

An Influence of Product and Brand Name on Positive Affect: Implicit and Explicit Measures

ALICE M. ISEN\*

APARNA A. LABROO

PAULA DURLACH

\* Alice M. Isen is the SC Johnson Chaired Professor in Marketing at the SC Johnson Graduate School of Management, and Professor of Psychology, Cornell University, Ithaca NY 14853. Tel: (607) 255-4687; Fax: (607) 254-4590; Email: ami4@cornell.edu. Aparna A. Labroo is a doctoral student at the SC Johnson Graduate School of Management, Cornell University, Ithaca NY 14853. Tel: (607) 255-5336; Fax: (607) 254-4590; Email: aal12@cornell.edu. Paula Durlach was the Exploratory Consumer Science Research Team Leader at Colworth House, Unilever Plc. UK, and is currently a research psychologist at the Army Research Institute, Orlando, FL. This research was supported by a grant from Unilever Plc., UK. Any correspondence regarding this work can be addressed to ami4@cornell.edu.

## An Influence of Product and Brand Name on Positive Affect: Implicit and Explicit Measures

Five implicit measures of positive affect were demonstrated in three studies. Results indicated that tasting a product designed to be refreshing (iced tea), without knowledge of the brand, induced positive affect, as did the gift-of-candy (not consumed) induction, used in many previous studies. As compared to controls, these participants performed significantly better on items from the Remote Associates Test (a test of creativity), generated more unusual and more pleasant first associates to a randomly selected letter of the alphabet, and to neutral words, and rated neutral words as more pleasant. Results also indicated that similar affect did not arise when participants tasted a less liked, unfamiliar, brand of iced tea, without knowledge of the brand. However, when the brand name of that tea was presented with the product sample, people who tasted that same tea showed positive affect responses on the implicit measures of affect and also explicitly rated the tea as more refreshing and pleasing than the unbranded version of the same tea. Experiment 3 included an explicit self-report assessment of affect at the end of the session. Results of this self-report assessment paralleled the implicit measures, but also showed that the explicit measure was influenced by task performance during the session, raising concerns about the validity of explicit “manipulation checks” placed at the end of a session.

A growing body of research is focusing on the impact of affect, in particular positive affect, on cognitive processes and behavior (see, for example, Isen 1999). This interest is apparent in the basic science fields of Psychology, and also in applied areas such as Consumer Behavior (e.g., Barone, Miniard and Romeo 2000; Isen 2001; Kahn and Isen 1993; Roehm and Sternthal 2001) and Organizational Behavior or Management (e.g., Ashkanazy 2003; Erez and Isen 2002; Staw and Barsade 1993; Weiss, Nicholas and Daus 1999). In many of these studies, affect is induced in randomly assigned groups, so as to see its causal effect on various processes of memory, categorization, expectations, decision making, and problem solving, as well as its effects on applied outcomes such as negotiations, consumer choices, social interaction, and so forth.

The purpose of the present studies is to examine whether tasting a product that is supposed to be refreshing, such as iced tea, can induce positive affect that is sufficient to influence problem solving and thinking, as has been found with a range of other affect inductions, such as success on a task, a small gift, 5 minutes of non-sexual, non-aggressive comedy, and so forth. In many studies, positive affect has been found to facilitate thinking and problem-solving (see, e.g., Isen 1999, for discussion), and therefore it may be advantageous to a company to know that its product induces positive affect. We were also interested in whether the brand name of the product could play a role in or enhance the positive affect experienced from tasting the tea. Third, we addressed the issue of whether implicit measures of affect would reflect the positive feelings induced and could be used to judge the effects of the products and brands.

An important issue in studying affect is how to demonstrate that affect has been induced as intended. One approach that some authors have taken has been to ask people about their mood

state or feelings, or to ask them to indicate on rating scales what degree of each of several alternative states they are feeling after activity designed to induce affect has been conducted. There are several problems involved in relying on such self-report measures of affect, however. One is that the validity of self-report measures of feelings has not itself been established. People may be unwilling or unable to report their true feelings, and in some instances they may be influenced by “experimenter demand,” if they know what the experimenter would like them to be feeling, or to say they are feeling. Second, asking people to rate their feelings is likely to cause them to focus on their feelings, and this focus may change the impact of naturally induced, mild positive affect (e.g., Schwarz and Clore 1983). In other words, the affective states being studied are designed to be realistic and subtle, but focusing people’s attention on those feelings may change the effects that the feelings would normally have. A third problem with asking people to report their feeling states following an attempt to induce affect is that it may interfere or interact with their performance on the cognitive or social task that is the primary interest of the study. Sometimes, researchers have moved the “manipulation check” to the end of the experimental session, in order to counter some of these problems. But, even then, several problems remain when explicit self-report of affect is taken this way to check on the manipulation.

