

Implicit Attitudes towards Romantic Partners and Ex-Partners:
A Test of the Reliability and Validity of the IAT

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Abstract

A known group approach was used to validate an idiographic adaptation of the Implicit Association Task (IAT) by Greenwald, McGhee, & Schwartz (1998) as a measure of implicit attitudes towards romantic partners and ex-partners. In a combined field and laboratory study, implicit and explicit attitudes towards romantic partners were assessed in different groups of women in stable partnerships and in a group of abused women who had separated from their partner. It was expected that both implicit and explicit attitudes towards the partner would be most positive for women in love, followed by student controls and hospitalized pregnant women, and least positive for abused women. It was further expected that compared to implicit attitudes explicit attitudes would show systematic discrepancies due to group-specific social pressure. These hypotheses could be largely confirmed, thus indicating criterion validity of the implicit attitude measure at the group level. At the level of individual differences, the correlation between implicit and explicit attitudes was high for abused women, but non-significant for the groups with positive attitudes towards partners. The results show that the idiographic Partner-IAT is a robust and reliable measure of implicit relational schemata that is particularly sensitive in the range of negative attitudes.

The last decade of relationship research has been characterized by an increasing interest in experimental methods of cognitive psychology such as semantic or affective priming for the study of relational schemata (Baldwin, 1992, 1995). This „New Look“ in relationship research has sparked considerable enthusiasm in many researchers, but the harvest of this enterprise has remained disappointingly meager. As compared to the flourishing use of priming methods in research on stereotypes and prejudice (e.g., Banaji, in press; Fiske et al. 1999), only a few priming studies have been published in the field of personal relationships (e.g., Baldwin, Carrel, & Lopez, 1990; Banse, 1999; Pierce & Lydon, 1998).

It is likely that this imbalance is due to the notorious small effect sizes and low reliabilities of implicit measures. Whereas research on stereotypes and prejudice can rely on the analysis of effects at the group level, typical relationship research focuses on individual differences and hence correlational analysis. Here it is not possible to aggregate measures across subjects and therefore a sufficient reliability of measures is crucial. However, empirical estimates of the reliability of individual priming measures ranged from close to zero (Banse, 1999) to levels around .50 (Banse, submitted) thus indicating that the psychometric properties of priming measures are often insufficient for an analysis of individual differences.

Recently, Greenwald, McGhee, and Schwarz (1998) presented the Implicit Association Test (IAT) as a very general method of assessing implicit associations that can be used to assess implicit attitudes, stereotypes, as well as aspects of the self-concept. The authors report that the IAT yields much larger effect sizes than priming methods. Recent studies could show that the reliability of individual differences in the IAT-scores met the conventional reliability criterion of .80, a level hitherto only reached

by explicit questionnaire measures (Banse, Seise, & Zerbes, submitted; but see Cunningham, Preacher, and Banaji, in press, for a somewhat lower reliability estimate).

It was the aim of the present study to investigate whether the IAT can be used as an implicit measure of relational schemata, and whether the reliability of the Partner-IAT is sufficient for the analysis of individual differences. For a first empirical test a relatively simple type of relational schema was chosen: The implicit evaluation of or attitude towards a romantic partner. This operationalization is conceptually close to other attitudes that have already been successfully measured with the IAT (Greenwald et al. 1998; Banse et al., submitted).

Validation of an implicit measure of attitudes towards romantic partners

It is clear from the recent literature on implicit measures of stereotypes and prejudice (e.g., Wilson, Lindsey & Schooler, 2000) that the validation of implicit measures is the subject of controversy. For example, low correlations between implicit and explicit measures can be interpreted both as supporting (e.g., Fazio et al., 1995; Greenwald et al., 1998) and contradicting evidence for the validity of the implicit measure, depending on the conceptualization of implicit and explicit attitudes as the same or different constructs (for a detailed discussion see Brauer, Wasel, & Niedenthal, in press; Wilson, Lindsey, & Schooler, 2000). In the domain of prejudiced attitudes it would therefore seem appropriate to use multiple validation criteria to determine the meaning of an implicit measure.

In the present study, three independent strategies were chosen to validate the implicit measure of attitudes towards the romantic partner. Criterion validity was evaluated using (1) a known group approach, and (2) by testing whether discrepancies

between implicit and explicit attitudes can be accounted for by other constructs. Finally, the (3) convergent validity of implicit and explicit measures was tested using correlation analysis. The rationale of these approaches is presented in the following.

The known group approach

The known group or extreme group validation consists in identifying groups that can be assumed a priori to differ regarding the construct in question. When considering attitudes towards romantic partners, several groups come to mind that are likely to differ in partner attitudes at least on average. The most positive attitudes towards romantic partners can be expected for people who have recently fallen in love. The apparently exaggerated positivity of attitudes towards the partner seems even to be a defining element of the state of infatuation or „being in love“ (Brehm, 1988; Murray, Holmes, & Griffin, 1997). After the honeymoon phase, attitudes towards partners are expected to decrease but to remain clearly positive on average for as long as the relationship lasts (Zeifman & Hazan, 1996). Romantic partners in relationships lasting longer than 6 months are therefore considered as a reference group in the moderately positive attitude range.

