

## An Indirect Measure of Implicit Sexual Assertiveness: Reliability and Validity of the Sexual Assertiveness IAT in Young Adults in The Netherlands

Jacques van Lankveld, Regina van den Eijnden, Peggy Emmerink, Tom ter Bogt, Ron Pat-El & Ine Vanwesenbeeck

To cite this article: Jacques van Lankveld, Regina van den Eijnden, Peggy Emmerink, Tom ter Bogt, Ron Pat-El & Ine Vanwesenbeeck (2022) An Indirect Measure of Implicit Sexual Assertiveness: Reliability and Validity of the Sexual Assertiveness IAT in Young Adults in The Netherlands, *Journal of Sex & Marital Therapy*, 48:6, 628-640, DOI: [10.1080/0092623X.2022.2035868](https://doi.org/10.1080/0092623X.2022.2035868)

To link to this article: <https://doi.org/10.1080/0092623X.2022.2035868>



© 2022 The Author(s). Published with license by Taylor & Francis Group, LLC.



Published online: 20 Feb 2022.



[Submit your article to this journal](#)



Article views: 1118








[View related articles](#)



[View Crossmark data](#)

## An Indirect Measure of Implicit Sexual Assertiveness: Reliability and Validity of the Sexual Assertiveness IAT in Young Adults in The Netherlands

Jacques van Lankveld<sup>a</sup> , Regina van den Eijnden<sup>b</sup> , Peggy Emmerink<sup>b</sup>,  
Tom ter Bogt<sup>b</sup> , Ron Pat-El<sup>a</sup>  and Ine Vanwesenbeeck<sup>b</sup> 

<sup>a</sup>Open University of the Netherlands, PO Box 2960, 6401 DLHeerlen, The Netherlands; <sup>b</sup>Utrecht University, Department of Interdisciplinary Social Sciences, Padualaan 14, 3584CH Utrecht, The Netherlands

### ABSTRACT

In the present study we investigated the reliability and validity of an Implicit Association Test of sexual assertiveness (the SA-IAT) in a sample of young adults ( $n=159$ ). The D600 algorithm was used to calculate implicit sexual assertiveness scores. Explicit sexual assertiveness was measured using a selection of items from the Hurlbert Index of Sexual Assertiveness. Personality traits were assessed using the revised, short version of the Eysenck Personality Questionnaire. The internal consistency of the SA-IAT was evaluated based on split-half reliability, and found acceptable with  $\alpha=0.61$  for the practice trials, and  $\alpha=0.70$  for the test trials, after correction for attenuation. Convergent and divergent validity were evaluated using correlation analysis. Correlation with explicit sexual assertiveness was found to be low, as expected. Divergent validity of the SA-IAT was evaluated against the personality traits of extraversion, neuroticism, and social desirability. Except for a significant correlation of implicit sexual assertiveness with extraversion in the full sample and the female subsample, implicit sexual assertiveness and personality traits were not found to share variance, as expected.

### Introduction

In the present study we investigated the psychometric properties of an Implicit Association Test of implicit sexual assertiveness (the SA-IAT) in a sample of young adults in The Netherlands. The concept of sexual assertiveness in sex research has a history spanning more than four decades (Attaky et al., 2020; Carlson & Johnson, 1975; Santos-Iglesias & Sierra, 2010a). It is considered an important factor in achieving desirable sexual interaction (e.g., Dunn et al., 1979), as well as in preventing unwanted forms of sexual contact (Darden et al., 2019). In accordance with these widely divergent goals, sexual assertiveness is defined in different ways. One of the first definitions was proposed in the context of spinal cord injury in women as ‘The acknowledgement of yourself as a sexual being and utilization, with little anxiety, of a set of behavioral skills to obtain sexual satisfaction for yourself and your partner.’ (Dunn et al., 1979, p. 294). This definition contains self-descriptive, emotional, and skill elements, as well as a specific purpose of being sexually assertive for oneself and empathic toward one’s partner. Morokoff

**CONTACT** Jacques J.D.M. van Lankveld  [jacques.vanlankveld@ou.nl](mailto:jacques.vanlankveld@ou.nl)  Open University of the Netherlands, Department of Psychology, Heerlen, The Netherlands

© 2022 The Author(s). Published with license by Taylor & Francis Group, LLC.

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way.

et al.'s (1997) more comprehensive definition of sexual assertiveness also includes the purpose of guarding off undesired sexual interactions, including sexual coercion and risky sexual behavior. It defines sexual assertiveness as 'behavior that communicates what one wants in a sexual context, including what one sexually wants, refusing what one does not sexually want, and advocating for safe sex/prevention practices'.

Sexual assertiveness is robustly associated with positive outcomes (for a review see: Santos-Iglesias & Sierra, 2010a), including higher sexual satisfaction (Haavio-Mannila & Kontula, 1997; Ménard & Offman, 2009), increased occurrence of positive sexual experiences in women with provoked vestibulodynia (McNicoll et al., 2017), adequate condom use in heterosexual men (Noar et al., 2002), as well as the prevention of unwanted sexual behavior (Brassard et al., 2015; Darden et al., 2019; Franz et al., 2016; Kelley et al., 2016).

Typically, sexual assertiveness is considered as a gendered phenomenon (Morokoff et al., 2009; Zhang et al., 2021). High levels of sexual assertiveness are often regarded as more common in men, and low levels as characteristic of women, creating a sexual double standard (Emmerink, 2017; Endendijk et al., 2020; Miller, 2013; Turett, 1980). This pattern of higher levels of explicit sexual assertiveness in men as compared to women, however, appears not to be universal. In a study of Lammers and Stoker (2019) higher sexual assertiveness was found to be higher in men in samples from South-East Asia and the British Isles, whereas no gender difference was found in a USA-based sample, and a Dutch sample even showed a reverse difference with higher levels of sexual assertiveness in women.

Several psychological factors were found in cross-sectional, correlational data to be related to sexual assertiveness, including lower sexual perfectionism (Kluck et al., 2018), higher self-reported social power (Lammers & Stoker, 2019), higher self-esteem (Ménard & Offman, 2009), low social anxiety (Schry & White, 2013), and positive parental sexual messages (Miller, 2013). Although these correlates were investigated in isolation in the majority of studies, some studies included multiple correlates (Santos-Iglesias et al., 2013) and showed substantial inter-correlations between predictors, suggesting that sexual assertiveness may not be an isolated correlate of sexual behavior but part of a larger set of individual characteristics associated with higher levels of empowerment in social and sexual interactions.