For these reasons, among others, some programs of research have relied on converging operations to triangulate on the concept of the affective state conceptually, instead of using self-report measures (e.g., see Isen 1999, for discussion). Ultimately such triangulation, using multiple measures of affect induction and convergent and discriminant responding on predicted dependent variables as well, is the strongest way to establish that the concept has been captured successfully. The current studies explore a supplementary approach, which is to use implicit, or

indirect, measures of affect that indicate successful affect induction without directly focusing on the feeling state itself, rather than using explicit self-report of feeling state.

Use of such “unobtrusive measures” is not new (e.g., Estrada et al. 1997; Webb et al. 1966), but it has been expanded and facilitated by the conceptual development of implicit measures of memory (e.g., Schacter 1987, also see Richardson-Klavehn and Bjork 1988, for discussion) and attitudes (e.g., Fazio et al. 1995; Fazio et al. 1986). In this work, “implicit” effects have been defined as those in which previous experiences are shown to facilitate performance on a task that does not require intentional recollection of those experiences (e.g., Schacter 1987). In contrast, if the task requires, during the testing phase of the study, that the participant deliberately recall material from the study condition, then the memory task is characterized as “explicit” (e.g., Tulving and Schacter 1990).

Implicit measures, then, are available in tasks such as word-fragment completion (e.g., Graf, Mandler and Haden 1982), on which participants have been found to be influenced, in completing the fragments, by old items from a previously learned list. This is considered an implicit measure, because people are not asked to recall items from the old list; the influence of having seen the old list is simply apparent in their responses in the new task. Another task used to obtain implicit measures is a lexical decision task, in which the participant is asked to indicate whether a briefly presented stimulus is or is not a word. Findings show that people are faster in deciding correctly for words that were learned or experienced on a previous occasion (e.g., Neely 1976, 1977; Richardson-Klavehn and Bjork 1988). In addition, several studies indicate that exposure to material enhances not only the accessibility in memory of that specific word or concept, but also of material related conceptually to that concept (e.g., McKoon and Ratcliff 1995; Shapiro 1999). Thus, implicit measures indicate the nature of material that is active in

memory, without directing attention to this material, which might alter other aspects of responding.

Research indicates that explicit, self-report measures and intentions sometimes do predict behavior (e.g., Fishbein and Ajzen 1974), and that sometimes implicit and explicit measures are reliably correlated (e.g., Kawakami et al. 1998). However, in other studies sometimes these correlations have not been found (e.g., Fazio et al. 1995); and therefore there is, in attitude research, a growing interest in development of measures of activation of implicit attitudes (e.g., Fazio et al. 1986). Furthermore, if this lack of correlation between implicit and explicit measures arises because of the influence of social desirability in explicit measures, or because the use of an explicit measure alters some aspect of the dependent variable of interest, the availability of implicit measures would seem especially useful.

What kinds of measures might serve as implicit measures of positive affect? Positive affect has been found to cue positive material in memory, making such material more readily accessible in mind (e.g., Isen et al. 1978; Teasdale and Fogarty 1979). Similarly, positive affect has been shown to cue a broader range of material in response to neutral words, and thus to lead to a more diverse and extensive range of associated thoughts, that are nonetheless organized effectively (e.g., Barone et al. 2000; Isen and Daubman 1984; Isen, Daubman and Gorgoglione 1987; Isen et al. 1985; Kahn and Isen 1993). For these reasons, we expect people's associates to neutral material to be more positive and/ or more unusual or diverse when they are feeling happy.

Because positive affect activates an extensive range of material in memory (Isen 1987), and because participants in implicit memory tasks, such as word fragment completion, have been found to complete the word stems with material that is more accessible in memory, we expect

that participants in positive affect will be more likely to complete word fragments with words that are more positive and/or more unusual than those generated by participants in neutral affect. This result would be similar to ones already obtained, showing that positive affect leads to more diverse and unusual, as well as more positive, first associates to neutral words and a broader consideration set in decisions (e.g., Isen and Geva 1987; Isen et al. 1985; Kahn and Isen 1993). In addition, on the basis of previous research (e.g., Estrada, Isen and Young 1997; Isen, Daubman, and Nowicki 1987), we expect that people in positive affect will be more successful at the Remote Associates Test (Mednick et al. 1964), a measure of creativity. We test these implicit measures of affect following the established positive affect induction technique of a gift of a small bag of candy, and we investigate whether tasting a product designed to be refreshing (iced tea), and providing the brand name of a well-respected brand, can generate positive affect that can be captured by such measures.

In the domain of consumer behavior, implicit measures may prove especially useful in investigating whether product trial can actually generate positive affect. Such implicit measures would overcome the problems noted above that are likely to occur in trying to assess the occurrence of affect from product use by means of explicit questions about feelings.