Which group can be considered a priori to hold clearly negative attitudes towards the romantic partner? There is evidence that there is a substantial proportion of stable and unhappy romantic relationships (Heaton & Albrecht, 1991). The demand for marital therapy or undertaking steps to divorce could be used as objective criteria for defining unhappy romantic relationship. However, these criteria concern dyads and do not necessarily reflect the attitudes of both partners, i.e. it is not possible to say which partner holds these negative attitudes. This seems different in the case of abused women

who live in protected housing projects. At least on average can these women be expected to hold clearly negative attitudes towards their ex-partners. However, even in this group there seems to be some variability. People working with abused women report that these women have often ambivalent feelings towards the ex-partner. Ambivalent attitudes could be particularly problematic for abused women because they are likely to interfere with the effort to cope with a difficult situation and to organize a new life without the ex-partner. For a better understanding of such coping processes it may be particularly informative to study the relation between implicit and explicit attitudes towards the ex-partner.

Since there is no obvious male equivalent to abused women it was decided to restrict the entire study to female participants. For practical reasons, women in stable relationships were recruited among university students. Concerning socio-demographic and situational factors these student controls were expected to be roughly comparable to the women in the honeymoon group. However, the group of abused women was expected to differ with respect to age, education, income, as well as to situational factors, such as living in an unfamiliar environment and acute suffering from multiple stressors. As a more adequate control group for abused women, hospitalized pregnant women in stable relationships were chosen. In addition to the expected better match of socio-demographic variables, the life circumstances of hospitalized pregnant women have some important similarities with abused women: they live in an unfamiliar environment, suffer from considerable stress, and the partnership can be expected to be very salient.

For the four groups the following average attitudes towards romantic partners were assumed a priori: very positive attitudes for women in love, positive attitudes for

the student controls and hospitalized women, and clearly negative attitudes towards ex-partners for abused women.

Implicit attitudes towards the partner and related constructs

The convergent validity of the implicit attitude measure was explored by investigating correlations with explicit attitude measures towards romantic partners and with explicit measures of related constructs such as relationship satisfaction and adult attachment. In the attitude literature, correlations between implicit and explicit measures are often low but occasionally reach correlations of around .60 (e.g., Banse et al, submitted; Greenwald et al, 1998). Whereas substantial correlations indicate convergent validity, low correlations can only be interpreted as evidence for lacking validity if implicit and explicit measures are considered as being different measures of the same construct. However, according to the dual attitudes model from Wilson, Lindsey, & Schooler (2000) implicit and explicit attitudes can be considered as being distinct constructs, and the authors speculate, for example, that the low correlation between explicit and implicit measures of adult attachment could be explained by this dual construct view. Implicit measures such as the Adult Attachment Interview (AAI, George, Kaplan, & Main, 1985) assess models of attachment at a “relatively habitual, automatic, and non-conscious (p. 109)” level, whereas explicit adult attachment questionnaires (e.g., Hazan & Shaver, 1987) assess working models at a “relatively deliberate, constructed, and conscious (p. 109)” level.

In addition to these measures of attitudes and relationship quality, psychological and physical well-being was included as a possible outcome variable of relationship quality or attitudes towards the partner. With respect to the different groups, specific

dissociations were expected for the relation between of partner attitudes and well-being. Numerous studies have found a positive relation between relationship quality and physical and mental well-being (Berscheid & Reis, 1998; Diener, Eunkook, Lucas, & Smith, 1999). There is also some evidence that relationship quality is the causal factor that influences well-being (Heady, Veenhoven, & Wearing, 1991; cf. Diener et al. 1999).

However, for abused women who had separated from their partner we expected that positive attitudes towards the partner should rather have negative effects because they may impede coping with the separation and with the effort to organize a new life without the partner.

Discrepancy between implicit and explicit attitudes as an indicator of social demand

Although it is likely that explicit measures of relationship quality and relational schemata are often distorted by self presentation concerns or social demand, this question has been rarely studied empirically. Since explicit but not implicit measures can be influenced by deliberate control (Banse et al., submitted; Fazio et al, 1995; Kim & Greenwald, submitted), discrepancies between implicit and explicit measures can be attributed to self presentation tendencies.

In applying this rationale, predicting and explaining discrepancies between explicit and implicit attitude measures can be used as a validation strategy of the implicit measure. In the present study this is done in a between-groups design by demonstrating a collective answer bias, and within groups by relating individual differences in answer bias to pertinent personality variables. At the group level we expected group-specific social demand effects for pregnant and abused women. It is part

of the social role that the former hold very positive, and the latter very negative attitudes towards their partner and ex-partner, respectively. In consequence, explicit attitudes were expected to be more positive than implicit attitudes for pregnant women, and more negative for abused women. No discrepancies were expected for the student controls and women in love. An overview of the predicted implicit and explicit average attitudes for each group is presented in Table 1.

