Nosek, B. A. & Banaji, M. R. (2002). [Polish language] (At least) two factors moderate the relationship between implicit and explicit attitudes. In R.K. Ohme & M. Jarymowicz (Eds.), Natura Automatyzmow (pp. 49-56), Warszawa: WIP PAN & SWPS.

(At least) two factors moderate the relationship between implicit and explicit attitudes

Brian A. Nosek

Yale University

Mahzarin R. Banaji

Harvard University

Deliberative, thoughtful, intentional evaluations can differ, sometimes quite dramatically, from spontaneous, automatic, unintentional evaluations. In the United States, for example, many people report little to no racial bias yet readily show negative automatic responses toward African Americans (Fazio, Dunton, Jackson, & Williams, 1995; Greenwald, McGhee, & Schwartz, 1998). Dissociations between deliberative (explicit) and automatic (implicit) evaluation, or attitudes, has led to the speculation that these two types of evaluations reflect independent processes and might be functionally unrelated. This perspective is consistent with the popular dual-process notions of the independence of conscious and unconscious processes or systems, and is largely based on repeated observations of mean differences between implicit and explicit measures (see Banaji, in press).

Recent evidence, however, suggests that implicit and explicit attitudes, while not the same, are not completely unrelated (Cunningham, Preacher, & Banaji, 1999). The presence of persistent positive correlations between implicit and explicit attitudes introduced the possibility that there is a predictable relationship between conscious and unconscious modes of evaluation. In this paper, we suggest that the magnitude of implicit-explicit (IE) correspondence is a function of at least two factors, self-presentation and attitude elaboration.

The lie detector versus independent evaluation views of implicit-explicit correspondence

Two views are discussed in the social cognition literature to explain the relationship between implicit and explicit attitudes. One, the implicit as lie detector view, persists as a discussion topic despite the apparent absence of prominent supporters. In this view, implicit attitudes are seen as 'true' attitudes, and explicit attitudes as corrupted versions because they can be obscured by self-presentation. In this view, implicit and explicit attitudes differ only to the extent that explicit attitudes are altered by self-presentation. For example, a person may have a negative attitude toward African Americans but avoid reporting it because such negativity violates social norms of egalitarianism. While explicit measures would not pick up the negativity toward African Americans, the implicit measures would because opportunities for intentional control are bypassed during measurement. The assumption, then, is that implicit and explicit attitudes are identical unless conscious intentions alter the explicit response.

A second conceptualization of IE correspondence, the independent evaluations view, derives from the body of evidence showing that automatic attitudinal responses are frequently dissociated from intentional responses (Devine, 1989; Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997; Wilson, Lindsey, & Schooler, 2000). These demonstrations emphasize the unique contributions of implicit and explicit modes of evaluation, and do not implicate any specific factors that might explain how they are related. The processes that give rise to implicit and explicit attitudes are thought to diverge or involve separate components in the information processing stream. As a consequence, implicit and explicit attitudes need not necessarily be related at all because they develop and are expressed by different aspects of the learning and production components of cognitive/affective systems (Banaji, in press).

IE correspondence is moderated by multiple factors

Recent data show that there is a relationship between implicit and explicit attitudes and that relationship varies as a function of the attitude objects being assessed (Nosek, Banaji, & Greenwald, 2002). For instance, attitudes toward young versus old, Black people versus White people, and self versus other show little IE correspondence, but attitudes toward George Bush versus Al Gore and math versus arts show moderate to strong IE correspondence. The independent evaluations view has little to say about why some attitude objects show correspondence and others do not. The implicit as lie detector view suggests that a single factor discriminates high and low correspondence – self-presentation demand.

Self-presentation demand is often assumed to moderate IE correspondence because implicit measures are less vulnerable to self-presentation than are explicit measures. Indeed, a situational manipulation of self-presentation demand showed that public responses are more weakly related to implicit attitudes than private responses are (Nosek & Banaji, 2002). However, it is not yet known whether presentation demand is sufficient to explain the variation in IE correspondence across attitude objects. The face validity of self-presentation as the single moderator of IE correspondence is marred by observations of low IE correspondence for attitude objects like flowers and insects, attitude objects with little apparent self-presentational demand (Greenwald et al., 1998). This suggests that self-presentation, while perhaps a predictor, may not be the only predictor of IE correspondence.