The assessment of sexual assertiveness has mostly relied on the use of self-report instruments, including the Sexual Assertiveness Scale (Morokoff et al., 1997), the Hurlbert Index of Sexual Assertiveness (Hurlbert, 1991), and the Sexual Assertiveness Questionnaire (Loshek & Terrell, 2015). We argue here that the study of sexual assertiveness could be fruitfully approached from a perspective that incorporates automatic cognition (Bargh, 1994; Fazio et al., 1986; McNally, 1995; Zapata-Calvente et al., 2019) in addition to more deliberate cognitive processing. Particularly in the realm of sexual behavior, automatic cognition is thought to be a powerful determinant of attitudes, behavioral intentions, and actual behavior (Snowden & Gray, 2013; Steffens, 2005; Wolfs et al., 2019). Automatic cognitions are not necessarily accessible to the individual's introspection and are not subject to volitional control. Moreover, they are efficient in terms of requiring little cognitive processing capacity (McNally, 1995). Dual-process models of decision-making (Evans & Frankish, 2009) postulate that deliberate and automatic aspects of cognitive processing synergistically determine such behavior. Although deliberate cognizing is able to overrule automatic behavioral inclinations, this ability is dependent on contextual factors, including the availability of sufficient cognitive processing capacity (Strack & Deutsch, 2004), both as a dispositional characteristic and as a context-dependent state. Although dual-process models have also been criticized (Keren & Schul, 2009), the study of automatic cognitions appeared to be able to add relevant explanatory value to deliberate cognitive factors in other fields of psychological research, including health-promotion behavior (Chevance et al., 2019), eating behavior (Aulbach et al., 2019), and sexual attraction to children (Babchishin et al., 2013). In a similar vein, adding automatic aspects might increase the explanatory value of theoretical models of sexual assertiveness.

Investigation of automatic aspects of sexual assertiveness is generally regarded to require the use of indirect measurement methods (De Houwer et al., 2009). The Implicit Association Test (Greenwald et al., 1998) is an instrument that enables indirect measurement of automatic associations. It is widely used for measuring a range of psychological phenomena, including socially sensitive topics (Roefs et al., 2011). Notwithstanding recent serious criticisms on several aspects of the methods used to measure implicit association (Meissner et al., 2019; Schimmack, 2021), there is agreement about the validity of the IATs as a method for measuring relative association strength (Greenwald et al., 2015; Schimmack, 2021), especially in experimental designs where the target association is experimentally manipulated.

The present study was undertaken to investigate psychometric characteristics of the Sexual Assertiveness Implicit Association Test (SA-IAT) in terms of reliability and validity. To evaluate the reliability of the SA-IAT, we investigated its internal consistency. Convergent validity of this indirect measure of implicit sexual assertiveness was investigated against explicit measures of the same construct, using self-report questionnaires. Based on previous validity studies of implicit association tests (Hofmann et al., 2005), absent to small-size correlations ( $0 < r < .20$ ; Cohen et al., 2013) of SA-IAT scores with self-reported sexual assertiveness, both initiation- and refusal-related, were predicted. Scores on an implicit sexual assertiveness measure can be expected to diverge with personality characteristics that can be seen as unrelated, including extraversion, neuroticism, and social desirability. Nonsignificant correlations of SA-IAT scores with these personality traits were predicted. Gender differences were explored.

## Method

### Participants

Sexually active emerging adults between the age of 18 and 25 in the general community were eligible for participation. Mastery of the Dutch language was required. Based on these inclusion criteria, 159 participants were included in the study. Participants resided in the Netherlands or in Flanders, Belgium, and were recruited by psychology students of the Open University of the Netherlands among their acquaintances. The geographical distribution of the participant's places of residence was wide, due to the distance education system of their university. After removing data of participants who did not complete the IAT, and of one participant due to an extreme number of invalid responses to the IAT (30%), the final sample retained for data analysis consisted of 124 emerging adults ( $N_{\text{female}} = 81$ ,  $M_{\text{age}} = 22.1$ ,  $SD_{\text{age}} = 1.9$ ;  $N_{\text{male}} = 43$ ,  $M_{\text{age}} = 21.9$ ,  $SD_{\text{age}} = 1.9$ ). The sample was comprised of 76 (exclusively or mostly) heterosexual women, one lesbian woman ("only attracted to women"), four bisexual women, 37 (exclusively or mostly) heterosexual men, four gay men ("only attracted to men"), and two bisexual men ("attracted both to men and women").

### Procedure

Ethical approval was obtained from the Utrecht University Ethics Committee (filed under reference FETC-14024; Vanwesenbeeck). Questionnaires were completed and computer tasks were performed in the comfort of the participant's home using an online research platform to reduce bias due to social demands.<sup>1</sup> Online assessment of the IAT was shown to yield robust findings that were not different from assessments in a laboratory setting (Houben & Wiers, 2008; Nosek et al., 2002). Participants first completed either the SA-IAT or an IAT assessing implicit sexual double standard endorsement. Data from the latter IAT will not be reported here, as they are not relevant to the current research aims. The order of both IATs was randomly assigned. After completing both IATs, all questionnaires were completed in a fixed order. Participation in the study took about 30 minutes. After finishing the last questionnaire participants were sent an email debriefing them about the study message, and a 10-euro gift voucher.

**Table 1.** Sequence of Trial Blocks in the SA-IAT.

Block	No. of trials	Function	Items assigned to left-key response	Items assigned to right-key response
1	16	Attribute practice	Sexually Assertive (8)	Sexually Compliant (8)
2	16	Practice	Sexually Assertive (4) + I (4)	Sexually Compliant (4) + Other (4)
3	48	Test	Sexually Assertive (12) + I (12)	Sexually Compliant (12) + Other (12)
4	16	Practice	Sexually Assertive (4) + Other (4)	Sexually Compliant (4) + I (4)
5	48	Test	Sexually Assertive (12) + Other (12)	Sexually Compliant (12) + I (12)

Note. For half the subjects, the positions of Blocks 2 and 3 were switched with those of Blocks 4 and 5, respectively. SA-IAT=Implicit Association Test measuring implicit sexual assertiveness.

