

Houber & Wiers

6/7 drugs OR D/4 food/drink, pg 1346
~~neg (2) for all~~

- (10) 6/7 drugs OR D/4 food/drink, pg 1346
- (11) w(2) for all, pg 1349
- (12) att(1) for 2 pos (neg IATS, belid (2) for around 6 sedation IATS
- (13) same for parallel explicit, pg 1350-1351 pg
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- (23) bef (1)
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discrepancy -
 put "in" for them
 but 2 last dr

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Addictive Behaviors 31 (2006) 1346–1362

**ADDICTIVE
BEHAVIORS**

Assessing implicit alcohol associations with the Implicit Association Test: Fact or artifact?

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Abstract

Studies using bipolar Implicit Association Tests (IATs) found that heavy drinkers have negative and arousal associations with alcohol relative to soda. Study 1 examined whether these results were due to the label 'alcohol' and the choice of the contrast category 'soda'. Four unipolar IATs assessed alcohol associations with positive and negative valence, arousal, and sedation, while varying the target dimension: alcohol or beer versus soda or animals. Results showed that drinkers had the strongest associations between alcohol and negative valence with the exact strength depending on the choice of the target categories. They also showed associations between alcohol and positive valence, arousal, and to a lesser extent sedation, which were uninfluenced by composition of the target dimension. These findings indicate ambivalence in both the valence and arousal–sedation dimension, underscoring the importance of using unipolar alcohol-IATs. Further, study 2 showed that “figure-ground” asymmetries could not account for these IAT results. These findings provide support that implicit alcohol associations are not merely IAT artifacts and that they can be assessed in a meaningful way with unipolar IATs.

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Keywords: Alcohol; Implicit Association Test; Implicit associations; Bipolarity; Figure-ground asymmetries

1. Introduction

The past decade, alcohol expectancies have been shown to be powerful predictors of drinking and it is now believed that they act as a common pathway for the influence of more distal risk factors for alcohol

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2. Study 1

Four IAT versions were compared that differed with respect to the target dimension: alcohol vs. soda (cf. Wiers et al., 2002), alcohol vs. animals (cf. Jajodia & Earleywine, 2003)², beer vs. soda, or beer vs. animals. Further, the attribute categories positive, negative, arousal and sedation were tested against neutral attribute categories to examine the utility of unipolar alcohol-IATs. The IAT was expected to show both a strong negative attitude and a weak positive attitude towards alcohol whereas the opposite was expected for beer.¹ Also, it was hypothesized that alcohol would be associated with arousal and that these associations would be related to alcohol use and problems, reflecting the activation of a sensitized “wanting” system. In addition, the relationship between these IAT effects and alcohol-related attitudes and expectancies was examined as well as the relation to recent and early alcohol-related experiences and social messages about alcohol use. IAT effects were expected to be related to both early alcohol experiences and social messages while self-reported attitudes and expectancies were expected to correlate with recent alcohol experiences.

2.1. Method

2.1.1. Participants

Ninety-six students of Maastricht University (48 males; mean age=20.4 years, SD=2.51) participated in return for course credit or a gift certificate of 10. Participants at least occasionally drank alcohol, including beer with an average weekly alcohol consumption of 15.07 (SD=10.55) Dutch standard drinks.³ Participants had an mean score of 9.90 (SD=3.73) on the Alcohol Use Disorder Identification Test (AUDIT; Saunders, Aasland, Babor, De la Fuente, & Grant, 1993), which is comparable to American college students (Fleming, Barry, & MacDonald, 1991), and an average item score of .47 (SD=.33) on the 18-items version of the Rutgers Alcohol Problem Index (RAPI; White & Labouvie, 2000). The average item score in clinical samples is about .80 (White & Labouvie, 1989).

2.1.2. Materials and measures

2.1.2.1. Alcohol use. Alcohol use was assessed with a self-report questionnaire based on the timeline follow-back method (Sobell & Sobell, 1990). Participants were asked to indicate how many drinks of different types of alcoholic drinks they consumed on each day of the past week, and for each day of the week, how many drinks they typically consumed on this day.

2.1.2.2. Alcohol-related problems. Alcohol-related problems were assessed with the RAPI and the AUDIT. The RAPI described 18 alcohol-related problem situations and participants indicated how often they experienced these situations on a 5-point Likert scale (0=never, 4=often) (Cronbach α =.67). The AUDIT consisted of 10 multiple choice questions. The first three questions related to alcohol use, the other seven to alcohol-related problems (α =.76).

² Unlike in the study of Jajodia and Earleywine (2003), the animals category used here did not exclusively consist of positively evaluated mammals but instead of atypical animals, which were evaluated as neutral.

³ A standard alcoholic drink in Holland contains less alcohol than a standard English or American alcoholic drink: 10 vs. 14 g, respectively.

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2.1.2.3. *Implicit alcohol associations.* Participants performed either an alcohol–soda IAT, an alcohol–animals IAT, a beer–soda IAT or a beer–animals IAT. All (Dutch) target categories were matched on familiarity, valence, arousal and number of syllables. Each IAT version assessed associations in four evaluative dimensions: positive vs. neutral, negative vs. neutral, arousal vs. neutral, and sedation vs. neutral. The positive (label ‘pleasant’) and negative (label ‘unpleasant’) categories consisted of positive and negative nouns (cf. Greenwald et al., 1998) to assess general attitudes towards the target concepts. The arousal (label ‘active’⁴) and sedation (label ‘quiet’⁴) categories consisted of outcome expectancies (cf. Wiers et al., 2002) to assess associations with drinking outcomes. The (Dutch) positive, negative and their paired (in balanced order) neutral categories were matched on familiarity, arousal (neutral on arousal) and number of syllables. Likewise, the (Dutch) arousal, sedation and their paired (in balanced order) neutral categories were matched on familiarity, valence (neutral on valence) and number of syllables. All stimuli are presented in Appendix A. Internal consistencies, calculated as in Greenwald, Nosek, and Banaji (2003), were .46 for the positive dimension, .44 for the negative dimension, .52 for the arousal dimension, and .46 for the sedation dimension.

