Lund Psychological Reports

Examining Prejudice with the Indirect and Direct Attitude Measure (IDAM): Further Tests of Construct Validity

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Abstract

Two studies examined the construct validity of the Indirect and Direct Attitude Measure (IDAM, Rohner, Mårtensson, Geisler, Sinclair, & Zetterberg, 2009). Experiment 1 revealed that the procedure could measure implicit attitudes towards heterosexuality and homosexuality, and that implicit prejudice was not influenced by motivation to respond without prejudice. Experiment 2 showed that the implicit attitude measure of IDAM was partially sensitive to faking. Taken together, the findings suggest that further research is needed.

Introduction

The development of implicit measures of attitudes and stereotypes has been one of the major goals in social psychological research in the last two decades (e.g. Bassili & Brown, 2005; Fazio & Olson, 2003; Wittenbrink, Schwarz, Wittenbrink, & Schwarz, 2007). Implicit measures do not rely on asking participants to report their likes and dislikes of groups, ideologies or artefacts. Instead, they use indirect tests to assess attitudes and stereotypes, such as reaction – time measures, indirect ratings, or psycho - physiological measures (see Fazio & Olson, 2003 for a review of implicit attitude measures). Payne and colleagues, for example, have recently developed an Affect Misattribution Procedure (AMP) to measure implicit attitudes (Payne, Burkley, & Stokes, 2008; Payne, Cheng, Govorun, & Stewart, 2005). In the AMP, participants are presented with attitude objects (primes) that are immediately followed by evaluative neutral images of Chinese pictographs (targets). The task is to rate the pleasantness of targets. Results show that participants misattribute evaluations generated by the primes to targets, even if they are asked to avoid doing so. I.e. they rate targets that are preceded by positive primes as more positive than targets that are preceded by negative primes.

Implicit measures have an important potential advantage: Presumably they avoid contaminating effects of intentional self – presentation strategies such as social desirability (Bassili & Brown, 2005; Devine, Plant, Amodio, Harmon-Jones, & Vance, 2002; Greenwald et al., 2002). This is particularly important when measuring attitudes regarding socially sensitive topics.

The validity of implicit attitude and stereotype measures has been debated recently (De Houwer & Moors, 2007; Fazio & Olson, 2003). Even if several measures that have been labelled "implicit measures" assess attitudes and stereotypes indirectly, there is a scarcity of evidence supporting that these measures tap cognitive processes that have the features typically associated with implicit processes. I.e. generally there is no evidence supporting that responses to popular putatively implicit measures are non-intentional, unconscious, effective or fast (Bargh, 1992; De Houwer & Moors, 2007; Hasher & Zacks, 1979; Schneider & Shiffrin, 1977; Shiffrin & Schneider, 1977).

Rohner and colleagues recently developed a measure of attitudes and stereotypes, IDAM, that assesses the conditional probability that an attitude is manifested towards an object, given that the intention to declare the attitude towards the object is absent (Rohner et al., 2009). This task has the advantage that attitudes towards an object are measured indirectly while intentions to profess the attitude towards the object are measured at the same time. An important feature of implicit processing is that it occurs non-intentionally (De Houwer & Moors, 2007); the IDAM measure can assess attitudes indirectly given that intentions to declare the same attitudes are absent.

In IDAM, participants perform a recognition-memory task with combinations involving instances of concepts and instances of attribute categories (e.g. an image of an attractive individual presented together with a positive word for the concept + attribute combination *attractive* + *positive*). In the test phase study combinations are shown with an equal number of new combinations, which are created by re-combining study combinations. Participants make one of four responses in the test-phase: (1) "Old & Agree", (2) "Old & Disagree", (3) "New & Agree", (4) "New & Disagree". Participants respond "old" or "new" to categorize if combinations were shown in the study-phase or not, and "Agree" or "Disagree" to judge if they agree or disagree with the information in a combination. Recognition-bias, the tendency to respond "old" relative to "new" is used as an *indirect* attitude measure. Recognition-bias, given that a participant responds "Disagree" is used as an *implicit* indirect attitude measure (i.e. showing signs of an attitude even when one does not intend to declare the same attitude by disagreeing).