## STUDY 1

### Overview and Design

Our purpose in Study 1 was to investigate whether tasting a pleasant product can induce positive affect similar to that induced through other established affect inductions such as unexpected receipt of a gift (e.g., Isen and Geva 1987; Kahn and Isen 1993). Therefore, a neutral-affect control condition where participants did not get any product, and two positive-affect conditions, the gift condition, and one where participants tasted iced tea, were included in

this study. In addition, we wished to distinguish between tasting a pleasant product and just any product. Thus, an additional baseline condition, in which participants tasted bottled water, was included in the study. In this study, therefore, we had four between-subjects conditions: control, gift, tasting popular iced tea, and tasting water. Our dependent variables included three implicit measures of positive affect, performance on the Remote Associates Test (e.g., Mednick et al. 1965), a test of creativity in which it has been established that positive affect facilitates performance (Isen et al. 1987), and a word-fragment completion task, in which the words generated by the participants are rated for pleasantness, and for uncommonness.

## Method

*Participants.* Seventy-four undergraduate students participated in the study, in exchange for extra credit toward a course grade. Of these, twelve stated that English was not their first language and therefore were subsequently removed from the analysis. This was done because it has been noticed that the Remote Associates Test is prohibitively difficult for non-native speakers of English (e.g., Estrada, Isen, and Young 1994).

*Procedure.* Participants were randomly assigned to one of four conditions: Control, Gift, Iced Tea, or Bottled Water. Control participants, after signing the consent form, moved immediately to the first task, which was either to provide their first five associates to the letter “H” (word-fragment completion task), or to attempt to solve the Remote Associates items (seven items of moderate difficulty from the Remote Associates Test, used by Isen et al. 1987). The order of these tasks was mixed, with each being presented first for half of the participants.

Participants in the Gift condition received a bag of candy (10 wrapped hard candies in a “Baggie” tied with a piece of red yarn), as the affect manipulation at the start of the session, as has been done in previous research, after having signed the consent form. Participants were told

to place the gift with their coats and other things, to take with them later, and did not eat candy during the session. Participants then provided their generated words (in response to the stem, “H”) or attempted to solve the Remote Associates Test.

Participants in the Tea or the Water condition were told that they would be evaluating products. They were led to a table that had three covered paper cups, and were asked to select any one product to try. In reality, all three cups contained about 3 oz of the same unbranded product (either peach flavored Brand A iced tea, or bottled water). Once they had consumed the product, they gave the first five words they thought of in response to the letter “H,” or did the Remote Associates task, and then worked on other of those tasks. Subsequently, all participants were asked how much they would be willing to pay for a bottle of water, then for a bottle of iced tea, and then they indicated the degree of agreement they felt to the statement, “In general, good things happen to me,” on a seven-point Likert scale anchored with 1= strongly disagree and 7=strongly agree.

## Results

Table 1 presents the means and variances associated with the three dependent measures (Remote Associates Test, Pleasantness of Associates, and Unusualness of Associates).

-----

Insert Table 1 about here

-----

*Remote Associates Test (RAT).* Participants who drank bottled water prior to the Remote Associates task did not differ from the controls ( $t(31) < 1, ns$ ) in their performance on the RAT. Similarly, the participants who consumed Brand A (unbranded) iced tea did not differ, in

performance on the RAT, from the participants who received a bag of candy ( $t(28) < 1$ , *ns*).

Thus, for further analysis, the two control conditions, Water and Control, were combined into a single Control condition, as were the two affect conditions (Gift and Iced Tea) into one Affect condition.

A one-way ANOVA using performance on the RAT as the dependent variable indicated a significant main effect of condition ( $F(1, 60) = 6.37$ ,  $p < .02$ ). Participants in positive affect performed significantly better on the RAT than did controls ( $M_{\text{affect}} = 1.07$ ,  $M_{\text{control}} = 0.41$ ).

*Word-Fragment Completion Task.* A judge, unaware of the condition the participant was in and unaware of the hypothesis of the study, coded the first five associates generated by participants to the letter “H,” for “pleasantness” and “uncommonness.” The coding for each word was binary, so that it was considered pleasant and received a score of 1, or it was not considered pleasant and received a score of 0. Similarly, a word could be common (scored as 0) or not common (scored as 1). The scores for total number of pleasant, and separately, total number of uncommon, associates were summed for each participant and divided by five, to create mean pleasantness, and mean uncommonness, scores for each participant. Therefore, each participant received a score ranging from zero to one on pleasantness and from zero to one on uncommonness of the associates generated. A higher score on these measures indicated higher pleasantness, or higher uncommonness, of associates.

