of both studies indicate, however, one further finding, which we did not expect: In both studies, comparing the participants in the neutral priming conditions reveals that East-Germans showed stronger IAT-effects than West-German participants. This result may be explained by the fact that the East-West issue is obviously more relevant for East- than for West-Germans. The changes in everyday practices after the reunification are certainly more fundamental for East- than for West-Germans. In addition, East-Germans have a minority status. As Mummendey et al. (1999) put it: "First, the categorization between East- and West Germans is highly salient. [...] Second, due to a highly salient East versus West categorization and to the fact that the official political program asks for an assimilation of East German to West German living conditions, in everyday social comparisons the latter are an important reference group for the former" (p. 263). Therefore, the East-West-German categorization can be assumed to be more salient for East- than for West-Germans. Accordingly, their performance on the IAT reflects the East-West differentiation more pronounced than the West-Germans' judgments - even when this category has not been activated.

In the beginning we asked why the IAT has raised so much attention and interest among Social Psychologists. We speculated that one of the reasons may route in the old hope of social scientists to discover an attitude pipeline - a robust device, which would allow to make "true" evaluations, preferences and prejudices visible, even when they are hidden by the respondents' willingness or capability to express them. As many other social cognition researchers (see Schwarz, 2000, for an overview), we understand attitudes not as stable associative links of categories and valence in the social knowledge structure, but rather as temporary construals. Schwarz put this view in rather unequivocal terms: "Whereas the work on implicit measures attempts to identify individuals 'true' attitudes, other researchers suggested that the classic issues of attitude research may be better conceptualized in the context of general judgmental models, essentially discarding the traditional attitude concept in the process [...]. For the sake of the argument, I base this discussion on an extreme assumption: People can never recall previously formed judgments and always have to start from the scratch, based on information accessible at the time," (p.164). We would like to extend this statement to the study of the self. People never have access to the "true" self. Identity is a temporary construal and self-evaluations are built on the spot – may they be measured explicitly or implicitly.

Thus, if researchers use the IAT in order to identify a person's "true attitudes", we doubt that the interpretation of the results can be valid. This is not to say, that the IAT should not be used for measuring evaluations at all. In fact, our results can be regarded as an experimental validation of the IAT: Similar results as already found using explicit judgmental tasks (Hannover, 1997) have now been demonstrated using the IAT. In contrast to other contributors to this special issue (Rothermund & Wentura), we therefore stick to the interpretation of the IAT as an indicator of a person's evaluations intended by its authors. However, the present results do also jeopardize the optimism being associated with the IAT. To the extent that evaluations in many cases are not only the product of long histories of experiences, but are also influenced by the present context, IAT measures must be regarded as flexible. To summarize, the robustness of the IAT is limited by the robustness of attitudes.

Appendix

Study	Participants' Origin	Priming Conditions	
		Neutral	East-West-related
Study 1	East Germans	283	90
	West-Germans	40	218
Study 2	East Germans	233	154
	West-Germans	148	278

Table 1: Strength of the IAT-effect in study 1 and 2 depending on the experimental conditions.