Recent research has examined the construct validity of IDAM (Rohner et al., 2009). In five experiments, implicit attitude measures obtained from the procedure could discriminate between attitude congruent and attitude incongruent combinations involving attractive and unattractive faces and positive and negative images. The aims of the present paper are to further examine the validity of the measure. If IDAM yields valid implicit attitude measurements, in the sense that outcomes are not contaminated by conscious intentions, the following predictions should be supported:

1. IDAM should be able to measure attitudes that social norms prohibit. In experiments 1 and 2 IDAM was used to study attitudes towards heterosexual and homosexual couples; i.e. to measure implicit homo-negativity. Previous research has shown that individuals exhibit implicit prejudice towards homosexuality (Banse, Seise, & Zerbes, 2001; Jellison, McConnell, & Gabriel, 2004; Steffens & Buchner, 2003).

2. Implicit homo-negativity, as measured by IDAM, should not correlate with internal (IMS) or external (EMS) motivation to respond without prejudice (Plant & Devine, 1998). I.e. intentions to respond without prejudice should not affect IDAMs implicit attitude measure. Experiment 1 examined this hypothesis.

3. The relation between implicit homo-negativity and intentions to declare homo-negativity should be moderated by internal (IMS) and/or external (EMS) motivation to respond without prejudice. I.e. participants that are motivated to conceal prejudice should not intend to declare homo-negativity while still showing homo-negativity on the implicit attitude measure; participants that are not motivated to conceal prejudice should be more prone to intend to declare homo-negativity and also exhibit more homo-negativity on the implicit measure. This prediction was tested in experiment 1 as well.

4. The implicit attitude measure in IDAM should not be influenced by intentions to fake attitudes. In experiment 2 participants were randomly allotted to receive one of two instructions: either to fake homo-negativity or to fake homo-positivity.

Experiment 1

Experiment 1 used IDAM to measure attitudes toward heterosexual couples and homosexual couples; participants also completed questionnaire measures of motivation to respond without prejudice.

Method

Participants

Fifty Swedish university students participated in experiment 1. Seventy percent were female and 30.00% were male. Mean age was 22.42 with a standard deviation of 2.52.

Procedure

Participants were tested individually or in groups of up to 6 people. All stimuli and questionnaire items were presented on computers (one per participant); participants responded by using the keyboard or the computer mouse. First, participants went through the IDAM, secondly they completed measures of internal (IMS) and external (EMS) motivation to respond without prejudice, and third they completed demographic information. Finally they were debriefed and offered the opportunity to be informed regarding the results of the research.

IDAM

IDAM uses a modified recognition-memory task to measure implicit and explicit attitudes indirectly (Rohner et al., 2009). The task consists of a study phase and a test phase.

At study, instances that represent concepts and instances that represent attributes were shown together on a screen as combinations (e.g. an image of a homosexual couple as an instance of the concept *homosexual* and a positive word as an instance of the concept *positive*). Participants were instructed that images and words would be presented and that the task was to attend to each image and word carefully. No responses were made in the study-phase. The test phase started directly after the study phase. At test, study-combinations were presented with an equal number of new combinations, which were created by randomly re-pairing study-combinations. During the test phase the task was to judge if each combination was shown at study or not and to judge if one agreed or disagreed with the information presented in each combination. One of four responses alternatives could be chosen: 1. "Old & Agree", 2. "Old & Disagree", 3. "New & Agree", 4. "New & Disagree". The four response alternatives were presented on a screen together with the concept instances and attribute instances and their position varied randomly from trial to trial. Participants responded by clicking with the computer mouse and there was no time-limit in this task. Before the test-phase participants were instructed that they would be shown the same images and words as before and that their task was to judge if a combination was old or new and to judge if they agreed or disagreed with the information in the combination. Instructions emphasized that *combinations*

and not images or words had to be judged. They were also informed regarding what response would be appropriate in a certain situation (e.g. "If you judge that a combination is old and you think that the image and word fit together, press Old & Agree").