*Pleasantness Scores.* As can be seen in Table 1, the two affect conditions did not differ from each other ( $t(28) < 1$ , *ns*), nor did the two control conditions ( $t(31) < 1$ , *ns*). Therefore, the two positive-affect conditions, and the two control conditions, were combined in subsequent analyses. A one-way ANOVA, with the pleasantness score as the dependent variable, and the combined affect conditions and combined control conditions as the independent variable,

revealed a significant main effect of condition ( $F(1, 60) = 6.39, p < 0.02$ ). This analysis showed that participants who received the candy bag, or who tasted the bottled tea, prior to providing associates to the letter “H,” generated significantly more words that were judged as pleasant, compared with participants who consumed water or who were not provided anything prior to the associates task ( $M_{\text{affect}} = 0.19, M_{\text{control}} = 0.09$ ). This indicates that the word-fragments completed by participants in positive affect were significantly more pleasant than those completed by participants in neutral affect.

*Unusualness Scores.* As can be seen in Table 1, the two affect conditions did not differ from each other on unusualness ( $t(28) < 1, ns$ ), nor did the two control conditions ( $t(31) < 1, ns$ ). Therefore, again, the two affect conditions and the two control conditions were combined for analysis. A one-way ANOVA using uncommonness score for associates generated to the letter “H” as the dependent variable, and the combined Affect and Control conditions as the independent variable, revealed a significant main effect of condition ( $F(1, 60) = 5.26, p < 0.03$ ). In other words, participants who were given the candy bag, or who tasted the bottled tea, prior to giving associates to the letter “H” generated significantly more words that were judged as uncommon, compared to participants who were provided water to taste or who were not given anything prior to the association task ( $M_{\text{affect}} = .30, M_{\text{control}} = .18$ ).

*Willingness to pay and estimate of general well being.* There were no differences among the four conditions on the general measure of well-being ( $F(3,58) < 1, ns; M_{\text{control}} = 4.97, M_{\text{gift}} = 5.29, M_{\text{tea}} = 5.33, M_{\text{water}} = 5.29$ ), or in the prices they were willing to pay for a bottle of water ( $F(3,58) < 1, ns; M_{\text{control}} = 1.06, M_{\text{gift}} = 1.03, M_{\text{tea}} = 1.13, M_{\text{water}} = 1.02$ ) or for a bottle of iced tea ( $F(3,58) < 1, ns; M_{\text{control}} = 1.44, M_{\text{gift}} = 1.50, M_{\text{tea}} = 1.59, M_{\text{water}} = 1.50$ ).

## Discussion

The results of Study 1 indicate that participants in the positive-affect conditions generated significantly more pleasant and more uncommon associates, and answered more Remote Associates Test items correctly, compared with controls. Participants in the Tea condition, a new positive-affect induction, responded like people in the Gift condition, and differed from Controls. This suggests that tasting bottled tea can induce positive affect and can influence problem solving and other responses previously found to result from positive affect. Note that the measures used in this study were implicit, not explicit, indicators of positive affect, and thus they can be used to show that positive affect was induced, but do not have the side effect of focusing participants' attention on their affect, on the experimenter's motives or desires, etc.

The finding that tasting bottled tea improves affect and influences cognitive processes could be important to makers of products such as this that are designed to be “refreshing,” because it indicates that such a product has the positive, desired impact. Study 1 even showed that tasting such a product influenced cognitive processes and improved problem solving. We believe that it does these things by inducing positive affect. Some may suggest that the Tea condition had its effects because of the sugar and caffeine consumed; however, this is unlikely because the results of the Tea condition paralleled those of the Gift condition, in which participants received, but did not consume, the candy.

## STUDY 2

### Overview and Design.

The purpose of this study was to replicate and extend the results of Study 1, investigating whether an alternative bottled tea would generate affect, and examining the role of a brand name

in the generation of positive affect. Therefore, in addition, to the Control condition, the Gift condition, and the Brand A unbranded iced-tea condition, we included two conditions where participants tasted Brand B bottled tea, one in which they were unaware of the brand, as in the Brand A condition (Brand B Unbranded), and one in which they knew the brand that they were drinking (Brand B Branded). We used a second tea, Brand B, for this for two reasons: First, although just as sweet and caffeinated as Brand A, it tasted different from Brand A; and second, it was not available in the US market at that time and therefore it provided a unique opportunity to examine the role of brand name. That is, the product itself (its taste) was unfamiliar to participants, and thus they would not immediately know its brand from recognizing its taste; at the same time, in reality its brand name was one familiar, popular, and well-respected among food items, so that its brand equity could reasonably be expected to play a positive role.