=== Table 1 ===

At the level of individual differences in implicit-explicit differences, we used an analogy with attitude research. According to Fazio's MODE model of attitudes (Fazio, 1990; Fazio & Towles-Schwenn, 1999), explicit attitudes are composed of a true attitude component that can be estimated by an implicit measure, and a component of positive self-presentation. Fazio et al. (1995) and Banse et al. (submitted) have demonstrated that individuals with negative implicit attitudes towards a minority reported negative explicit attitudes only if their motivation to control prejudiced behavior was weak; otherwise they reported positive attitudes. This demonstration of a moderator effect of prejudice control provides strong evidence for the validity of the implicit measure.

In the present research, we included a social desirability measure as a potential moderator of implicit-explicit discrepancies. This construct does not tap individual answer tendencies in partner attitudes as directly as the motivation to control prejudice (Dunton & Fazio, 1997) in the case of racial attitudes. However, it seems reasonable to assume that women with high scores in social desirability will respond more strongly to

social demand, and hence show larger differences between implicit and explicit measures.

Method

Participants. A total of 139 women with an age range from 17 to 51 years ($M = 28.4$, $SD = 6.9$) participated in the study. Abused women were contacted via the staff of four protected housing projects who agreed to support our study. A large proportion of women living in these projects were not eligible because their German was not fluent. Hospitalized pregnant women were contacted via the medical staff of the gynecology-units of two large hospitals. To avoid any physical risk or unnecessary stress, hospital staff contacted only pregnant women passed the 32nd week of pregnancy, who were in good physical condition, and were visited regularly by their partner. Women who had recently fallen in love (hereafter metaphorically called the honeymoon group) were recruited among acquaintances of the experimenters, by flyers at the university campus, or were directly approached when couples displayed behaviors commonly associated with being in love in public places such as cinemas, parks, or shopping malls. To be eligible, the women had to state explicitly that they were in love, and the duration of their romantic relationship had to be less than 6 months. Student controls with a romantic relationship lasting more than 6 month were recruited at the university campus. Students received a research participation credit, the other women participated without payment. Three women (one from the abused group, two from the pregnant group) had to be excluded from data analysis because of extremely high error rates ($> 3 \text{ sd}$) in at least one of the mixed tasks of the Partner-IAT. The remaining sample was composed of 136 women who were distributed over the four experimental groups as follows: 21

abused, 46 hospitalized pregnant, 50 student controls, 19 honeymoon. To protect the anonymity of hospitalized and abused women, only minimal background variables (age and education) could be recorded.

The proportion of subjects with a high-school education was 90% for the honeymoon group, 100% for student controls, 62% for hospitalized pregnant women, and 33% for abused women; the mean age of the four groups was 24.8, 26.1, 29.6, and 34.8 years, respectively. In addition, relationship duration was assessed for the honeymoon group (3.3 months) and the student controls (5.2 years).

The Partner-IAT. The procedure of the IAT closely followed that described in Greenwald et al. (1998). The IAT proceeds in five distinct phases. 1) participants first had to classify items relating to the partner¹ or a stranger by pressing the left or right answer key, respectively. For abused women, the category label partner was replaced by the word ex-partner. 2) They then classified affectively polarized words as good or bad by pressing the left or right answer key, respectively. 3) In a first combined task items relating to good and stranger required a response with the left answer key, items related to bad and partner a response of the right answer key. 4) The assignment of the partner and stranger items to the answer keys was altered, i.e. partner items to the right and stranger items to the left answer key. 5) Both tasks were again combined, good and partner were assigned to the left, and bad and stranger to the right answer key. The five sequences of the experiment and key assignments are presented in Table 2.

=== Table 2 ===

In line to Greenwald et al. (1998), implicit attitudes are interpreted as more

positive to the extent that the response latencies across all mixed trials with the same key assignment for partner + positive and stranger + negative are shorter than the response latencies across trials in the second mixed block with the same key assignment for partner + negative and stranger + positive.

For the good-bad decision task, 40 nouns that were rated clearly positive or negative in a normative evaluation study (Schwibbe, Räder, Schwibbe, Borchardt, & Geiken-Pophanken, 1994) were used. To individually determine the items for the partner-stranger classification task, participants were provided with a list containing items classified into ten groups (first name, profession, hair color, eye color, sport, car, hobby, music, beverage, and habits). Participants had to choose five items that were characteristic for their partner, and five matched items from the same item group that they neither associated with their partner nor with anybody else they personally knew.

Partner-related items could be chosen freely or taken from the list, stranger items were all chosen from the list. Care was taken that the partner-stranger distinction was not confounded with evaluation or attractiveness: car items were approximately matched for price, and profession items for social status and income. The IAT was run using the software Experimental Run Time System (Beringer, 1994) on IBM-compatible PCs in the research rooms and in the field on IBM-compatible laptops. The item selection was done with the help of an interactive computer program that implemented the selected items in the experimental protocol and then started the experiment.