Concept instances consisted of 16 images of heterosexual couples and 16 images of homosexual couples (8 female + female, 8 male + male) involved in romantic situations (hugging, kissing, etc). Attribute instances consisted of 16 negative words and 16 positive words (see the Appendix). Combinations in the study phase varied according to concept category (2: heterosexual, homosexual) and attribute category (2: negative, positive); a total of 32 combinations were shown in random order in the study-phase, one combination per trial. Concept images and attribute words were randomly assigned to these conditions, anew for each participant. At test, participants viewed study-combinations together with an equal number of new combinations, created by randomly re-combining study-combinations. The test phase thus contained a total of 64 combinations. New combinations had the same concept instance + attribute category mapping as study combinations, i.e. the valence (negative or positive) of the word that appeared alongside a given image was the same for study-combinations and new combinations. Conditions in the test phase were presented in a new random order for each participant.

Attitude measures were then computed separately for homo-negativity congruent combinations (heterosexual + positive and homosexual + negative) and homo-negativity incongruent combinations (heterosexual + negative and homosexual + positive) from response-frequencies in the test phase, shown in table 1.

Table 1.

Response categories for the IDAM

Response	Item type	Meaning	Variable name
Old & Agree	Old	Hit & Agree	HA
Old & Agree	New	False alarm & Agree	FA
Old & Disagree	Old	Hit & Disagree	HD
Old & Disagree	New	False alarm & Disagree	FD
New & Agree	Old	Miss & Agree	MA
New & Agree	New	Correct rejection & Agree	CA
New & Disagree	Old	Miss & Disagree	MD
New & Disagree	New	Correct rejection & Disagree	CD

The measure of intent to express attitude, INT, is shown in equation 1. INT is a linear contrast that represents the difference between agree-responses and disagree-responses.

$$INT = (HA + FA - HD - FD + MA + CA - MD - CD) / 8 \qquad (1)$$

To measure attitudes indirectly, IDAM uses measures of recognition-bias; the tendency to respond "old", relative to "new", independently of whether an item was presented at study or not (see Rohner et al., 2009). We calculated an *implicit* indirect measure (IIM), which is recognition-bias for a concept + attribute combination, given that a participant disagrees with that concept + attribute combination, and an *explicit* indirect measure (EIM), which is recognition-bias for a concept + attribute combination, given that a participant agrees with that concept + attribute combination. These measures are shown in equation 2 and 3.

$$EIM = [- FA / (- 1 - FA + HA) + (- 1 + CA) / (-1 + CA - MA)] / 2 \qquad (2)$$
$$IIM = [- FD / (- 1 - FD + HD) + (- 1 + CD) / (- 1 + CD - MD)] / 2 \qquad (3)$$

Motivation to respond without prejudice

Motivation to respond without prejudice was assessed by means of the scale constructed and validated by Plant and Devine (Plant & Devine, 1998). The scale consists of 5 items measuring external motivation to respond without prejudice (EMS) and 5 items measuring internal motivation to respond without prejudice (IMS), (Plant & Devine, 1998). Participants rated each item on a 7-point scale that ranged from -3 (labelled "- 3 completely disagree") to +3 (labelled "+3 completely agree") shown on the computer screen by clicking with the computer mouse.

Results

IDAM measures, IMS and EMS were inspected for outliers, which were defined as values with a two-tailed probability lower than 0.01 in a normal distribution. Outliers were replaced with the raw scores that correspond to 0.01/2 and 1 – 0.01/2, using an iterative procedure that only ended when all outliers were gone (i.e. by recalculating means, standard deviations and probabilities after each group of outliers had been removed); see Tabachnick and Fidell (Tabachnick & Fidell, 2001). The variable that had most outliers had 4.00%.