## Instruments

### Demographics

Participants reported their age, gender, education level, relationship status, lifetime number of sexual partners, and sexual orientation (on a five-point scale ranging from '1 = exclusively attracted to men' to '5 = exclusively attracted to women').

### Implicit sexual assertiveness

An IAT (Greenwald et al., 1998) was designed to measure implicit sexual assertiveness (SA-IAT). Attribute categories were 'I' (translated from the Dutch *ik*) versus 'Other' (translated from the Dutch *een ander*), and target categories were 'sexually assertive' (translated from the Dutch *seksueel assertief*) versus 'sexually compliant' (translated from the Dutch *seksueel meegaand*). Stimuli presented in the middle of the screen were either words representing the 'I' attribute category (I, me, self, mine [translated from the Dutch *ik, mij, zelf, mijn*]) or the 'other' attribute category (you, you, their, your [translated from the Dutch *je, jij, hun, jouw*]), or words associated with the 'sexually assertive' (confident, initiative-taking, leading, adventurous [translated from the Dutch *zelfverzekerd, initiatiefrijk, leidend, avontuurlijk*]) versus 'sexually compliant' (following, agreeable, subordinate, dependent [translated from the Dutch *volgend, toegeeflijk, onderdanig, afhankelijk*]) target categories. Word stimuli to represent the 'sexually assertive' versus 'sexually compliant' target categories were chosen based on a pretest among 200 participants (50% female). Out of 20 words per category, the four words with the strongest associations with the target categories and not showing gender differences were selected for each category in the study. The labels of the target and attribute categories were permanently visible in the upper-left and -right corners of the screen. Correct responses were defined as key presses with which stimuli were placed into the category they were a priori considered to represent. Following a correct response, the next stimulus was presented after a 250 ms interval. After an incorrect response, a red X appeared that replaced the stimulus and remained on the screen until the correct key was pressed.

The SA-IAT was organized in five blocks, see Table 1 for details. To familiarize participants with the procedure, the SA-IAT started with a practice run of 16 trials presenting only stimuli from the target categories ('I' versus 'other'; block 1). Next was a practice block of 16 trials (block 2) in which both target and attribute stimuli were presented, followed by a test block of 48 trials (block 3). In these two blocks, one of two possible combinations of target and attribute categories (I+sexually assertive; other+sexually compliant) were mapped on the response keys ('z' and 'm' on a QWERTY keyboard). In the final blocks, a practice (block 4) and a test block (block 5), including the same numbers of trials, the reverse combination was presented (I+sexually compliant; other+sexually assertive). Two versions of the SA-IAT were made. They differed in the order of presentation of blocks 2+3 and 4+5, thus allowing to investigate potential within-IAT order effects. Random allocation ensured that half of the participants started with each version.

The D600 algorithm of Greenwald, Nosek, and Banaji (2003) was employed to calculate implicit sexual assertiveness scores. Only test block data were used. Following Greenwald et al.'s (2003) guidelines for preparing IAT data for analysis, reaction times (RTs) below 400 ms, that are considered to reflect outliers due to random responding, were discarded and RTs higher than 2,500 ms, considered to reflect responses during slips of attention, were replaced with 2,500 ms before calculation of the mean RTs. Error trial RTs were replaced with the mean RT of the participant's correct responses in the same block in which the error occurred plus a 600 ms penalty. The D600 index score was calculated as the difference score between the mean RTs, divided by the pooled standard deviation with the exception of the attribute practice block. A positive SA-IAT score reflects higher implicit sexual assertiveness.

### ***Explicit sexual assertiveness***

To assess explicit sexual assertiveness a selection of eight items from the Hurlbert Index of Sexual Assertiveness was used (HISA; Hurlbert, 1991; Pierce & Hurlbert, 1999; Santos-Iglesias & Sierra, 2010b) was made to limit the length of the questionnaire. Items were selected while taking previous research into account concerning the factor structure of the scale, making sure that items from both the 'initiation' (3 items) and 'no shyness/refusal' dimensions (5 items) were included (Santos-Iglesias et al., 2014). In this study we obtained satisfactory reliability for both the 'initiation' ( $\alpha = .77$ ) and the 'no shyness/refusal' ( $\alpha = .72$ ) subscales. An example item for the 'initiation' dimension is 'I think I am open with my partner about my sexual needs.' An example item for the 'no shyness/refusal' dimension is 'It is hard for me to say no, even when I do not want sex.' Answers were given on a 5-point scale ranging from '0 = Never' to '4 = Always'.

### ***Personality characteristics***

Personality traits were assessed using the Eysenck Personality Questionnaire (revised, short version (EPQ-R); Eysenck & Eysenck, 1975; Dutch adaptation: Sanderman et al., 1991). The EPQ-R is a 48-item self-report questionnaire. For the present study the extraversion, neuroticism, and social desirability subscales were used. The possible range of subscale scores is 0-12. Higher scores represent stronger personality traits. In previous research satisfactory to good reliability was found for all factors (Cronbach's  $\alpha$  between .69 and .86), except for the psychoticism dimension among Dutch men (Cronbach's  $\alpha = 0.62$ ) (Sanderman et al., 1991). In the present sample Cronbach's  $\alpha$ 's (.64 for Social Desirability; .80 for Extraversion; and .81 for Neuroticism) indicated acceptable to good reliability.

### ***Statistical Analysis***

The internal consistency of the SA-IAT was evaluated by calculating the split-half reliability by correlating D600 scores of the even trials with the odd trials within each block. Because the D600 indices are calculated as difference scores, its reliability is impacted by the sampling error in both its constituent parts, decreasing when the correlation between those parts increases. Given the improbability that the correlation between constituent parts is zero, the reliability of the D600 requires a correction for this error-attenuation (Cohen & Cohen, 1983) to compensate for the error in opposing blocks, and the correlation between the blocks.