All IAT versions were programmed in ERTS 3.18 (Beringer, 1996) and consisted of seventeen blocks. Participants first received 24 trials of target discrimination practice using a right and a left response key. All target stimuli were presented twice. In the second block, the attribute classification (e.g., pleasant vs. neutral) was practiced with the same response keys. All attribute stimuli were presented twice. The third block was a combination block during which both target and attribute stimuli were presented twice for a total of 48 trials. Next, participants practiced the reversed attribute discrimination, followed by the reversed combination block. Blocks 2 to 5 were then repeated for the other three attribute dimensions. Stimuli were presented randomly with the restriction that targets and attributes were presented in alternating order (Greenwald et al., 1998). Stimuli appeared in the middle of the computer screen, in black against a grey background. Instructions were presented before each task. Category labels were presented in the upper corners of the computer screen in agreement with the required response and remained there during the task. Stimuli remained on screen until a response was given. Feedback (‘wrong’, ‘too fast’ [<300 ms] and ‘too slow’ [>3000 ms]) was presented in red beneath the stimuli. The intertrialinterval was 250 ms.

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2.1.2.4. *Thought-listing.* The thought-listing task (Rudman & Heppen, 2003) asked participants to report five thoughts that came to mind quickly and easily about recent and early alcohol-related experiences and social messages about alcohol. Participants then indicated for each thought whether it was positive or negative on a 6-point Likert scale (-3 = extremely negative, $+3$ = extremely positive). They also rated the personal importance of all recent and early alcohol experiences on a 5-point Likert scale (1 = not at all important, 5 = extremely important) and they estimated how often they encountered the social messages they listed on a 5-point Likert scale (1 = seldom, 5 = all the time).

2.1.2.5. *Explicit alcohol-related cognitions.* Explicit alcohol-related cognitions were assessed with an expectancy questionnaire, an attitude questionnaire and a feeling thermometer. The alcohol

⁴ The labels ‘active’ and ‘quiet’ were chosen for the arousal and sedation category, respectively, because there are no suitable terms to denote ‘arousal’ and ‘sedation’ in Dutch.

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expectancy questionnaire consisted of 6 positive ($\alpha=.85$), 6 negative ($\alpha=.91$), 7 arousal ($\alpha=.65$) and 7 sedation expectancy items ($\alpha=.65$). Each item asked participants to indicate on a Visual Analogue Scale (VAS) how much they agreed or disagreed with the statement: "After drinking alcohol, I feel" For the positive and negative items, this statement was completed with the words unhappy, depressive, sad, lonely, moody, down, pleasant, happy, sociable, friendly, enjoyable, and likable. For the arousal and sedation statements, the same words as presented during the IAT were used, including the labels. The alcohol attitude questionnaire consisted of 4 semantic differentials which asked participants to indicate on a VAS how much they considered drinking alcohol to be unpleasant–pleasant, bad–good, boring–fun, and stupid–smart. The first and third item formed an affective attitude component ($\alpha=.90$), the other two items formed a cognitive attitude component ($\alpha=.77$). Finally, two feeling thermometers, labeled in 10° increments ranging from 0 (cold) to 100 (warm), asked participants how favorable they felt about the target concepts (depending on condition: alcohol/beer and soda/animals).

2.1.3. Procedure

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Participants first filled out an informed consent form. Next, they performed one of the four IAT versions. The response assignment of the target categories was balanced across participants. The presentation order of the attribute dimensions was partially balanced with a Latin square, resulting in 4 orders. Participants (first) performed the IAT with alcohol/beer paired with the relevant attribute category (positive, negative, arousal and sedation) and then with alcohol/beer paired with the neutral category. Participants then received the thought-listing questionnaire, the feeling thermometer, the alcohol attitude questionnaire and the alcohol expectancy questionnaire. These questionnaires referred to either alcohol or beer, depending on the IAT condition. Finally, participants received the alcohol use questionnaire, the AUDIT and the RAPI, and rated all IAT stimuli on familiarity, valence and arousal.

3. Results

3.1. Implicit alcohol associations

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First, it was examined whether there were differences in reported alcohol use and problems between IAT conditions using 2 (target: alcohol or beer) \times 2 (contrast: soda or animals) univariate analyses of variance (ANOVA). Results showed no effect of target ($p>.25$) or contrast ($p>.90$) on reported alcohol use and a borderline significant effect of target ($p=.06$) but no effect of contrast ($p>.90$) on reported alcohol-related problems.⁵ Next, IAT effects were calculated with the new D600 algorithm (Greenwald et al., 2003) in such a way that higher IAT scores reflect a stronger association between alcohol/beer and positive, negative, arousal, or sedation. Then, the effect of target and contrast category on IAT effects for each evaluative dimension (positive, negative, arousal and sedation) was examined with a 2 (target:

⁵ There was a borderline significant trend that showed higher reporting of alcohol-related problems in the alcohol condition compared with the beer condition. Therefore, the factor target (alcohol vs. beer) was entered in the hierarchical regression analysis of alcohol problems in step 1. Results showed that the pattern of results remained the same.