Implicit indirect measures were analyzed in an ANOVA with congruence (2: homo-negativity-congruent, homo-negativity-incongruent) and measure (IIM, EIM) as within subjects factors. This analysis did not show a significant interaction between congruence and measure, $F(1, 49) = 1.70$, $p = 0.20$, $\eta_p^2 = 0.03$, but significant main effects of both congruence and measure, $F(1, 49) = 8.67$, $p < 0.05$, $\eta_p^2 = 0.15$, and $F(1, 49) = 4.18$, $p < 0.05$, $\eta_p^2 = 0.08$, respectively. As shown in figure 1, homo-negativity-congruent combinations produced higher values than homo-negativity-incongruent combinations on both indirect measures. Simple effects analyses, however, revealed that only IIM differed significantly between

congruent and incongruent combinations, $F(1, 49) = 6.80$, $p < 0.05$, $\eta_p^2 = 0.12$; the effect of congruence on EIM failed to reach significance, $F(1, 49) = 1.72$, $p = 0.20$, $\eta_p^2 = 0.03$.
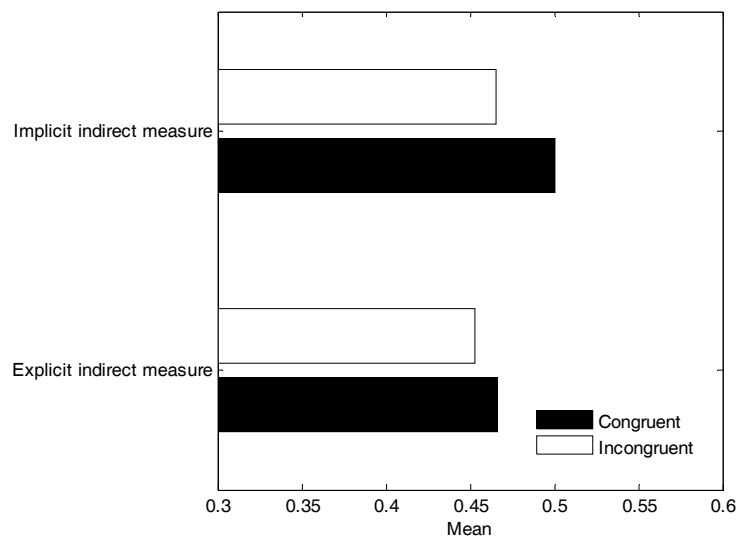

Figure 1. Effects of congruence and measure on indirect responses.

The effect of congruence on intentions to express attitude, INT, was non-significant, $F(1, 49) = 2.68$, $p = 0.11$, $\eta_p^2 = 0.05$ (homo-negativity-congruent had $M = 0.47$, homo-negativity-incongruent had $M = 0.46$). The implicit indirect measure (IIM) but not the direct measure of intentions to declare attitude (INT) was thus sensitive to participants' attitudes towards heterosexuality and homosexuality.

The next analyses focused on relations with motivation to respond without prejudice. Descriptive statistics for the internal (IMS) and external (EMS) motivation to respond without prejudice scales are shown in table 2.

Table 2.

Descriptive statistics for motivation to respond without prejudice measures

Measure	MIN	MAX	M	SD
Internal motivation to respond without prejudice (IMS)	-3.00	15.00	8.93	4.46
External motivation to respond without prejudice (EMS)	-15.00	9.00	-3.70	6.97

Note. IMS = Internal motivation to respond without prejudice; EMS = External motivation to respond without prejudice.