We evaluated potential order effects (both in the order of both IATs, and within IAT opposing block order), or effects of the number of errors on the implicit and explicit scores. Convergent and divergent validity were investigated in a multitrait-multimethod approach by, firstly, inspecting the bivariate correlations in the female and male subsamples of the SA-IAT scores with instruments measuring both neighboring and unrelated constructs. Additionally, to examine gender effects, a hierarchical multiple regression analysis was conducted with SA-IAT scores as criterion variable. In the first step, gender and other predictors were entered; in the second step the

**Table 2.** Demographic Characteristics.

	Men (M(SD); %)	Women (M(SD); %)
Age	21.9 (1.9)	22.1 (1.9)
Education Level		
Lower	6.9	3.8
Intermediate	65.2	55.0
Higher	27.9	41.2
Relationship Status*		
Single	39.2	28.4
Dating	23.3	6.2
Committed Relationship	34.9	64.2
Married	2.3	1.2

\*:  $\chi^2(3) = 12.531, p < .01$ .

interaction terms of gender with the predictors were added. All variables in the model were standardized before entering them into the correlation and regression analyses. Analyses were carried out using IBM SPSS™, Version 24.0. Reliability analysis and correction for attenuation was performed using R (R\_Core\_Team, 2016). A general threshold of 5% was used to determine significant findings.

## Results

### Participant Characteristics

Demographic features of the sample are shown in Table 2. Mean ages and education level of female and male participants were not significantly different. Compared to female participants, male participants were more often single or dating, whereas female participants were more often in a committed relationship than male participants ( $\chi^2(3) = 12.531, p = .005$ ). Participant scores on implicit and explicit sexual assertiveness and personality dimensions are shown in Table 3. Gender differences were found for the personality traits of neuroticism ( $t(122) = 2.38, p = .01, d = 0.45$ ), and social desirability ( $t(122) = 2.60, p = .02, d = 0.49$ ). Compared to male participants, female participants were found to show higher levels of neuroticism and dispositional tendency to respond in a socially desirable manner.

### Internal Consistency

Calculation of the split-half reliability for the practice trials yielded an  $\alpha = 0.90$ , and for the test trials  $\alpha = 0.95$ . After correction for attenuation, we found  $\alpha = 0.61$  for the practice trials,  $\alpha = 0.70$  for the test trials.

### Gender differences in implicit and explicit sexual assertiveness

Men had positive SA-IAT scores (see Table 3), meaning that, on average, they automatically associated themselves ('I') stronger with 'sexually assertive' and the 'other' with 'sexually compliant'. This mean score among men was significantly different from zero ( $t(35) = 4.10, p < .001, d = 1.39$ ). Female participants also had a positive SA-IAT score (see Table 3), but this was not significantly different from zero ( $t(79) = 1.32, p = .19, d = 0.30$ ), implying that young women neither associate themselves at the automatic level with being sexually assertive, nor with being sexually compliant. The mean difference between the D600 score among male and female participants was statistically significant ( $t(120) = 2.71, p < .01, d = 0.49$ ), implying that the association of self with sexual assertiveness was stronger in young men compared to young women (see Table 3). A gender difference was also found on explicit refusal of unwanted sexual behavior ( $t(114) = 2.21, p = .01, d = 0.41$ ). Compared with male participants, young women reported

**Table 3.** Means and Standard Deviations among Young Men and Women

	Young men (n = 43)		Young women (n = 81)		Full Sample (n = 124)	
	M	SD	M	SD	M	SD
Implicit Sexual Assertiveness (SA-IAT; seconds)**	.25	.39	.05	.37	.12	.39
Explicit Sexual Assertiveness (HISA Initiation)	2.97	.73	2.82	.94	2.87	.88
Explicit Sexual Assertiveness (HISA Refusal)*	3.12	.52	2.86	.76	2.95	.70
Extraversion (EPQ-R)	8.93	3.14	7.88	2.96	8.24	3.05
Neuroticism (EPQ-R)*	4.42	3.02	5.84	3.25	5.35	3.23
Social Desirability (EPQ-R)*	4.53	2.34	5.69	2.37	5.29	2.42

\* $p < .05$ ; \*\* $p < .01$ ;

HISA: Adapted Hurlbert Index of Sexual Assertiveness; EPQ: Eysenck Personality Questionnaire

lower explicit sexual assertiveness with regard to refusal of unwanted sex. However, initiation-related explicit sexual assertiveness did not differ between female and male participants.

### Order Effects on Implicit Sexual Assertiveness

To examine order effects on implicit sexual assertiveness a two-way ANOVA was performed with SA-IAT scores as the dependent variable and order of presentation of both combinations of target and attribute categories within the SA-IAT and order of presentation of both IATs (See Procedure) as independent factors. No significant effects of both order conditions nor of their interaction were found ( $F(3,117) = 0.70, p = .56$ ). Adding gender as an independent factor did not show any gender-order interaction effects. The association of higher error rates with SA-IAT scores was investigated using hierarchical linear regression analysis, with error rate entered as predictor in the first step, and gender and the interaction term of error rate with gender in the second step. Error rate did not predict implicit sexual assertiveness, nor did the interaction of error rate with gender. For further analyses, data of all order conditions were collapsed.

### Convergent and Divergent Validity of the Sexual Assertiveness IAT

Bivariate correlations were calculated between the SA-IAT and relevant variables in the full sample and female and male subsamples, see Table 4. With regard to convergent validity of the SA-IAT, no significant correlations of implicit sexual assertiveness with explicit sexual initiation-related and refusal-related assertiveness were found in the full sample or in the subsamples. As to divergent validity of the SA-IAT in the full sample, a significant positive correlation ( $r = .26, p < .01$ ) was found of implicit sexual assertiveness with extraversion, whereas the correlations with neuroticism and social desirability proneness were not significant. The same pattern of correlations was found in the female subsample, whereas none of the correlations were found significant in the male subsample. Hierarchical linear regression was performed with SA-IAT scores as criterion variable and explicit sexual assertiveness scores, personality scores, and gender as predictors in the first step. The interaction terms of gender with the predictors were added in the second step, but this set of two-way interactions did not significantly increase the model's  $R^2$  ( $\Delta R^2 = .005, F(11, 99) = 1.43, p = .17$ ). Regression model characteristics are shown in Table 5. In the most parsimonious model (Step 1) only gender was a significant (negative) predictor of implicit sexual assertiveness. Compared with male participants, female participant's mean implicit sexual assertiveness score was .223 standard deviations lower.