For all IAT tasks, the key assignments were displayed in the left and right upper corners of the screen, target words in the center. To facilitate the discrimination of both tasks, partner-related labels and items were presented in yellow, whereas evaluation-related labels and items were presented in white on black background. The order of

trials was randomized for each participant. The inter-trial interval after correct responses was 250 ms. After incorrect responses, the word “error” was displayed for a further 1000 ms below the center of the screen. Participants were instructed to respond quickly, even if this would mean making some mistakes.

The basic dependent variable in the IAT is the difference of the mean reaction times for the mixed tasks (Sequence 3 – Sequence 5, see Table 2). Only trials with correct responses were retained for analysis. Response latencies of less than 300 ms were recoded to missing data, latencies longer than 3000 ms were replaced by this value. The first 40 trials of the mixed tasks were considered as training trials. The following 120 trials of the mixed sequences were used to calculate the IAT difference scores. The reliability of the IAT was estimated using the internal consistency of a tripartite split of the whole test. Three separate IAT-scores were calculated using difference scores of three consecutive blocks of 40 trials in both mixed sequences. The internal consistency was $\alpha = .84$ across all participants. A group-wise analysis of the internal consistency showed very homogenous results: abused women .81, hospitalized pregnant women .84, student controls .80, and women in the honeymoon .89.

Explicit measures. To measure explicit attitudes towards romantic partners, an attitude questionnaire was developed. The first version of this instrument contained 6 rationally constructed items (three positive, three negative) for each of three subscales cognitive attitudes (“My partner has many qualities”), affective attitudes (“I feel good when I am close to near my partner”) and behavioral attitudes (“When I am with my partner I often have the desire to hug him”) that had to answered on a 5-point agreement scale (1 = “not at all”, 5 = “fully agree”). For abused women, the word partner was

replaced by ex-partner. After the elimination of three items, the internal consistency (Cronbach's α) of the average attitude scale was good $\alpha = .95$. Upon request the German items and an English translation can be obtained by the author.

Several established indicators of partnership quality were assessed for women in ongoing relationships (not for abused women). Relationship satisfaction was assessed using a German translation (Sander & Böcker, 1993) of the Relationship Assessment Scale (Hendrick, 1988). The reliability of the scale was satisfactory for the present sample ($\alpha = .87$). For measuring adult attachment, the German version (Doll, Mentz, & Witte, 1995) of Bartholomew and Horowitz's (1991) four prototype descriptions (secure, anxious, preoccupied, dismissing) of adult attachment was reformulated to refer specifically to the romantic partner. Participants rated on 5-point scales to what extent each prototype correctly described their relationship.

Psychological and physical well-being was assessed using three subscales (26 items) from the Quality of Life Profile for Chronically Ill Patients by Siegrist, Broer, and Junge (1996). The subscales concerned the present mood, the capacity to enjoy and relax, as well as the capacity to social contact. The internal consistency was $\alpha = .94$ in the present sample. Social desirability was measured using the German translation (Lück & Timaeus, 1969) of the scale by Crowne & Marlowe (1960). The internal consistency was $\alpha = .75$.

Procedure. The experiments with student controls and the honeymoon group were run in an experimental room in the university. The data for remaining groups were collected "in the field", either in the apartment of the abused women, or in the hospital room of the pregnant women. First the women were interviewed briefly to collect some biographical data (i.e., age, education), after which they filled in the questionnaires.

Then the women chose the idiographic items and worked through the IAT. If two women in the same hospital room participated simultaneously, one started with the questionnaire while the other worked through the Partner-IAT.

Results

Group differences of implicit and explicit attitude scores

To test the expected group differences, separate one-factorial ANOVAs were conducted for implicit and explicit attitude measures. A significant main effect for the factor group emerged for implicit ($F(3, 132) = 6.1, p < .001$), and explicit ($F(3, 132) = 118.2, p < .001$) attitudes towards the partner. As expected, Scheffé post-hoc comparisons ($p < .05$) confirmed that abused women reported more negative, and women in love more positive explicit attitudes than the two control groups (Table 3). The implicit attitude scores were more negative in abused women than in the other three groups, but unexpectedly, the implicit attitudes of the honeymoon group were not found to be more positive than in the two control groups. For implicit and explicit measures, the difference between abused women and the other groups was large (.93 SD units for the implicit, and 2.32 for the explicit measure). These strong effects provide evidence for the criterion validity of both the implicit and the explicit attitude measures. However, only the explicit measure could discriminate between women in love and the control groups.

=== Table 3 ===

Discrepancies between implicit and explicit attitudes

Implicit and explicit attitude measures were z -transformed to render them directly comparable. It was predicted that explicit attitudes would be more negative than implicit attitudes in abused women, and more positive in pregnant women. No implicit explicit difference was expected for student controls or women in the honeymoon group. This pattern was partially confirmed by the data (Figure 1).