Index measures were computed for INT, IIM and EIM representing the difference between homo-negativity-congruent and homo-negativity-incongruent combinations; higher values thus indicate relatively more homo-negativity. IIM-index was not significantly correlated with IMS or EMS, $r = 0.13$, $p = 0.36$, and $r = 0.06$, $p = 0.71$, respectively. To examine if motivation to control prejudice moderated the

relation between implicit prejudice (IIM-index) and intentions to declare prejudice (INT-index), INT-index, IIM-index, EMS and IMS were subjected to regression analyses. As a first step all entered variables were converted to standard-scores. Two linear regression analyses were then computed with INT-index as the criterion variable. The first analysis had IMS, IIM-index and the product of IMS and IIM-index as predictors. The second analysis had IIM-index, EMS and the product between IIM-index and EMS as predictors. The moderating effects of motivation to respond without prejudice are represented by the coefficients for the product terms. Results are shown in table 3.

Table 3.

Linear regression analyses with INT-index as criterion variable.

Analysis	Predictor	B	SE	t	p
1	IMS	-0.32	0.14	-2.34	<0.05
	IIM-index	0.33	0.13	2.52	<0.05
	IMS x IIM-index	-0.23	0.10	-2.23	<0.05
2	EMS	0.38	0.13	2.89	<0.05
	IIM-index	0.27	0.13	2.01	0.05
	EMS x IIM-index	-0.05	0.16	-0.33	0.74

Note. Unstandardized coefficients (Bs) are shown.

Internal motivation to respond without prejudice, IMS, significantly moderated the relation between IIM-index and INT-index, see table 3 and figure 2. Low internal motivation to control prejudice participants had a stronger positive relation between IIM-index and INT-index than high internal motivation to control prejudice participants. The moderating effect of external motivation to control prejudice was, however, not significant, see table 3 and figure 2. Somewhat surprisingly, high external motivation to control prejudice (EMS) - participants had higher homo-negativity-values on the INT-index.
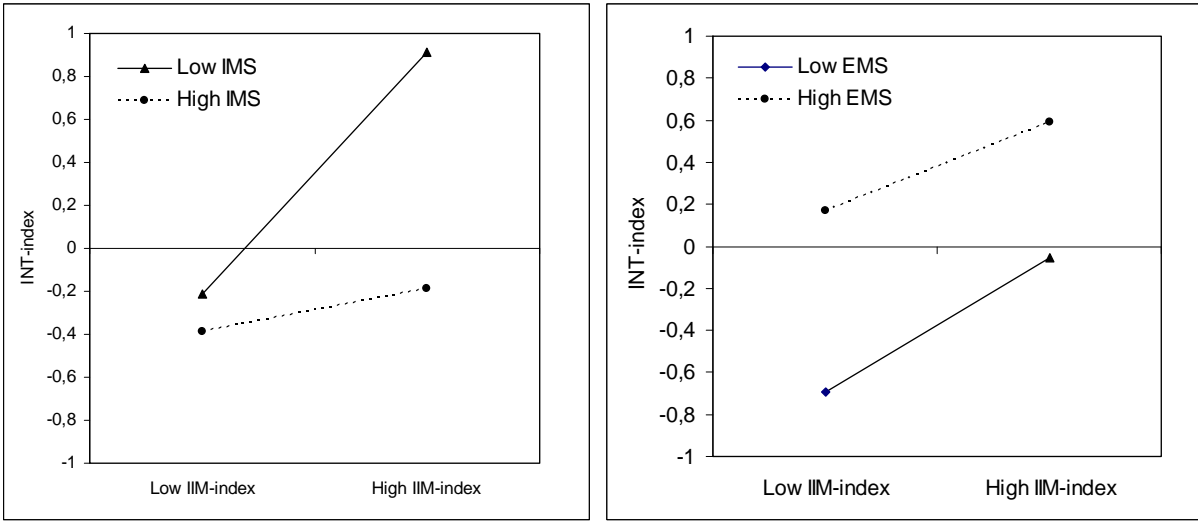
Figure 2. Moderating effects of motivation to respond without prejudice on the relation between IIM-index and INT-index. High and low values represent 1 standard deviation above the mean and 1 standard deviation below the mean on each measure. Estimates for INT-index were obtained from the regression equations shown in table 3.