**Table 4.** Bivariate Correlations with Implicit and Explicit Sexual Assertiveness in the Full Sample and the Female and Male Subsamples.

Method	Trait/Variable					
	I	II	3	4	5	6
Full Sample (n = 124)						
I. Implicit Sexual Assertiveness (SA-IAT)	$r_{tt} = .70$					
II. Explicit Sexual Assertiveness (HISA)	.08	(.77)				
III. Personality (EPQ-R)	.15	.67**	(.72)			
1 Extraversion	.26**	.15	.21*	—		
5 Neuroticism	-.16	-.18	-.26**	-.19*	(.81)	
6 Social Desirability	-.06	.05	.13	-.12	-.18	(.64)
Male (lower left panel; N = 43) \ Female (upper right panel; N = 81)						
I. Implicit Sexual Assertiveness (SA-IAT)	—	.08	.17	.26*	-.15	-.00
II. Explicit Sexual Assertiveness (HISA)	-.00	—	.68**	.20	-.23*	.10
III. Personality (EPQ-R)	-.03	.64**	—	.29*	-.28*	.17
1 Extraversion	.12	-.11	-.16	—	-.13	-.10
5 Neuroticism	-.05	.06	-.06	-.22	—	-.30**
6 Social Desirability	.00	-.01	.20	.01	-.08	—

$r_{tt}$  = Split-half reliability for the test trials after correction for attenuation; \* =  $p < .05$ ; \*\* =  $p < .01$ ; Other numbers in parentheses on the main diagonal denote Cronbach's alphas.

**Table 5.** Hierarchical Linear Regression of Gender, Explicit Sexual Assertiveness, Extraversion, Neuroticism, and Social Desirability, and the Interactions of These Predictors with Gender on Implicit Sexual Assertiveness.

	B	SE	Beta	t	p	95% CI
Step 1 $R^2 = .13$ , $F(6, 104) = 2.63$ , $p = .020$						
(Constant)	.443	.144		3.078	.003	.158
Gender	-.187	.083	-.223	-2.251	.026	-.352
Explicit Sexual Assertiveness (HISA-Initiation)	-.023	.050	-.057	-.452	.652	-.121
Explicit Sexual Assertiveness (HISA-Refusal)	.036	.051	.092	.701	.485	-.066
Extraversion (EPQ-R)	.071	.038	.180	1.857	.066	-.005
Neuroticism (EPQ-R)	-.029	.039	-.074	-.743	.459	-.107
Social Desirability (EPQ-R)	-.005	.039	-.013	-.137	.892	-.082
Step 2 $R^2$ Change = .005, $F(11, 99) = 1.43$ , $p = .17$						
(Constant)	.483	.164		2.939	.004	.157
Gender	-.206	.092	-.245	-2.242	.027	-.387
Explicit Sexual Assertiveness (HISA-Initiation)	-.013	.261	-.032	-.048	.962	-.531
Explicit Sexual Assertiveness (HISA-Refusal)	.005	.255	.011	.018	.986	-.501
Extraversion (EPQ-R)	.125	.120	.318	1.045	.299	-.113
Neuroticism (EPQ-R)	-.084	.121	-.213	-.693	.490	-.325
Social Desirability (EPQ-R)	-.020	.120	-.050	-.164	.870	-.258
Gender * Explicit Sexual Assertiveness (HISA-Initiation)	-.006	.139	-.028	-.043	.966	-.282
Gender * Explicit Sexual Assertiveness (HISA-Refusal)	.015	.137	.069	.107	.915	-.258
Gender * Extraversion (EPQ-R)	-.086	.178	-.147	-.485	.629	-.440
Gender * Neuroticism (EPQ-R)	.082	.176	.143	.469	.640	-.267
Gender * Social Desirability (EPQ-R)	.022	.175	.038	.125	.901	-.325

## Discussion

In this study we investigated psychometric properties of the SA-IAT that aims to measure sexual assertiveness at an automatic level of cognitive processing. The internal consistency of the SA-IAT was evaluated. After correction for attenuation, alpha levels for the practice ( $\alpha=0.61$ ) and the test phases ( $\alpha=0.70$ ) were within the range found for other IATs (Cunningham et al., 2001; Nosek et al., 2007). Based on these findings the measurement error of the SA-IAT can be presumed not to compromise the interpretation of the validity estimates (Cronbach & Meehl, 1955), although it sets an upper limit for correlations (Werts et al., 1976).

We found a large-size gender effect on implicit sexual assertiveness. Women's SA-IAT scores did not differ from zero, indicating that - at the automatic level - they neither associate themselves with being sexually assertive nor with being sexually compliant. In contrast, men's SA-IAT scores were significantly different from zero, indicating that - at the automatic level - they associate themselves more with being sexually assertive than with being sexually compliant. The observed gender differences in the present study regarding explicit sexual assertiveness are in line with notions and findings found in the literature (Endendijk et al., 2020; Lammers & Stoker, 2019). Compared with male participants, female participants reported lower refusal-related sexual assertiveness. We note, however, that the distinction between initiation- and refusal-related explicit sexual assertiveness as made in the present study has only rarely been investigated in other studies (e.g., Attack et al., 2020).

The convergent and divergent validity of the SA-IAT were investigated using a multitrait-multimethod approach. Implicit and explicit sexual assertiveness were not correlated in the full sample and gender subsamples. The correlations of SA-IAT scores with scores on a self-report measure of explicit sexual assertiveness, despite being a closely related construct, were expected to be low based on a meta-analysis of data from other IAT studies (Hofmann et al., 2005), as well as for theoretical reasons. Separate modes of information processing are believed to underlie implicit attitudes and beliefs (Greenwald & Banaji, 1995), and responses to measures tapping into these different processes, will naturally show low convergence (Cunningham et al., 2001; Hofmann et al., 2005). The absence of significant associations between implicit and explicit measures of sexual assertiveness, however, does not exclude the possibility that implicit and explicit sexual assertiveness do not align in some participants, while they are, respectively, positively and negatively related in others. Further research is recommended to establish whether implicit and explicit sexual assertiveness, together or separately, explain significant proportions of variance in relevant sexual behaviors.