As an implicit test of affect, all participants were given the Remote Associates task to solve, as in Study 1. In addition to this implicit measure of affect, we tested a second implicit measure of affect, conceptually similar to the first study's assessments of people's word-fragment completion (associates to the letter "H"), this time participants' first associates to neutral words. Consistent with the literature on affect (e.g., Isen et al. 1985), we hypothesized that participants in positive affect would generate more pleasant and/or unusual first associates to these neutral words.

## Method

*Participants.* Fifty-four undergraduate students participated in the study, in exchange for extra credit toward a course grade. As in the earlier study, non-native speakers of English were not included in the study.

*Procedure.* Participants were randomly assigned to one of five conditions: Control, Gift, Brand A Unbranded tea, Brand B Unbranded tea or Brand B Branded tea.

All participants signed a consent form at the start of the session. Following this, participants in the Gift positive-affect condition received a bag of candy as the affect induction, and as in Study 1, were asked to put it with their things and take it with them when they left the session. Participants in the iced-tea conditions were told that they were participating in a product trial for an iced tea that might or might not have been on the market at that time. They were taken to a table that had three covered paper cups and were asked to take any one of the three to try. All three cups contained about 3 oz of the same product, either unbranded peach flavored Brand A bottled tea, unbranded peach flavored Brand B bottled tea or branded peach flavored Brand B bottled tea. While participants in the unbranded conditions saw three covered cups on a tabletop, participants in the branded condition saw bottles of Brand B iced tea on the tabletop, behind the three covered cups. The experimenter returned to her workstation while the participant drank one of the cups of bottled tea. Almost all participants drank the entire 3 oz. of tea.

After their respective affect inductions, all participants returned to their workstations to complete the answer booklet containing the first-associates task and the Remote Associates Test (RAT). For the first-associates task, participants were asked to respond with their first associate to each of five neutral words (table, street, hand, cabin and stem). For half of the participants, the RAT followed the first-associates task, and for the other half, the order of the tasks was reversed.

Participants also indicated how much they were willing to pay for a bottle of water and for a bottle of iced tea, and also responded to the question, “In general, good things happen to me,” on a seven-point Likert scale anchored at 1= strongly disagree and 7=strongly agree. On

completion of these tasks, all participants who consumed tea (Brand A Unbranded, Brand B Unbranded, Brand B Branded) rated the tea, using two seven-point scales, indicating the degree to which the tea was refreshing and the degree to which it was pleasing (1 = not at all to 7 = very). As a final measure, participants who consumed unbranded tea (Brand A or Brand B) were asked whether they thought that the tea they had consumed was Brand A.

## Results

Table 2 presents the means and standard deviations of the RAT scores (number correct), and mean pleasantness and unusualness scores of people's first associates to the neutral words, by condition.

-----  
 Insert Table 2 about here  
 -----

*Remote Associates Test (RAT).* A one-way ANOVA, using number of Remote Associate items correctly answered (from a possible seven) as the dependent variable and all five affect conditions (Control, Gift of Candy, Brand A [which was unbranded], Brand B Unbranded, Brand B Branded) as the independent variable, revealed a marginal effect of condition ( $F(4, 54) = 2.06$ ,  $p = 0.10$ ). Because we were interested in, and had predicted, effects of the individual conditions (and differences between teas), and in whether these measures would be sensitive enough to detect differences among products and presentations, we tested the individual conditions as well.

Planned comparisons of the study predictions revealed, as expected, that participants in the Gift condition ( $M = 2.83$ ) answered significantly more Remote Associates items correctly compared to Controls ( $M = 1.60$ ,  $t(21) = 2.23$ ,  $p < .02$ ). Similarly, as expected, participants who

consumed Brand A had significantly more correct answers ( $M = 2.92$ ) than controls ( $t(21) = 2.08, p < .05$ ), as did those in the Brand B Branded condition ( $M = 2.92, t(21) = 2.62, p < .02$ ). However, participants in the Brand B Unbranded condition ( $M = 1.92$ ) were not significantly different from controls ( $t < 1, ns$ ) in the number of Remote Associates items they answered correctly. Thus, participants in each intended affect condition, except the Brand B Unbranded condition, scored better than the controls on the Remote Associates Test. Interestingly, it turned out that, as reported above, the unsuccessful tea, when presented with its package and brand name, also resulted in improved performance compared to Control (and we believe induced positive affect). Furthermore, we thought that if the unfamiliar tea was not successful in inducing affect and facilitating performance, then possibly adding its branding information (name and packaging) might change that; therefore we compared those two conditions, Brand B Unbranded versus Branded. This comparison revealed a significant difference in performance on the RAT ( $t(22) = 1.85, p < .04$ ).