Experiment 2

In experiment 2 effects of an instruction manipulation were studied. Participants were either instructed to fake homo-negativity or to fake homo-positivity.

Method

Participants

Sixty-one individuals participated in experiment 2. Mean age was 23.31 with a standard deviation of 3.86; 29.51% were male and 70.49% were female.

Procedure

As in experiment 1, participants were tested individually or in groups of up to 6 using computers. Participants completed an IDAM identical to the procedure for experiment 1, with the following exception. Participants were randomly assigned to one of two instruction-conditions as shown in table 5 (31 in the fake homo-positivity condition, 30 in the fake homo-negativity condition).

Table 5.

Instructions given to participants in the faking conditions.

Condition	Instruction
Fake homo-negativity	The aim of the next task is to measure attitudes, by examining how you judge images and words. Your judgements can thus be used to assess if you make positive or negative evaluations of different groups of people. In this case, heterosexuals and homosexuals. We want to study if you can simulate different attitudes that then show up in the test-results. That is, will test-results show that you have a certain attitude if you pretend that you have that attitude? Therefore, we want you to pretend that you have very positive attitudes towards heterosexuals and very negative attitudes towards homosexuals. That is, that you answer in a way that you think produces a test-result which show that you strongly like heterosexuals and strongly dislike homosexuals.
Fake homo-positivity	The aim of the next task is to measure attitudes, by examining how you judge images and words. Your judgements can thus be used to assess if you make positive or negative evaluations of different groups of people. In this case, heterosexuals and homosexuals. We want to study if you can simulate different attitudes that then show up in the test-results. That is, will test-results show that you have a certain attitude if you pretend that you have that attitude? Therefore, we want you to pretend that you have very positive attitudes towards homosexuals and very negative attitudes towards heterosexuals. That

is, that you answer in a way that you think produces a test-result which show that you strongly like homosexuals and strongly dislike heterosexuals.

Participants read one of these instructions and clicked on a button marked OK. They then received standard test-phase instructions explaining when to respond "Old & Agree", "Old & "Disagree", "New & Agree" or "New & Disagree"; see the method section of experiment 1. Finally participants were debriefed and offered to get information regarding the research results.

Results

IDAM-measures were calculated, inspected and treated for outliers as explained in the method section of experiment 1. The variable with most outliers in experiment 2 had 6.56% outliers.

An ANOVA was calculated with measure (2: implicit indirect, explicit indirect), congruence (2: homo-negativity-congruent, homo-negativity-incongruent) and group (2: fake homo-negativity, fake homo-positivity). This analysis revealed a significant interaction between measure, congruence and group, as shown in table 6. Follow up analyses were then conducted separately for each group. In the fake homo-negativity-group, there was a significant interaction between congruence and measure; the main effect of congruence was also significant for both IIM and EIM, see table 6. As shown in figure 3, fake homo-negativity participants had higher values on the implicit indirect measure (IIM) on congruent than on incongruent combinations. The explicit indirect measure showed the opposite pattern, with an advantage for incongruent combinations. Fake homo-negativity participants thus showed signs of homo-negativity on the implicit measure (IIM). In the fake homo-positivity group, instead, none of the effects were significant; see table 6 and figure 3. Apparently thus, faking homo-positivity did not produce implicit homo-positivity.

Table 6.