Divergent validity of the SA-IAT was evaluated against the personality traits of extraversion, neuroticism, and social desirability. In female participants positive correlations were found of extraversion with implicit sexual assertiveness and refusal-related explicit sexual assertiveness, however, these effects were very small or negative. The correlations between neuroticism and implicit sexual assertiveness are not significant and do not differ in male and female participants, whereas the correlations of neuroticism and initiation- and refusal-related explicit sexual assertiveness are small but significant only in female participants. Due to the small size of the male subsample significance testing may be less informative, but some of the gender differences might be replicable in a larger sample. This pattern of associations was found to be replicated in hierarchical regression analysis including gender and the interactions of gender with personality dimensions.

## Limitations and implications

There are numerous concerns with convenience samples, particularly with a small sample size; in particular, in this study the use of a convenience sample that was recruited among relatives and acquaintances of university students resulted in a skewed gender distribution of participants with more female participants and more highly educated participants. The use of a convenience sample may introduce another limitation, as those who volunteer for participation in this study

may be self-selected for assertiveness. Their participation itself might indicate that they are more open to disclosing their personal sexual attitudes. The general population at large may be less open to such disclosures, and may thus also be less sexually assertive.

## Conclusion

The present study demonstrated with exception of a significant correlation of implicit sexual assertiveness with extraversion in the full sample as well as the female subsample, both constructs were not found to share variance, as was expected, and a pattern of correlations with similar and unrelated constructs that supported our expectations. Despite limitations of this study, the measurement of implicit aspects of sexual assertiveness may be fruitfully pursued using the SA-IAT. We expect that future studies, using the SA-IAT, can help investigate the contributions of different levels of cognitive processing related to sexual assertiveness.

## Note

1. The IAT was run using OpenSesame software, which is freely accessible at: <https://osdoc.cogsci.nl/3.3/download/>. The software code of the Sexual Assertiveness IAT (IATseksueleassertiviteit.opensesame.tar.gz) is available in Open Science Framework using the following link: [https://osf.io/92d3g/?view\\_only=2fc5eaff-51384d8c8687f3e5d2c2c335](https://osf.io/92d3g/?view_only=2fc5eaff-51384d8c8687f3e5d2c2c335)

## Funding

The author(s) reported there is no funding associated with the work featured in this article.

## ORCID

Jacques van Lankveld  <http://orcid.org/0000-0003-0956-4067>  
 Regina van den Eijnden  <http://orcid.org/0000-0002-5353-8440>  
 Tom ter Bogt  <http://orcid.org/0000-0001-6819-4831>  
 Ron Pat El  <http://orcid.org/0000-0002-4742-0163>  
 Ine Vanwesenbeeck  <http://orcid.org/0000-0001-5800-3771>

## References

- Attacky, A., Kok, G., & Dewitte, M. (2020). Attachment insecurity and sexual and relational experiences in Saudi Arabian women: The role of perceived partner responsiveness and sexual assertiveness. *Journal of Sexual Medicine, 17*(7), 1383–1394. doi:10.1016/j.jsxm.2020.02.029
- Aulbach, M. B., Knittle, K., & Haukkala, A. (2019). Implicit process interventions in eating behaviour: A meta-analysis examining mediators and moderators. *Health Psychology Review, 13*(2), 179–208. doi:10.1080/17437199.2019.1571933
- Babchishin, K. M., Nunes, K. L., & Hermann, C. A. (2013). The validity of Implicit Association Test (IAT) measures of sexual attraction to children: A meta-analysis. *Archives of Sexual Behavior, 42*(3), 487–499. doi:10.1007/s10508-012-0022-8
- Bargh, J. A. (1994). The four horsemen of automaticity: Awareness, intention, efficiency, and control in social cognition. In R. S. Wyer, Jr. & T. K. Srull (Eds.), *Handbook of social cognition, Vol. 1: Basic processes; Vol. 2: Applications* (2nd ed.). (pp. 1–40). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc. <http://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=1994-97751-001&site=ehost-live>
- Brassard, A., Dupuy, E., Bergeron, S., & Shaver, P. R. (2015). Attachment insecurities and women's sexual function and satisfaction: The mediating roles of sexual self-esteem, sexual anxiety, and sexual assertiveness. *Journal of Sex Research, 52*(1), 110–119. doi:10.1080/00224499.2013.838744
- Carlson, N. R., & Johnson, D. A. (1975). Sexual assertiveness training: A workshop for women. *The Counseling Psychologist, 5*(4), 53–59. doi:10.1177/001100007500500409
- Chevance, G., Bernard, P., Chamberland, P. E., & Rebar, A. (2019). The association between implicit attitudes toward physical activity and physical activity behaviour: A systematic review and correlational meta-analysis. *Health Psychology Review, 13*(3), 248–276. doi:10.1080/17437199.2019.1618726