Overall, these results show that positive affect induced in any of the ways described (one of which had been used in several previous studies) improves performance on this task, as was shown in Study 1, and as had been shown previously using other, multiple, methods of affect induction. Further, the result shows that the tea's effect on performance on this task is not simply the result of physiological processes related to consumption of sugar and/ or caffeine. In addition, it indicates that, as an implicit measure of positive affect, performance on the RAT is sensitive enough to detect differences among beverages and presentations in ability to induce positive affect.

*Pleasantness/Uncommonness of First Associates.* As in Study 1, a judge unaware of the condition the participant was in, and unaware of the hypothesis, coded the participants'

associates to the five neutral words, for “pleasantness” and “uncommonness.” As in Study 1, the coding for each word was binary, either it was considered pleasant and received a score of 1, or it was not considered pleasant and received a score of 0. Similarly, a word could be common (scored as 0) or not common (scored as 1). The scores for total number of pleasant, and separately, total number of uncommon, associates were summed for each participant and divided by five, to create mean pleasantness and uncommonness scores for each participant. Therefore, each participant received a score ranging from zero to one on pleasantness and from zero to one on uncommonness of the associates generated. A higher score on these measures indicated higher pleasantness, or higher uncommonness, of associates.

*Pleasantness Scores.* A one-way ANOVA, examining all five conditions, was conducted on the pleasantness score. This analysis revealed a significant main effect of condition ( $F(4, 54) = 6.15, p < 0.01$ ). Individual comparisons showed, as expected, that participants in the Gift condition scored significantly higher on pleasantness of associates to neutral words ( $M = .37$ ) than controls ( $M = .12, t(21) = 3.28, p < .01$ ). Similarly, as expected, participants the Brand A condition ( $M = .27$ ) received a higher pleasantness score, as compared to participants in the control condition ( $t(21) = 2.28, p < .02$ ), as did those in the Brand B Branded condition ( $M = .22, t(21) = 1.79, p < .05$ ). However, participants in the Brand B Unbranded condition ( $M = .06$ ) were not significantly different from controls ( $t < 1, ns$ ) in the pleasantness score they received for their first associates to the neutral words. Thus, participants in each intended affect condition, except the Brand B Unbranded condition, provided more pleasant first associates to neutral words than controls. These results paralleled the effect with the RAT, reported above. In addition, as reported, as with performance on the RAT, it turned out that the unsuccessful tea, when presented with its package and brand name, resulted in more pleasant associates given in

response to the neutral words (and we believe induced positive affect), compared to controls. As before, we compared the Brand B Unbranded versus Branded conditions; this comparison revealed a significant increase in pleasantness of associates when the branding information was provided ( $t(22) = 2.97, p < .01$ ).

*Uncommonness Scores.* A one-way ANOVA, examining all five conditions, was conducted on the uncommonness score. This analysis revealed a significant main effect of condition ( $F(4, 54) = 2.63, p < 0.04$ ). Individual comparisons showed, as expected, that participants in the Gift condition generated significantly more uncommon associates to neutral words ( $M = .33$ ), as compared to the controls ( $M = .16, t(21) = 2.15, p < .05$ ). Similarly, as expected, participants the Brand A condition ( $M = .40$ ) received a higher unusualness score, as compared to participants in the control condition ( $t(21) = 2.33, p < .02$ ). In addition, the difference between the Brand B Branded condition ( $M = .27$ ) and the control condition was near-significant ( $t(21) = 1.65, p < .06$ ). However, participants in the Brand B Unbranded condition ( $M = .18$ ) were not significantly different from controls ( $t < 1, ns$ ) in unusualness score. Thus, participants in each intended affect condition, except the Brand B Unbranded condition, responded with more unusual first associates to neutral words than controls, as was also shown on the pleasantness measure and the RAT measure. A comparison of the Brand B Branded and Unbranded conditions indicated a marginally significant difference in unusualness of associates ( $t(22) = 1.43, p < .10$ ), in the same direction as observed for the other two implicit measures.

*Willingness to pay and estimate of general well being.* There were no differences among the five conditions on the general measure of well-being ( $F(4,54) < 1, ns; M_{\text{control}} = 5.70, M_{\text{gift}} = 5.42, M_{\text{BrandA}} = 5.33, M_{\text{BrandBUnbranded}} = 5.38, M_{\text{BrandBBranded}} = 5.50$ ), or in the prices they were willing to pay for a bottle of water ( $F(4,54) = 1.04, ns; M_{\text{control}} = 1.23, M_{\text{gift}} = 1.23, M_{\text{BrandA}} = .96,$

$M_{\text{BrandBUnbranded}} = 1.12$ ,  $M_{\text{BrandBBranded}} = 1.04$ ) or for a bottle of iced tea ( $F(4,54) < 1$ , *ns*;  $M_{\text{control}} = 1.37$ ,  $M_{\text{gift}} = 1.35$ ,  $M_{\text{BrandA}} = 1.27$ ,  $M_{\text{BrandBUnbranded}} = 1.49$ ,  $M_{\text{BrandBBranded}} = 1.37$ ).