Effects of Congruence, Measure and Group

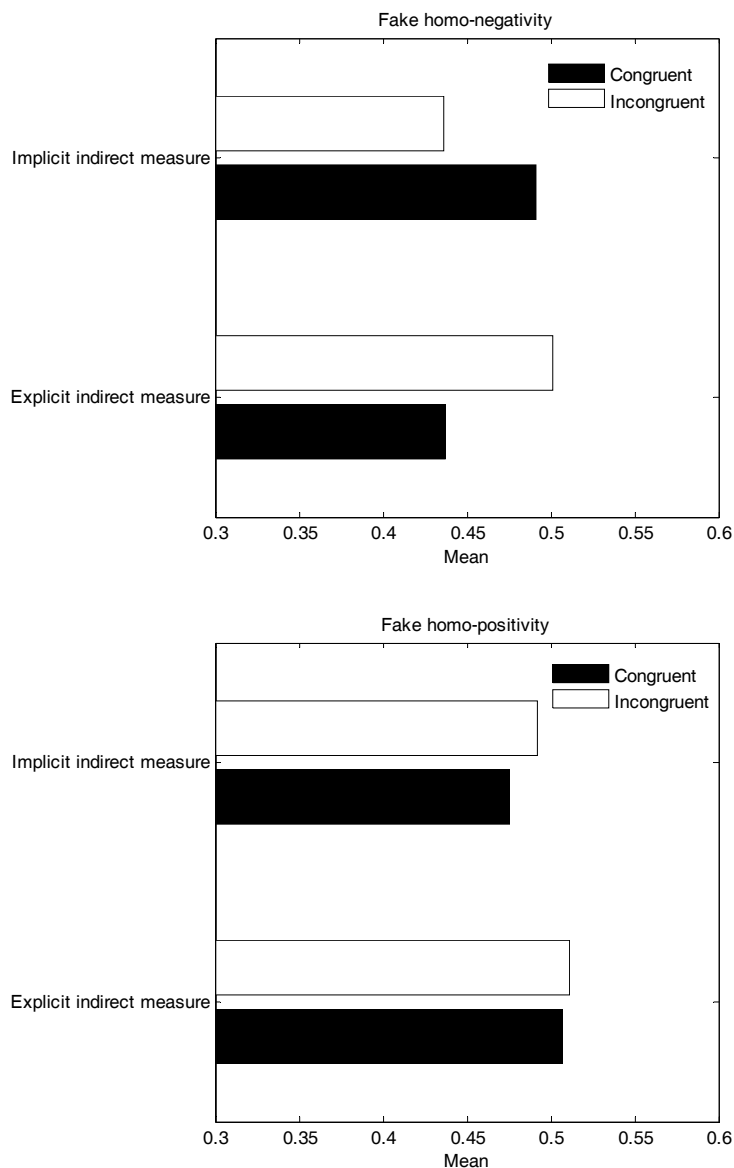| Group	Effect	F	p	η_p^2
Both	Congruence x Measure x Group	4.51	< 0.05	0.07
	Congruence x Measure	2.92	0.09	0.05
	Congruence	0.44	0.51	0.01
Fake homo-negativity	Congruence x Measure	6.74	< 0.05	0.19
	Congruence | IIM	4.92	< 0.05	0.15
	Congruence | EIM	4.55	< 0.05	0.14
Fake homo-positivity	Measure x Congruence	0.10	0.76	0.00
	Congruence	0.46	0.50	0.02
	Measure	2.93	0.10	0.09

Figure 3. Effects of congruence, measure and group on indirect responses.