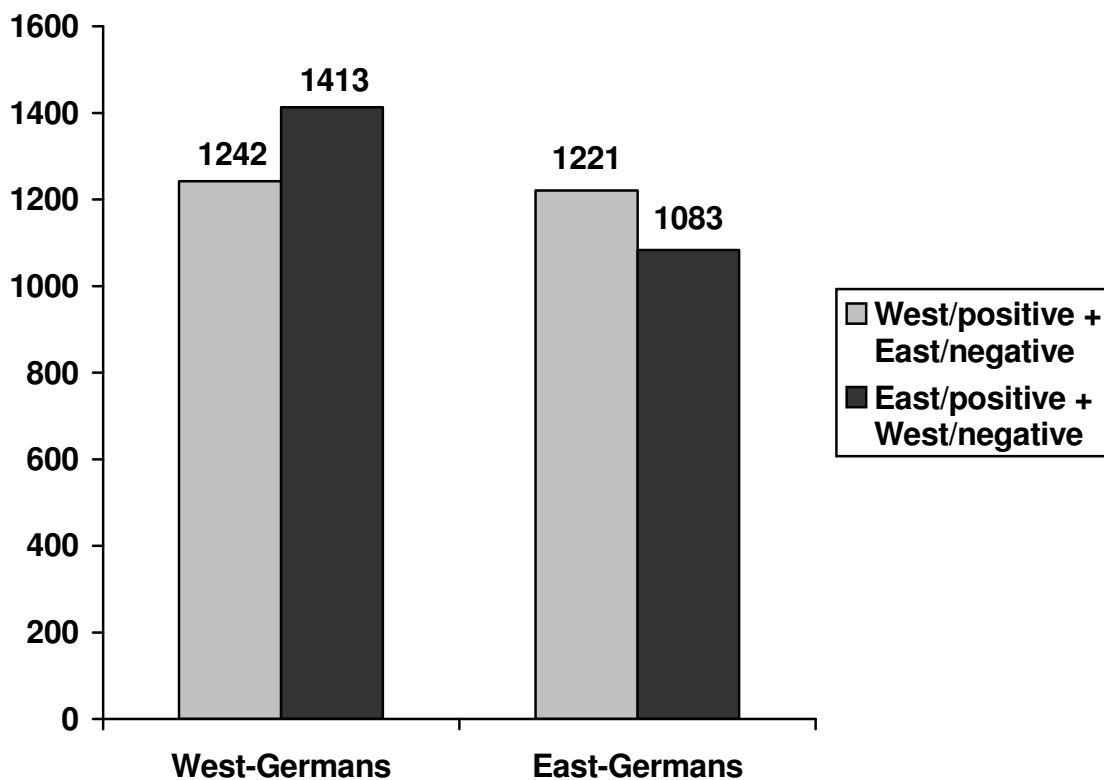


Figure 1: Mean response latencies in study 1 in msec.

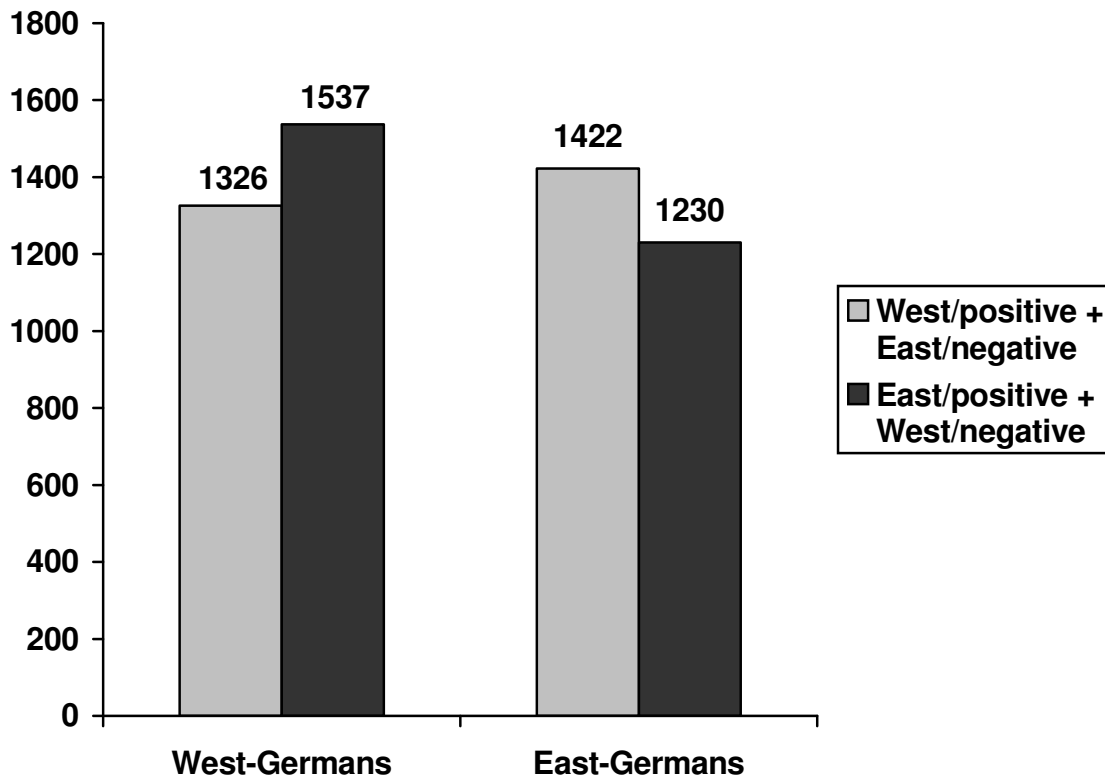


Figure 2: Mean response latencies in study 2 in msec.

References

Blanz, M., Mummendey, A., Mielke, R., & Klink, A. (1998). Responding to negative social identity: A taxonomy of identity management strategies. *European Journal of Social Psychology*, *28*, 697-729.

Doll, J., Mielke, R., & Mentz, M. (1994). Formen und Veränderungen wechselseitiger ost-westdeutscher Stereotypisierungen zwischen 1990 und 1992. *Bielefelder Arbeiten zur Sozialpsychologie*, Nr. 171, Psychologische Forschungsberichte: Universität Bielefeld.