*Measures of Taste.* On completion of the other tasks, participants in all of the conditions in which tea was tasted (Brand A, Brand B Branded, Brand B Unbranded) rated the tea on seven-point Likert scales for the two items, refreshing and pleasing (1=not at all to 7=very). Because participant ratings of these two items were highly correlated (Cronbach's alpha = .92), the scores were averaged for further analysis. A one-way ANOVA conducted on this score revealed a marginal effect of type of tea ( $F(2, 33) = 2.69$ ,  $p < .085$ ). Informal pre-tests had suggested that Brand A and Brand B differed in tastiness, and there was already reason to believe that people were reacting differently to Brand B Branded, as compared with Unbranded, in the results of the three implicit measures of affect (the RAT, pleasantness rating, and unusualness rating). Therefore, we performed planned contrasts between Brand A and Brand B Unbranded tea, and between Brand B Branded and Unbranded. These tests indicated that Brand B Unbranded tea was rated as less refreshing or pleasing ( $M = 3.88$ ) than Brand A (unbranded) ( $M = 5.09$ ,  $t(22) = 1.91$ ,  $p < .04$ ), and that Brand B Unbranded tea was rated as less refreshing or pleasing than Brand B Branded tea ( $M = 5.12$ ,  $t(22) = 2.10$ ,  $p < .05$ ).

Based on the report of "refreshingness," we constructed a Combined Positive Affect condition (consisting of Gift, Brand A, and Brand B Branded Tea), and compared this composite Positive Affect condition with the Control condition. Three one-way ANOVA's revealed that this Combined Affect Condition differed from the Control condition on the RAT score ( $M_{\text{Combined Affect vs. Control}} = 2.89$  vs. 1.60;  $F(1, 44) = 5.84$ ,  $p < .02$ ), the pleasantness score ( $M_{\text{Combined Affect vs. Control}} = .28$  vs. .20;  $F(1, 44) = 5.86$ ,  $p < .02$ ), and the unusualness score ( $M_{\text{Combined Affect vs. Control}} = .33$  vs. .16;  $F(1, 44) = 4.82$ ,  $p < .04$ ).

Further, a MANOVA examining the effects of these four conditions on each of the implicit measures found a significant difference between Affect (Gift, Brand A, Brand B Branded) and Control ( $F(9, 126) = 2.17, p < .05$ ), but not an effect of measure ( $F < 1, ns$ ). Finally, a MANOVA examining the effects of each of the two Brand B conditions (Branded vs. Unbranded) on each of the implicit measures indicated a significant difference between the two conditions ( $F(3, 21) = 4.08, p < .02$ ), but no difference among the three measures in ability to detect this difference. Results of these two MANOVA's help to establish that the three implicit measures are similar in reflecting induced positive affect.

*Participants knew when it was not Brand A.* Interestingly, participants who consumed unbranded tea were quite accurate in realizing that the unbranded Brand B tea was not Brand A. A binary logistic regression conducted on whether participants thought they had consumed Brand A, by condition (whether they actually consumed Brand A or Brand B Unbranded), revealed a significant main effect of condition ( $F(1, 21) = 3.89, p < .05$ ). This indicates that participants who consumed Brand B Unbranded were more likely than participants who consumed Brand A unbranded to indicate that they had not consumed Brand A (82% vs. 42% respectively). In addition, a test of proportion showed that participants who consumed Brand B Unbranded were more accurate than chance (which would be 50% of the participants who tasted unbranded tea) in guessing that they had not consumed Brand A ( $t(10) = 2.60, p < .025$ ). In contrast, those who tasted Brand A (unbranded) tea were not significantly different from chance in reporting that the tea they consumed was Brand A. This indicates that, while participants were not more certain than chance that they had consumed Brand A when they actually did so (perhaps because there may be many pleasant iced teas available with tastes similar to Brand A), they were quite certain that they had not consumed Brand A iced tea when in reality they had

been given Brand B. This indicates that Brand B peach iced tea was discernibly different from Brand A peach iced tea. It also indicates that the flavor of Brand B was sufficiently unique, compared to other ice teas on the American market (that might be confused among one another), such that consumers of Brand B were less likely to identify it or confuse it with something they had consumed before.