An ANOVA with the intention to express attitude measure, INT, as the dependent variable, revealed a strong and significant interaction between congruence and group, $F(1, 59) = 417.48$, $p < 0.05$, $\eta_p^2 = 0.88$. Congruence did not show a main effect, $F(1, 59) = 1.07$, $p = 0.31$, $\eta_p^2 = 0.02$. Faking instructions thus almost explained 90% of the variance in the intention measure. This effect is shown in figure 4. As expected, fake homo-negativity participants were easily able to fake intentions to express homo-negativity; fake homo-positivity participants could easily fake intentions to declare homo-positivity.
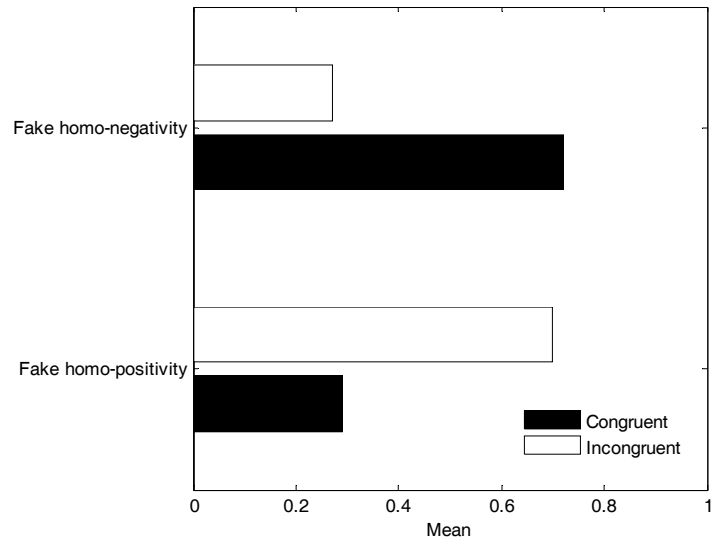
Figure 4. Effects of instructions on the intention to express attitude measure, INT.

General discussion

Experiment 1 supported predictions 1 and 2: IDAM showed implicit homo-negativity (IIM) and this measure did not correlate significantly with either internal (IMS) or external (EMS) motivation to respond without prejudice. Intentions to declare attitude (INT) did not differ significantly between homo-negativity congruent and homo-negativity incongruent combinations. Prediction 3 was partially supported: Only internal motivation to respond without prejudice moderated the relation between implicit homo-negativity and intentions to declare homo-negativity. Somewhat surprisingly, external motivation to respond without prejudice (EMS) was associated with more intentions to declare homo-negativity (INT). Even so, this finding can be interpreted as showing that only participants who view themselves as prejudiced (as evident on INT), should be externally motivated to conceal their prejudice from others (as evident on EMS).

Experiment 2 only partially supported prediction 4: Participants instructed to fake homo-positivity were unable to do so on the implicit indirect measure (IIM). Still, implicit homo-negativity was influenced by instructions to fake homo-negativity or homo-positivity. Only fake homo-negativity participants revealed implicit homo-negativity. The measure of intentions to declare homo-negativity or homo-positivity (INT) was very easily influenced by the instruction manipulation.

Taken together the findings yield partial support for the construct validity of IDAM as an implicit attitude measure. The procedure could measure attitudes towards homosexual and heterosexual couples, even when explicit measures failed to do so. Still, there are a number of unanswered questions. For instance, it would be interesting to explore what factors mediate effects of faking instructions on implicit attitude measurements. One possibility is that conscious intentions do not mediate the effects of instructions on implicit attitude. Moreover, it would be informative to examine implicit attitudes in other populations; such findings may strengthen the external validity of the procedure. The present studies only consisted of a student population.

Appendix

Negative	English translation	Positive	English translation
Äckligt	Disgusting	Vackert	Beautiful
Osmakligt	Distasteful	Lämpligt	Appropriate
Fel	Wrong	Fint	Nice
Sjukt	Sick	Lockande	Attractive
Motbjudande	Repulsive	Underbart	Wonderful
Obehagligt	Creepy	Mysigt	Cosy
Oanständigt	Indecent	Skönt	Nice
Fult	Ugly	Idealiskt	Ideal
Fördärvat	Blighted	Sunt	Sound
Förskräckligt	Terrible	Önskvärt	Desirable
Onaturligt	Unnatural	Rätt	Correct
Opassande	Inappropriate	Bra	Good
Vidrigt	Wicked	Härligt	Nice
Fjolligt	Effeminate	Perfekt	Perfect
Onormalt	Abnormal	Oklanderligt	Impeccable
Oacceptabelt	Unacceptable	Tilltalande	Appealing

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