=== Figure 1 ===

The interaction term of the factor implicit-explicit across the four groups in question was significant ($F(3,116) = 15.62, p < .001$). Post-hoc comparisons of the z -transformed measures showed as expected more negative explicit than implicit attitudes for abused women ($t(20) = 5.23, p < .001$), a marginal significant difference for pregnant women ($t(45) = -1.93, p = .06$), and no significant difference for student controls ($t(49) = -.13, \text{n.s.}$). Unexpectedly, the explicit attitudes of the honeymoon group were more positive than the implicit attitudes ($t(18) = -2.85, p < .05$).

Across the three groups of women with ongoing relationships, explicit attitudes towards romantic partners were not related to social desirability scores ($r = .12, \text{n.s.}$). However, higher social desirability scores were related to relatively more positive explicit than implicit attitudes ($r = .26, p = .004$). The correlation was slightly higher for the two control groups alone ($r = .32, p = .002$). For abused women, no significant correlation was found ($r = -.03, \text{n.s.}$), and this correlation was not significantly lower than for the control groups.

Individual differences in implicit and explicit attitudes

To evaluate the convergent validity of implicit and explicit attitudes measures, both scores were correlated for the total sample and group-wise. Overall, the correlation between implicit and explicit attitudes towards the partner was significant ($r = .37$, $p < .01$). However, an inspection of the scatter plot (Figure 2) and group-wise correlation analysis showed that this result was not homogenous across all groups. The correlation was mainly driven by the between group difference and the within group correlation for abused women. For this group, the implicit-explicit correlation was remarkably high ($r = .53$, $p < .05$). Importantly, the correlation remained essentially unchanged if age and education were controlled for.

For the other three groups, the implicit-explicit correlations were non-significant (.14 for pregnant women, -.01 for student controls, and -.16 for the honeymoon group). Across all women in ongoing relationships, no significant correlation was found between implicit attitudes towards the partner and relationship satisfaction or attachment styles. The explicit attitude measure, however, showed the expected pattern of correlations. Explicit attitudes towards the partner were positively related to relationship satisfaction ($r = .74$, $p < .001$), secure attachment style ($r = .50$, $p < .001$), and negatively to insecure attachment styles (all r 's $< -.25$, all p s $< .05$).

=== Figure 2 ===

Attitudes towards the partner and well-being

The relation between explicit and implicit partner attitudes and well-being was analyzed using correlation and multiple regression analyses. The expected positive zero order correlation between well-being and attitudes towards the partner was found for

explicit attitudes in student controls ($r = .35$), pregnant women ($r = .43$), but only the latter showed also a significant correlation between well-being and implicit attitudes ($r = .38$).

When well-being was simultaneously regressed on implicit and explicit attitudes, implicit attitudes towards the partner explained a substantial part of the variance in well-being independent of the significant contribution of explicit attitudes (Table 4). As we will discuss later, this result could indicate that implicit and explicit attitude scores reflect different constructs. No significant results were found for abused women or the honeymoon group.

=== Table 4 ===

Discussion

The present research investigated the reliability and validity of the Implicit Association Test (Greenwald, McGhee, & Schwartz, 1998) as an implicit measure of attitudes towards romantic partners and ex-partners. The results show that the idiographic Partner-IAT is a robust and reliable measure with large effect sizes and high criterion validity in the range of negative to moderately positive attitudes. High convergent validity with an explicit measure of partner attitudes was found only for abused women in the negative attitude range. This result can be explained by either a reduced sensitivity of the IAT for positive attitudes, or by a dissociation of implicit and explicit attitudes at the construct level, as predicted by the dual attitude model of Wilson, Lindsey, & Schooler (2000).

Reliability and Validity of the Partner-IAT

The reliability of the Partner-IAT was estimated using the internal consistency of the IAT score. The Cronbach's α resulting from a tripartite split of the IAT exceeded .80, a level of reliability that is conventionally considered satisfactory for questionnaire measures. This value is remarkably high compared to reliabilities reported for other implicit attitude measures such as affective priming (Banse, 1999; Banse, submitted; Cunningham et al., in press), or semantic priming (Wittenbrink et al., 1997), and comparable to the reliability of other IAT variants (e.g., Banse, Seise, & Zerbse, submitted).

Three approaches were used to investigate the validity of both the implicit and the explicit measure of partner attitudes. The criterion validity was assessed using a known group approach, as well as by testing hypotheses about specific discrepancies between implicit and explicit measures between and within groups. The convergent validity of both measures was investigated using the correlation between implicit and explicit scores.

For the group of abused women, all three approaches provided supportive evidence for the validity of the Partner-IAT, and the newly developed explicit attitude towards romantic partner scale. It was predicted that abused women show more negative implicit and explicit attitudes towards their ex-partners than hospitalized pregnant women and student controls. The average attitudes of abused women were in fact much more negative for explicit ($d \cong 2$) and implicit ($d \cong 1$) attitudes, thus providing strong evidence for the criterion validity of both measures. A substantial correlation ($r = .53$) between implicit and explicit attitude scores indicated convergent validity. Finally, the more negative explicit as compared to implicit attitudes of abused women confirmed the prediction of an answer bias of abused women, who were expected to exaggerate the

negativity of explicit attitudes in responding to specific social demands.