Our laboratory has gathered some evidence that attitude elaboration, merely thinking about feelings for an attitude object, may help to fill the explanatory gap in IE correspondence left by self-presentation. We focus

on it because attitude elaboration is known to play an important role in determining the state of an explicit attitude. Greater elaboration has been shown to make attitudes more temporally stable, resistant to persuasion, and predictive of behavior (Petty & Wegener, 2001; Petty & Cacioppo, 1986). We argue that the act of elaboration can provide the opportunity for implicit and explicit attitudes to achieve greater correspondence either by the automatization of explicit responses (Logan, 1988), the greater accessibility of automatic evaluations, or simply that the two modes of evaluation are similarly and simultaneously influenced by the exercise of elaboration. In one study, participants spent 30 minutes thinking about an attitude object. Immediately following this elaboration exercise, correspondence between implicit and explicit attitudes toward that object increased significantly compared to a control attitude object (Nosek & Banaji, 2002).

       These data support the role of situational manipulations of self-presentation and elaboration in moderating IE correspondence. It is not yet clear whether either factor can explain stable differences in IE correspondence across attitude objects. Can self-presentation and elaboration help us understand why IE correspondence is high for math versus arts attitudes but low for flower versus insect attitudes? In addition, there is no evidence regarding possible interactive effects of self-presentation and elaboration. When self-presentation demand is high, attitude elaboration may be irrelevant for IE correspondence because there are still many reasons to alter explicit responses (without the comparable opportunity to alter implicit responses). However, when presentation demand is low, there is little motivation to alter one's explicit responses, so variation in IE correspondence may be more heavily influenced by other factors, like attitude elaboration. In the next sections, we examine the role of self-presentation and elaboration in explaining variation in IE correspondence across attitude objects. We do this by synthesizing data collected from two sources. This analysis provides preliminary evidence for the viability of self-presentation and elaboration as explanatory factors in determining the relationship between implicit and explicit attitudes.

Some evidence / A preliminary analysis of existing data

       Over the past 6 years, we have collected measures of implicit attitudes via two means: traditional laboratory and web-based data collections. The web-based data described in this paper were collected at two demonstration sites (http://www.yale.edu/implicit/; http://www.tolerance.org/) in which visitors have an opportunity to examine their own implicit biases for a variety of topics. We summarized subsets of these data, the procedures used to collect and analyze them, and the methodological issues to consider in their interpretation, in Nosek, Banaji, and Greenwald (2002).   Other portions of the data appear in two additional papers as well (Greenwald, Nosek, & Banaji, 2002; Nosek, Greenwald, & Banaji, 2002).

       Studies were included in this synthesis if they met the following conditions: (1) the Implicit Association Test (IAT; Greenwald et al., 1998; Greenwald & Nosek, 2001) served as the measure of implicit evaluation; (2) the explicit measure either mapped directly on to the relative assessment of the IAT (e.g., I strongly prefer White people relative to Black people), or could easily be calculated by taking the difference between two single-item rating scales (e.g., warm-cold ratings for Black and White people); (3) the tasks assessed evaluative (good/bad) associations of the target concepts; and, (4) the target concepts were topics that would be familiar to the average American (to be sure that the raters could make informed presentation and elaboration ratings).