- Cohen, J., & Cohen, P. (1983). *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*. Hillsdale, New Jersey: Lawrence Erlbaum Associates.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2013). *Applied multiple regression/correlation analysis for the behavioral sciences*. Mahwah, NJ: Lawrence Erlbaum Associates. doi:10.4324/9780203774441
- Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological Bulletin*, 52(4), 281–302. doi:10.1037/h0040957
- Cunningham, W. A., Preacher, K. J., & Banaji, M. R. (2001). Implicit attitude measures: Consistency, stability, and convergent validity. *Psychological Science*, 12(2), 163–170. doi:10.1111/1467-9280.00328
- Darden, M. C., Ehman, A. C., Lair, E. C., & Gross, A. M. (2019). Sexual compliance: Examining the relationships among sexual want, sexual consent, and sexual assertiveness. *Sexuality & Culture*, 23(1), 220–235. doi:10.1007/s12119-018-9551-1
- De Houwer, J., Teige-Mocigemba, S., Spruyt, A., & Moors, A. (2009). Implicit measures: A normative analysis and review. *Psychological Bulletin*, 135(3), 347–368. doi:10.1037/a0014211
- Dunn, M., Lloyd, E. E., & Phelps, G. H. (1979). Sexual assertiveness in spinal cord injury. *Sexuality and Disability*, 2(4), 293–300. doi:10.1007/BF01101395
- Emmerink, P. M. (2017). *Gendered sexuality: Exploring dynamics of the sexual double standard* [PhD dissertation, Utrecht University]. Utrecht. <https://dspace.library.uu.nl/bitstream/handle/1874/355073/Emmerink.pdf?sequence=1&isAllowed=y>
- Endendijk, J. J., van Baar, A. L., & Deković, M. (2020). He is a stud, she is a slut! A meta-analysis on the continued existence of sexual double standards. *Pers Soc Psychol Rev*, 24(2), 163–190. doi:10.1177/1088868319891310
- Evans, J., & Frankish, K. (2009). *In two minds: Dual processes and beyond*. Oxford UK: Oxford University Press. <http://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=2009-05881-000&site=ehost-live>
- Eysenck, H. J., & Eysenck, S. B. G. (1975). *Manual of the Eysenck Personality Questionnaire*. London UK: Hodder + Stoughton.
- Fazio, R. H., Sanbonmatsu, D. M., Powell, M. C., & Kardes, F. R. (1986). On the automatic activation of attitudes. *Journal of Personality and Social Psychology*, 50(2), 229–238. doi:10.1037/0022-3514.50.2.229
- Franz, M. R., DiLillo, D., & Gervais, S. J. (2016). Sexual objectification and sexual assault: Do self-objectification and sexual assertiveness account for the link? *Psychology of Violence*, 6(2), 262–270. doi:10.1037/vio0000015
- Greenwald, A. G., & Banaji, M. R. (1995). Implicit social cognition: attitudes, self-esteem, and stereotypes. *Psychological Review*, 102(1), 4–27. doi:10.1037/0033-295x.102.1.4
- Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). Understanding and using the implicit association test: I. An improved scoring algorithm. *Journal of Personality and Social Psychology*, 85(2), 197–216. doi:10.1037/0022-3514.85.2.197
- Greenwald, A. G., Banaji, M. R., & Nosek, B. A. (2015). Statistically small effects of the Implicit Association Test can have societally large effects. *Journal of Personality and Social Psychology*, 108(4), 553–561. doi:10.1037/pspa0000016
- Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. (1998). Measuring individual differences in implicit cognition: The Implicit Association Test. *Journal of Personality and Social Psychology*, 74, 1464–1480. doi:10.1037/0022-3514.74.6.1464
- Haavio-Mannila, E., & Kontula, O. (1997). Correlates of increased sexual satisfaction. *Archives of Sexual Behavior*, 26(4), 399–419. doi:10.1023/A:1024591318836
- Hofmann, W., Gawronski, B., Gschwendner, T., Le, H., & Schmitt, M. (2005). A meta-analysis on the correlation between the Implicit Association Test and explicit self-report measures. *Personality and Social Psychology Bulletin*, 31(10), 1369–1385. doi:10.1177/0146167205275613
- Houben, K., & Wiers, R. W. (2008). Measuring implicit alcohol associations via the Internet: Validation of web-based implicit association tests. *Behavior Research Methods, Instruments, & Computers*, 40(4), 1134–1143. doi:10.3758/BRM.40.4.1134
- Hurlbert, D. F. (1991). The role of assertiveness in female sexuality: A comparative study between sexually assertive and sexually nonassertive women. *Journal of Sex and Marital Therapy*, 17(3), 183–190. doi:10.1080/00926239108404342
- Kelley, E. L., Orchowski, L. M., & Gidycz, C. A. (2016). Sexual victimization among college women: Role of sexual assertiveness and resistance variables. *Psychology of Violence*, 6(2), 243–252. doi:10.1037/a0039407
- Keren, G., & Schul, Y. (2009). Two is not always better than one: A critical evaluation of two-system theories. *Perspect Psychol Sci*, 4(6), 533–550. doi:10.1111/j.1745-6924.2009.01164.x
- Kluck, A. S., Hughes, K., & Zhuzha, K. (2018). Sexual perfectionism and women's sexual assertiveness: Understanding the unique effects of perfectionistic expectations about sex originating from and directed toward the sexual partner. *Sex Roles*, 79(11–12), 715–725. doi:10.1007/s11199-018-0901-0
- Lammers, J., & Stoker, J. I. (2019). Power affects sexual assertiveness and sexual esteem equally in women and men. *Archives of Sexual Behavior*, 48(2), 645–652. doi:10.1007/s10508-018-1285-5
- Loshek, E., & Terrell, H. K. (2015). The development of the Sexual Assertiveness Questionnaire (SAQ): A comprehensive measure of sexual assertiveness for women. *Journal of Sex Research*, 52(9), 1017–1027. doi:10.1080/00224499.2014.944970