This result is particularly compelling because the high correlations between implicit and explicit attitudes show that both measures tap the same construct. The large shift of explicit attitudes towards the negative pole of the attitude scale can therefore be confidently attributed to a deliberate answer bias. The data provide no direct evidence for the nature of this bias. Although social demand seems to be a plausible cause, alternative explanations such as reduction of cognitive dissonance (Festinger, 1957) can not be excluded. The easiest way to resolve the conflict induced by feeling attracted to an abusing person might be to derogate the relatively positive attitude towards the person. If this interpretation is correct, it is noteworthy that cognitive dissonance reduction was confined to explicit attitudes.

Hospitalized pregnant women and the student controls showed not only more positive implicit and explicit attitudes than abused women, but also the expected pattern of implicit-explicit discrepancies. At the group level, hospitalized pregnant women reported more positive explicit as compared to implicit attitudes, and no difference was found for student controls. Although the overall pattern of observed discrepancies between implicit and explicit attitudes is compatible with the hypothesis of group-specific self presentation strategies, a trivial alternative interpretation has to be considered. Similar effects would be expected if a lower validity of the implicit measure produced average scores closer to the population mean. Indeed, with exception of the student controls, group means were less extreme for implicit than for the explicit attitude measure.

To substantiate the hypothesis that discrepancies between implicit and explicit attitudes are meaningful and reflect at least partially self presentation strategies, it was

investigated whether they can be accounted for by the personality variable social desirability. Across all women in ongoing relationships, relatively more positive explicit than implicit attitudes were related to higher social desirability scores. This relation was particularly clear for pregnant women and student controls. No evidence was found for the expected reversed relation in the group of abused women. However, this result has to be interpreted in the light of the strong answer bias observed for this group. Since almost all women showed a large negative bias little room was left for discrepancies to correlate with a third variable. Overall, these results strongly support the view that self-presentation strategies moderate the relation between implicit and explicit attitude measures, thus providing a theoretically coherent picture of the relation of implicit and explicit attitudes.

Two central predictions were not confirmed by the results. They both concern the positive range of attitudes towards the partner. First, the expected more positive attitudes towards the partner in the honeymoon group were found for explicit, but not for the implicit measure. Second, for the two control groups and the honeymoon group, implicit and explicit attitude measures were not significantly correlated. These results suggest an asymmetry in the psychometric properties of the Partner-IAT. Criterion validity of the Partner-IAT could be demonstrated by group differences in the range of negative to moderately positive attitudes, but not for very positive attitudes; convergent validity with the explicit attitude measure was found in the range of negative, but not for positive attitudes. These data suggest that towards the positive pole of the scale the implicit measure is either less sensitive, or taps a different construct. Both alternative explanations seem theoretically coherent and compatible with all empirical results. Unfortunately, it is not possible with the data collected in the present study to eliminate

one of these alternatives.

Reduced sensitivity of the Partner-IAT for positive attitudes

The Partner-IAT may be less sensitive in the range of positive attitudes, providing still valid group means in the moderately positive range, but no meaningful individual difference measure. Positive IAT-scores result from relatively slow responses if bad + partner and good + stranger are assigned to the same answer key, and relatively fast responses if good + partner and bad + stranger are assigned to the same answer key. Individual differences were shown to be meaningful in the range of -400 to 400 milliseconds. Unlike questionnaire measures IAT scores are not technically limited to a maximum value. However, it is conceivable that all scores above (or below) some threshold carry the same information. Whether the more difficult mixed tasks requires 200 or 400 milliseconds more than the easier mixed task may be informative for the underlying evaluation dimension, but it may be irrelevant whether it is 400, 600, or 800 milliseconds slower, since these reaction times are just indicating a very positive attitude towards the partner.

Reduced test sensitivity for very high or very low test scores is a common problem in psychological tests construction. In questionnaires it can be solved by adding items with more extreme difficulties. Although rarely discussed for implicit measures, analogous principles of test construction apply for the IAT (or other implicit methods). There are several ways to gauge the difficulty of the IAT in order to increase its sensitivity in the positive attitude range. A rather subtle modification could be implemented by altering the order of the two mixed task sequences. Greenwald et al. (1998) report stronger effects (and presumably higher sensitivity) for the order

compatible-incompatible. In the present study the IAT was optimized for abused women, therefore the mixed task combination partner + bad was presented first, and the combination partner + good second. The inverse order should lead to an increase of test sensitivity in the positive scale range.

An alternative and more radical measure would consist in changing the labels that define the attitude object dimension (here partner-stranger). For example, a more positive label than the word stranger could shift the mean IAT effect for individuals in ongoing relationships closer to zero and in turn increase the sensitivity of the instrument.

Are positive implicit and explicit attitudes towards partners two distinct constructs?