       With these criteria, this review included eight web-based tasks and nine tasks collected in the traditional laboratory. For tasks appearing in multiple experiments, implicit-explicit correlations were calculated independently for each experiment and then averaged.[1] This conservative analytic approach avoids inflating the power of the test by combining multiple tests of the same attitude objects into a single index. Combining data resulted in IE correlations for 15 unique attitude objects: Arab-Muslims/Other people (web), creationism/evolution (2 studies), democrats/republicans (4 studies), fruit/bugs (1 study), science/humanities (3 studies), thin people/fat people (web; 2 studies), Black children/White children (web), dark-skin/light-skin (web), math/arts (web; 3 studies), Black people/White people (web; 3 studies), Gay people/Straight people (3

---

[1] Sample sizes for the individual traditional laboratory experiments ranged from 49 to 83. Web-based samples were first constrained to consist exclusively of college-aged participants (18-21 yearolds) to maximize the comparability to the laboratory samples. This resulted in sample sizes ranging from 678 to 16797. If a task appeared on the Internet and in multiple experiments in the traditional laboratory, the overall implicit-explicit correlation reflected equal weighting of laboratory and web-based data. Due to space constraints, a full exposition of the preparation of this analysis is impossible. Greater detail on the selection of attitude objects and data preparation is available from the authors.

studies), flowers/insects (1 study), old people/young people (web), George Bush/Al Gore (web), and self/other (web).

Ten American raters were recruited to provide estimates of (a) the extent to which college-aged people in general would be likely to conceal preferences for one concept over the other for each of the pairs, and separately (b) the extent to which college-aged people in general would have spent time thinking about each of the object pairs. Reliability among the judges was in excess of .9 for both self-presentation and elaboration estimates.

Table 1 summarizes the simple zero-order correlations between implicit and explicit attitudes toward 15 attitude object pairs. Across attitude objects, the relationship between implicit and explicit attitudes varies from a paltry r of .01 (age attitudes) to a strong r of .62 (Bush-Gore attitudes). The relationship between implicit and explicit attitudes is reliable, but variable across attitude objects.

<u>Implicit-explicit correspondence is a function of self-presentation and elaboration</u>

To test whether perceived presentation demand and elaboration can explain variation in implicit-explicit correspondence, we conducted a simultaneous regression on implicit-explicit correspondence with self-presentation and elaboration ratings as predictors. These two factors explained 55% of the variance in implicit-explicit correspondence ($\underline{F}(2,12) = 7.22$, $\underline{p} = .009$, $\underline{adj\ R}^2 = .47$). Both perceived self-presentation demand ($\underline{B} = .08$, $\underline{SE\ B} = .022$, $\underline{p} = .003$, $\underline{\ss} = .84$) and elaboration ($\underline{B} = .08$, $\underline{SE\ B} = .028$, $\underline{p} = .02$, $\underline{\ss} = .61$) explained significant variation in implicit-explicit correspondence, despite the low power of the test.

Given the extremely low power of this analysis, adding the interaction term of perceived self-presentation demand and elaboration to the above model, is unlikely to produce a reliable effect. With this recognition, we conducted a second regression analysis including both the main effects of presentation and elaboration along with the interaction of those two factors. This model explained 62% of the variance in implicit-explicit correspondence ($\underline{F}(3,11) = 5.87$, $\underline{p} = .01$, $\underline{adj\ R}^2 = .51$). The interaction term ($\underline{B} = .02$, $\underline{SE\ B} = .016$, $\underline{p} = .19$, $\underline{\ss} = .32$) was in the right direction but, as expected, did not reach statistical significance. Shown another way, for the seven attitude objects lowest on self-presentation demand, variation in elaboration was strongly predictive of implicit-explicit correspondence ($\underline{r} = .85$, $\underline{p} = .01$), but for the seven attitude objects highest on self-presentation demand, the predictive power of elaboration was much weaker ($\underline{r} = .29$, $\underline{p} = .52$). Though underpowered, the increase in overall $\underline{R}^2$, the moderately sized $\underline{\ss}$, and the pattern of correlations suggest that the weaker the self-presentation demands, the greater is the role elaboration might play in predicting IE correspondence. This finding should be viewed as no more than a strong speculation regarding the interplay of various moderators of the IE relationship.