Fazio, R.H., Jackson, J.R., Dunton, B.C., & William, C.J. (1995). Variability in automatic activation as an unobtrusive measure of racial attitudes: A bona fide pipeline? *Journal of Personality and Social Psychology*, *69*, 1013-1027.

Greenwald, A.G., & Banaji, M.R. (1995). Implicit Social Cognition: Attitudes, Self-Esteem, and Stereotypes. *Psychological Review*, *102*, 4-27.

Greenwald, A.G. & Farnham, S. D. (in press). Using the Implicit Association Test to measure self-esteem and self-concept. *Journal of Personality and Social Psychology*.

Greenwald, A.G., McGhee, & Schwartz, J.L.K. (1998). Measuring individual differences in implicit cognition: The Implicit Association Test. *Journal of Personality and Social Psychology*, *74*, 1464-1480.

Hannover, B. (1997). *Das dynamische Selbst - Zur Kontextabhängigkeit selbstbezogenen Wissens.* [The dynamic self. The context-dependency of self-related knowledge] Bern: Huber.

Markus, H.R., & Wurf, E. (1987). The dynamic self-concept: A social psychological perspective. In M. R. Rosenzweig & L. W. Parter (Eds.), *Annual Review of psychology* 38, 299-337. Palo Alto, Ca: Annual Reviews.

Mummendey, A., Klink, A., Mielke, R., Wenzel, M., & Blanz, M. (1999). Socio-structural characteristics of intergroup relations and identity management strategies: Results from a field study in East-Germany. *European Journal of Social Psychology*, 29, 259-285.

Nosek, B.A., Cunningham, W., Banaji, M.R., & Greenwald, A.G. (1999). Measuring implicit attitudes on the internet. Poster presented at the first annual meeting of the Society of Personality and Social Psychology, Nashville, TN.

Piontkowski, U., & Öhlschlegel, S. (1999). *Ost- und West im Gespräch - Zur Bedeutung sozialer Kategorisierung in der Kommunikation zwischen Ost- und Westdeutschen*. Münster: LIT.

Rothermund, K. & Wentura, D. (2001). Figure-ground asymmetries in the Implicit Association Test (IAT). In Banse, R. and Plessner, H.(Eds.): *Zeitschrift für Experimentelle Psychologie; Special Issue: Attitude measurement using the Implicit Association Test (IAT)*.

Rudman, L., Greenwald, A.G., & McGhee, D.E. (1996). Powerful women, warm men? Implicit associations among gender, competency, and nurturance. Paper presented at the meeting of the Society of Experimental Social Psychology, Sturbridge, MA.

Schwarz, N. (2000). Social judgment and attitudes: Warmer, more social, and less conscious. *European Journal of Social Psychology*, 30, 149-176.

Author Note

The present research was supported by a grant from the Deutsche Forschungsgemeinschaft to the first author and Bettina Hannover (grant HA 2381/3-1). Many thanks to Amélie Mummendey for giving us the opportunity to conduct parts of Study 1 at the Friedrich-Schiller University of Jena. Also, thanks to Sabina Brandstätter, Susanne Haberstroh and two anonymous Reviewers for helpful comments on earlier drafts. Please, address correspondence to Ulrich Kühnen, Technical University of Berlin; Institute for Psychology, FS 001; Franklinstr. 5-7; 10587 Berlin or email: kuehnen@gp-tu-berlin.de

Footnotes

ⁱ Of course, the order of describing a typical East- and West-German person were counterbalanced.

ⁱⁱ The IAT-version we used was designed similarly to the original one. Therefore, we will not describe it in full detail. See Greenwald et al. (1998) for more details.

ⁱⁱⁱ Intuitively one might expect the second sequence to be more difficult which may have reduced the reliability of the measurement. However, this was not the case.

^{iv} Error-rates did not differ significantly between the compatible (6.2%) and the incompatible (6.5%) blocks.

^v As in study 1, we made sure that participants in fact came from that part of Germany where the study was conducted. We asked the participants to indicate their origin at the end of the study. No West-German participated in an East-German city or vice versa.

^{vi} The data of two participants had to be excluded from the analysis because of their high error rates. After excluding these participants error rates were similar to Experiment 1: 5.6% in the assumed compatible condition and 8.6% in the incompatible one.

^{vii} In this study we found an unexpected three-way interaction $F(1,58)=4.28$; $p=.043$. Therefore, the order factor was not excluded from the analysis this time. Since the order was varied as a control factor only and is not of any particular interest for our theoretical assumptions, we will not describe the full pattern of means in detail.