Zero correlations can be due to trivial methodological reasons such as the lacking reliability or sensitivity of a measure, but of course zero-correlations can also truly reflect the independence of two measures. Non-significant correlations between implicit and explicit measures of racial prejudice are a quite common finding (e.g., Fazio et al., 1995, Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997; Greenwald, et al. 1998). These results have been interpreted as evidence that implicit and explicit attitudes tap distinct constructs because the validity of the implicit measure could be demonstrated by a meaningful correlation with a third variable (e.g., nonverbal behavior, an experimenter rating, or degree of identification with an ethnic group).

I am not aware of any evidence for a dissociation of implicit and explicit attitudes for a part of the scale range only. However, since the use of extreme groups is not typical for the implicit attitude literature, existing dissociations may have remained undetected.

In the present study, women in love showed more positive explicit but not the expected more positive implicit attitudes towards their romantic partner as compared to the control groups. Instead of lacking test sensitivity this result may reflect a true dissociation between implicit and explicit attitudes. It is conceivable that women in love hold positive implicit attitudes towards their partners, but not more so than women in established ongoing relationships. This view is compatible with the dual attitude model by Wilson et al. (2000), which considers implicit attitudes as the product of many experiences across an extended period of time. According to this view romantic infatuation may have dramatic effects on explicit, but little or no effects on implicit attitudes. In consequence, our a priori assumption that women in love can be considered as an extreme group for both explicit and implicit attitudes may have been mistaken.

The even more critical zero-correlation between implicit and explicit attitudes in the positive scale range can be interpreted as substantial to the extent that the implicit measure is valid. In fact, the present study provided evidence supporting the validity of the implicit measure also at the level of individual differences. Replicating the results of many prior studies (Berscheid & Reis, 1998), explicit attitudes towards the partner correlated positively with well-being in student controls and pregnant women. Interestingly, for pregnant women only, also implicit attitudes showed a substantial correlation. A multiple regression analysis revealed that both attitude measures accounted for independent portions of the variance in well-being.

The finding that the implicit attitudes play a role for the well-being of pregnant women but not of student controls is suggestive. In the very stressful situation of being hospitalized with pregnancy complications it is the role of the partner to be present, supportive and caring. In other words, the pregnant women face a paradigmatic

attachment situation. A functional relationship to the partner should be supportive and buffer stress, a problematic relationship may even worsen the situation. It seems conceivable that the mental representation or inner working model of the relationship to the partner is not fully reflected in verbal self report measures. As postulated by Wilson et al. (2000), a highly overlearned, unconscious, and automatic layer of this mental representation may influence the women's well-being independently of consciously accessible representations such as explicit attitudes, or explicit attachment measures.

Using the IAT in future relationship research

The choice of attitudes towards romantic partners as the central construct for the present study was mainly motivated by methodological reasons. For a first attempt to validate the IAT in the context of relationship research, it seemed advisable to avoid theoretical complexities for the sake of methodological clarity. This approach proved successful in demonstrating the reliability of the Partner-IAT, high criterion validity for negative to moderately positive attitudes towards partners, and high convergent validity with an explicit attitude measure for the range of negative attitudes. The present study could not conclusively answer the question why implicit and explicit attitude scores did not correlate in the range of positive attitudes. Two alternative explanations were offered that have to be tested in studies to come.

For the future use of implicit methods in personal relationship research some more general conclusions can be drawn from the present study. Research on implicit measures of relational schemata should go beyond the demonstration that implicit measures are possible. It seems most urgent now to optimize the psychometric properties of implicit measures, to apply these to fields where dissociations between explicit and implicit

approaches are predicted by theory (e.g., in the field of adult attachment theory), and to investigate the incremental validity of implicit as compared to explicit measures.

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Table 1

Expected group effects for implicit and explicit attitudes towards (ex)-partners.

| | Attitudes towards (Ex-)Partner | |
|------------------|--------------------------------|----------|
| | explicit | implicit |
| Abused women | -- | - |
| Student controls | + | + |
| Pregnant women | ++ | + |
| Honeymoon | +++ | +++ |

Note: The symbols indicate negative (-) and positive (+) attitudes, the number of symbols indicates attitude extremity.

Table 2

Task sequence of the Partner-IAT.

| Sequence | N of trials | Task | Answer Key Assignment | |
|----------|-------------|------------------------|-----------------------|-----------------|
| | | | Left key | Right key |
| 1 | 40 | Evaluation | Good | Bad |
| 2 | 40 | Target | Partner | Stranger |
| 3 | 40 +120 | Evaluation + Target | Good Stranger | Bad Partner |
| 4 | 40 | Target reversal | Stranger | Partner |
| 5 | 40 +120 | Evaluation + Target | Stranger Bad | Good Partner |

Table 3

Means and Standard deviations of implicit and explicit attitudes towards partners and ex-partners.

| | Attitudes towards Romantic (Ex-)Partners | | | |
|---------------------------|--|-----------|--------------------|-----------|
| | Explicit | | Implicit | |
| | (Questionnaire Scores) | | (IAT-Scores in ms) | |
| | <u>M</u> | <u>SD</u> | <u>M</u> | <u>SD</u> |
| Abused women (N = 21) | 2.04 _A | .81 | 98 _A | 215 |
| Pregnant women (N = 46) | 4.41 _B | .45 | 247 _B | 179 |
| Student controls (N = 50) | 4.33 _B | .55 | 282 _B | 147 |
| Honeymoon (N = 19) | 4.71 _C | .28 | 256 _B | 130 |

Note: Cells in the same column not sharing the same index are significantly different ($p < .05$).