<u>The relationship between implicit and explicit attitudes is multiply-determined</u>

This initial research synthesis suggests that the relationship between implicit and explicit attitudes is determined by (at least) two factors – self-presentation and elaboration. A new formulation of the nature of the relationship between implicit and explicit attitudes must be devised to handle these observations. The <u>independent evaluations</u> view does not explain how reliable and predictable relationships can exist between implicit and explicit attitudes. And, the <u>implicit as lie detector</u> view does not anticipate that factors other than self-presentation will moderate IE correspondence. Developing strong theory about the functional relationship between implicit and explicit attitudes requires examination of other factors that could moderate the relationship (e.g., attitude accessibility, attitude importance), and attention to the cognitive processes that give rise to these two modes of evaluation. In other words, the same heavy doses of theorizing about explicit attitudes, if brought to bear on the IE relationship will quickly provide answers to the conditions under which they are likely to be associated or dissociated.

References

Banaji, M. R. (in press). The opposite of a great truth is also true: Homage to koan #7. In J. Jost, D. Prentice, and M. Banaji (eds) ????. American Psychological Association.

Cunningham, W. A., Preacher, K. J., & Banaji, M. R. (2001). Implicit attitude measures: Consistency, stability, and convergent validity. Psychological Science, 12, 163-170.

Dovidio, J. F., Kawakami, K., Johnson, C., Johnson, B., Howard, A. (1997). On the nature of prejudice: Automatic and controlled processes. Journal of Experimental Social Psychology, 33(5), 510-540.

Fazio, R. H., Jackson, J. R., Dunton, B. C., & Williams, C. J. (1995). Variability in automatic activation as an unobtrusive measure of racial attitudes: A bona fide pipeline? Journal of Personality & Social Psychology, 69(6), 1013-1027.

Greenwald, A. G., & Banaji, M. R. (1995). Implicit social cognition: Attitudes, self-esteem, and stereotypes. Psychological Review, 102(1), 4-27.

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: The implicit association test. Journal of Personality and Social Psychology, 74(6), 1464-1480.

Greenwald, A. G., & Nosek, B. A. (2001). Health of the Implicit Association Test at age 3. Zeitschrift für Experimentelle Psychologie, 48(2), 85-93.

Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2002). Scoring procedures to improve implicit association test measures. Unpublished manuscript.

Logan, G.D. (1988). Toward an instance theory of automatization. Psychological Review, 95(4), 492-527.

Nosek, B. A., & Banaji M. R. (2002). Moderators of implicit-explicit correspondence. Unpublished manuscript.

Nosek, B. A., Banaji, M. R., & Greenwald, A. G. (2002). Harvesting implicit group attitudes and beliefs from a demonstration website. Group Dynamics, 6(1), 101-115.

Nosek, B. A., Greenwald, A. G., & Banaji, M. R. (2002). Administering and interpreting the implicit association test: Lessons from some large data sets. Unpublished manuscript.

Petty, R. E. & Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion. In L. Berkowitz (Ed.), Advances in experimental social psychology (Vol. 19, pp. 123-205). New York: Academic Press.

Petty, R. E. & Wegener, D. T. (1999). The elaboration likelihood model: Current status and controversies. In S. Chaiken & Y. Trope (Eds.), Dual-process theories in social psychology (pp. 41-72). New York: Guilford Press.

Wilson, T.D., Lindsey, S. & Schooler, T.Y. (2000). A model of dual attitudes. Psychological Review, 107(1), 101-126.

Table 1. Summary of average implicit-explicit correlations, perceived elaboration, and perceived self-presentation demands for 15 attitude object pairs.

	Implicit-Explicit correlation	Perceived elaboration	Perceived presentation demand
George Bush / Al Gore	.62	4.5	2.1
Science / Humanities	.51	4.5	2
Math / Arts	.48	4.5	2.2
Creationism / Evolution	.47	3.2	2.4
Democrats / Republicans	.45	5.3	2.6
Gay people / Straight people	.32	5.3	5.4
Flowers / Insects	.26	1.4	1.2
Thin people / Fat people	.22	4.9	5.3
Black children / White children	.21	3.8	6.1
Black people / White people	.18	4.9	6.1
Self / Others	.18	6.7	4.8
Fruit / Bugs	.18	1.3	1.3
Dark-skin / Light-skin	.14	3.8	5.4
Arab-Muslims / Other people	.09	4.3	5.5
Old people / Young people	.01	3.2	3.3
Average	.29	4.1	3.7