- McNally, R. J. (1995). Automaticity and the anxiety disorders. *Behaviour Research and Therapy*, 33(7), 747–754. doi:10.1016/0005-7967(95)00015-P
- McNicoll, G., Corsini-Munt, S., O. Rosen, N., McDuff, P., & Bergeron, S. (2017). Sexual assertiveness mediates the associations between partner facilitative responses and sexual outcomes in women with provoked vestibulodynia. *Journal of Sex and Marital Therapy*, 43(7), 663–677. doi:10.1080/0092623X.2016.1230806
- Meissner, E., Grigutsch, L. A., Koranyi, N., Muller, F., & Rothermund, K. (2019). Predicting behavior with implicit measures: Disillusioning findings, reasonable explanations, and sophisticated solutions. *Frontiers in Psychology*, 10, 2483. doi:10.3389/fpsyg.2019.02483
- Ménard, A. D., & Offman, A. (2009). The interrelationships between sexual self-esteem, sexual assertiveness and sexual satisfaction. *Canadian Journal of Human Sexuality*, 18(1-2), 35–45. <https://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=2009-12429-004&site=ehost-live>
- Miller, K. R. (2013). *Influence of parental communication of sexual messages on late adolescent sexual assertiveness and sexual experience and the influence of adolescent adherence to the sexual double standard: An exploratory study* ProQuest Information & Learning]. APA PsycInfo. <https://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=2013-99120-385&site=ehost-live>
- Morokoff, P. J., Quina, K., Harlow, L. L., Whitmire, L., Grimley, D. M., Gibson, P. R., & Burkholder, G. J. (1997). Sexual Assertiveness Scale (SAS) for women: Development and validation. *Journal of Personality and Social Psychology*, 73(4), 790–804. doi:10.1037/0022-3514.73.4.790
- Morokoff, P. J., Redding, C. A., Harlow, L. L., Cho, S., Rossi, J. S., Meier, K. S., Mayer, K. H., Koblin, B., & Brown-Peterside, P. (2009). Associations of sexual victimization, depression, and sexual assertiveness with unprotected sex: A test of the multifaceted model of HIV risk across gender. *Journal of Applied Biobehavioral Research*, 14(1), 30–54. doi:10.1111/j.1751-9861.2009.00039.x
- Noar, S. M., Morokoff, P. J., & Redding, C. A. (2002). Sexual assertiveness in heterosexually active men: A test of three samples. *AIDS Educ Prev*, 14(4), 330–342. doi:10.1521/aeap.14.5.330.23872
- Nosek, B. A., Banaji, M. R., & Greenwald, A. G. (2002). Harvesting implicit group attitudes and beliefs from a demonstration web site. *Group Dynamics*, 6(1), 101–115. (Groups and the Internet) doi:10.1037/1089-2699.6.1.101
- Nosek, B. A., Greenwald, A. G., & Banaji, M. R. (2007). The Implicit Association Test at age 7: A methodological and conceptual review. In J. A. Bargh (Ed.), *Social psychology and the unconscious: The automaticity of higher mental processes*. (pp. 265–292). Hove, East Sussex UK: Psychology Press. <http://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=2007-00387-006&site=ehost-live>
- Pierce, A. P., & Hurlbert, M. K. (1999). Test-retest reliability of the Hurlbert Index of Sexual Assertiveness. *Perceptual and Motor Skills*, 88(1), 31–34. doi:10.2466/PMS.88.1.31-34
- R\_Core\_Team. (2016). *R: A language and environment for statistical computing*. In Vienna, Austria: R Foundation for Statistical Computing. <http://www.R-project.org/>
- Roefs, A., Huijding, J., Smulders, F. T., MacLeod, C. M., de Jong, P. J., Wiers, R. W., & Jansen, A. T. (2011). Implicit measures of association in psychopathology research. *Psychological Bulletin*, 137(1), 149–193. doi:10.1037/a0021729
- Sanderman, R., Eysenck, S. B., & Arrindell, W. A. (1991). Cross-cultural comparisons of personality: The Netherlands and England. *Psychological Reports*, 69(3, Pt 2), 1091–1096. doi:10.2466/PRO.69.8.1091-1096
- Santos-Iglesias, P., & Sierra, J. C. (2010a). The role of sexual assertiveness in human sexuality: A systematic review. *International Journal of Clinical and Health Psychology*, 10(3), 553–577. <https://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=2010-15814-010&site=ehost-live>
- Santos-Iglesias, P., & Sierra, J. C. (2010b). Hurlbert Index of Sexual Assertiveness: A study of psychometric properties in a Spanish sample. *Psychological Reports*, 107(1), 39–57. doi:10.2466/02.03.07.17.21.PR0.107.4.39-57
- Santos-Iglesias, P., Sierra, J. C., & Vallejo-Medina, P. (2013). Predictors of sexual assertiveness: The role of sexual desire, arousal, attitudes, and partner abuse. *Archives of Sexual Behavior*, 42(6), 1043–1052. doi:10.1007/s10508-012-9998-3
- Santos-Iglesias, P., Vallejo-Medina, P., & Sierra, J. C. (2014). Equivalencia y baremos del Hurlbert Index of Sexual Assertiveness entre hombres y mujeres Españoles. *Anales de Psicología*, 30(1), 232–237.
- Schimmack, U. (2021). The Implicit Association Test: A method in search of a construct. *Perspect Psychol Sci*, 16(2), 396–414. doi:10.1177/1745691619863798
- Schry, A. R., & White, S. W. (2013). Sexual assertiveness mediates the effect of social interaction anxiety on sexual victimization risk among college women. *Behavior Therapy*, 44(1), 125–136. doi:10.1016/j.beth.2012.09.001
- Snowden, R. J., & Gray, N. S. (2013). Implicit sexual associations in heterosexual and homosexual women and men. *Archives of Sexual Behavior*, 42(3), 475–485. doi:10.1007/s10508-012-9920-z
- Steffens, M. C. (2005). Implicit and explicit attitudes towards lesbians and gay men. *Journal of Homosexuality*, 49(2), 39–66. doi:10.1300/J082v49n02\_03
- Strack, F., & Deutsch, R. (2004). Reflective and impulsive determinants of social behavior. *Pers Soc Psychol Rev*, 8(3), 220–247. doi:10.1207/s15327957pspr0803\_1
- Turett, L. M. (1980). *Sex-role stereotypes and sexual assertiveness: An investigation of the double standard* ProQuest Information & Learning]. APA PsycInfo. <https://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=1981-70636-001&site=ehost-live>

- Werts, C. E., Rock, D. A., Linn, R. L., & Joreskog, K. G. (1976). Comparison of correlations, variances, covariances, and regression weights with or without measurement error. *Psychological Bulletin*, 83(6), 1007–1013. doi:10.1037/0033-2909.83.6.1007
- Wolfs, K., Bos, A. E. R., Mevissen, F. E. F., Peters, G.-J. Y., & Lankveld, J. J. D. M. (2019). Sexual arousal and implicit and explicit determinants of condom use intentions. *Archives of Sexual Behavior*, 48(2), 469–480. doi:10.1007/s10508-018-1257-9
- Zapata-Calvente, A. L., Moya, M., Bohner, G., & Megías, J. L. (2019). Automatic associations and conscious attitudes predict different aspects of men's intimate partner violence and sexual harassment proclivities. *Sex Roles*, 81(7-8), 439–455. doi:10.1007/s11199-019-1006-0
- Zhang, H., Xie, L., Lo, S. S. T., Fan, S., & Yip, P. (2021). Female sexual assertiveness and sexual satisfaction among Chinese couples in Hong Kong: A dyadic approach. *Journal of Sex Research*. 59(2), 203–211. doi:10.1080/00224499.2021.1875187