Table 4

Multiple regressions of well-being on implicit and explicit attitudes towards romantic (ex-)partners.

| | Attitudes towards Romantic (Ex-)Partners (standardized β s) | | <u>R</u> |
|--------------------------------------|---|------------|---------------|
| | explicit | implicit | |
| Total sample (N = 136) | .41*** | .12 | .47*** |
| Abused women (N = 21) | -.21 | .07 | .18 |
| Hospitalized pregnant women (N = 46) | .38** | .33* | .54** |
| Student controls (N = 50) | .35* | -.01 | .35* |
| Honeymoon (N = 19) | .20 | .19 | .25 |

Note: * < .05, ** < .01

Figure Caption

Figure 1.

Mean scores of z -transformed implicit and explicit attitude scores across the four groups of women.

Figure 2.

Scatterplot of implicit and explicit attitude scores.

Figure 1

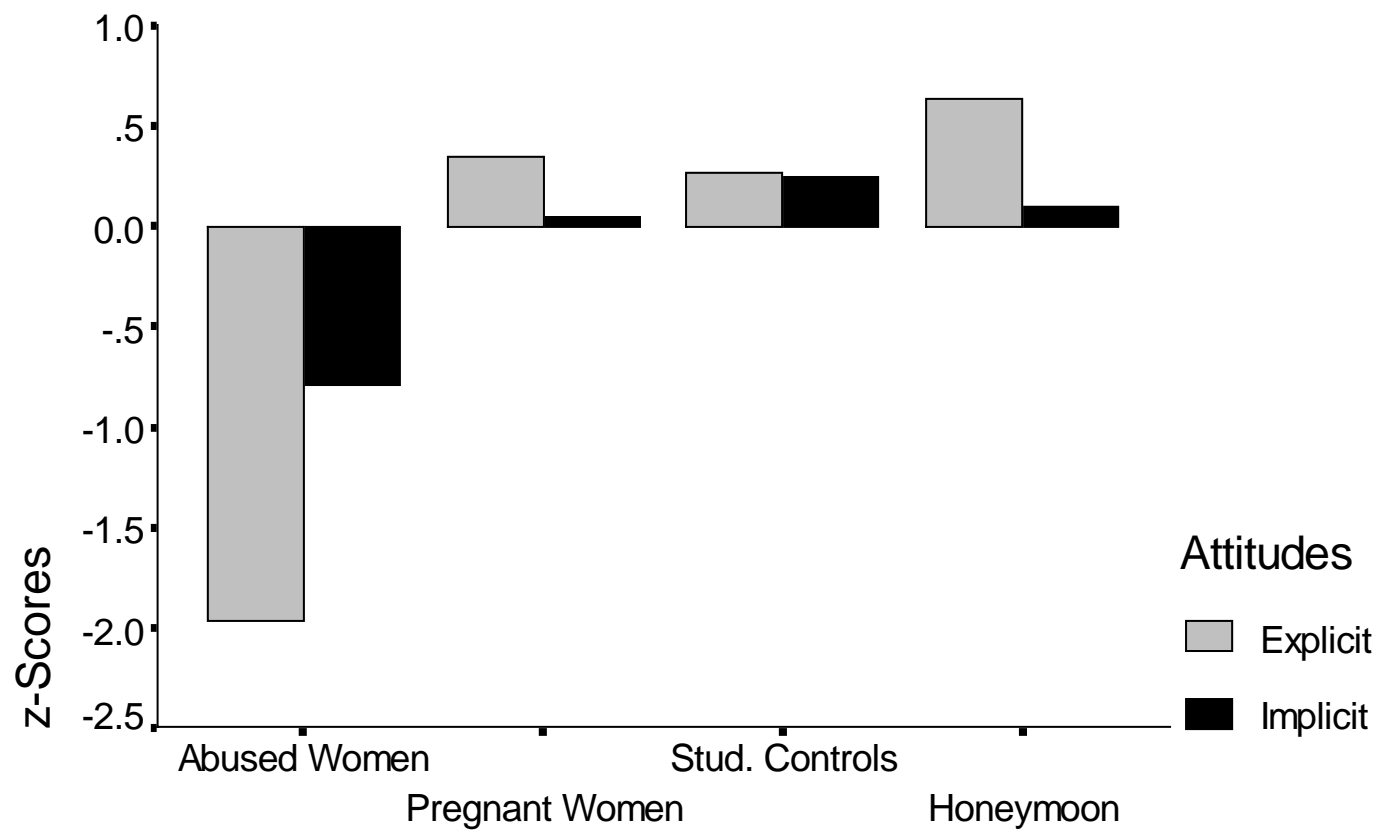


Figure 2