## Discussion

Results of these two studies, taken together, demonstrate that tasting commercial sweetened, flavored, bottled iced tea can induce positive affect, and that implicit measures of affect (performance on the Remote Associates Test items, unusualness and pleasantness of first associates generated to neutral words, and positivity and unusualness of word-fragment completion to the letter “H”) can be used to assess the induction of positive affect. In Study 2 it was shown, further, that some tea preparations are liked more than others and that this difference is reflected in these implicit measures of affect. In addition, in Study 2 it was shown that a well-respected, familiar, brand name can result in positive affect’s being generated in response to even the tea that does not induce affect on the basis of its taste alone. Results on the implicit measures, even the performance measure (RAT), paralleled those reflecting explicit liking for the beverage (e.g., rated “refreshingness” and “pleasantness” of the taste of the tea).

One question people may have had at the end of Study 1 was whether the affect was induced because of the participant’s guessing the brand of the anonymously presented tea sample, rather than because of the taste of the tea itself. In Study 2, however, one of the teas was presented both with and without its brand name. Participants actually did not like that tea as well as the tea used in the first study, and all indicators showed that it differed from the other affect

conditions. But, interestingly, when it was presented in branded format, positive affect was induced by even that sample of tea. Thus, it appears that the affect induced in Study 1 is not attributable to the process of guessing the brand of the tea tasted, because affect is induced even when the brand name is known, and in fact the brand name (which is familiar and well respected) actually increased the indicators of affect, both implicit and explicit (performance on a task requiring creativity, unusualness and positivity of word associations, and ratings of the refreshingness and pleasantness of the taste of the tea).

In these studies we were examining implicit measures of affect. We included one explicit measure of affect, the ratings of the refreshingness and pleasantness of the tea. Some researchers believe that the only real way to measure affect is in terms of people's self-reports of their feelings. We disagree with this position conceptually, because positive feelings have been found to have many reliable effects other than self-reported affect. In addition, many times self-reports of affect are not themselves valid indicators of affect, because they may be influenced by other factors in the situation, such as experimenter demand, desire to conceal feelings, and so on. In addition, sometimes they are problematic to obtain in a study because they can change the focus of the participant's attention and thus potentially influence subsequent measures in the session. Therefore, we sought to find implicit, unobtrusive measures of positive affect that could be used to assess affect induction but not distract people's attention or focus attention on their feelings.

However, some authors believe that, if placed at the end of the session, an affect self-report can be used to indicate the success or failure of the affect induction, while avoiding some of these problems. Study 3, therefore, includes a self-report of affect, conducted at the end of the session, to obtain this additional validation of the implicit measures that we used, and at the same

time investigate whether placement at the end of the study does provide protection of the interpretation of such measures.

### STUDY 3

The purpose of this study was to investigate whether implicit measures of affect correspond to effects observed with explicit affect scales, and whether events during the session, such as task performance, influence the explicit measures themselves. This is important, because if there is a relationship between implicit and explicit measures of affect, this would help to validate the implicit measures that we are proposing using. At the same time, this study will allow us to determine whether intervening events such as performance on a task influence the explicit measures of affect obtained at the end of the session. It is important to discover whether performance on a task influences explicit measures collected at the end of the session, because if that is so, the measure might not reflect the success of the manipulation of affect, or might reflect it only as modified by the intervening task. If performance on the tasks of the study plays a role in responses to explicit affect measures collected at the end of the session, then condition differences on such measures may not indicate that affect was induced successfully at the start of the study. Of course, non-significance on this measure may not mean that affect was not induced successfully at the start of the study, either.

#### Method

*Participants.* Seventy-four undergraduate students participated in a study on memory, in exchange for course credit.

*Procedure.* Participants were randomly assigned to a positive or neutral affect condition. Those in the positive-affect condition received a small bag of candy to take with them, as an

affect induction, as in Studies 1 and 2. Subsequently, all participants were seated at individual workstations, and were provided an answer booklet in which they were to give pleasantness ratings for two neutral words (“table” and “pencil”). This served as an implicit measure of affect, to check on the induction of positive affect. Participants rated the words for pleasantness on a seven-point Likert scale (where 1= “not at all” and 7=”extremely”).

After this, participants performed a memory task in which they were directed to memorize the names of 30 brands. Participants viewed each brand name on a computer monitor for 4 seconds. Subsequently, in order to clear working memory, all participants completed the 18-item Need for Cognition scale (Cacioppo, Petty and Kao 1984), which served as a filler task, and then wrote down all of the brand names they could recall.

Finally, at the end of the session, as an explicit measure of affect, participants indicated how they felt at that time by providing ratings on seven-point Likert scales in response to the four mood items, sad (1)-happy (7), bad (1)-good (7), irritable (1)-pleased (7), depressed (1)-cheerful (7). After this, participants were thanked and debriefed.

## Results and Discussion

Table 3 presents the means and standard deviations associated with the implicit and explicit measures of affect.

-----

Insert Table 3 about here

-----

*Implicit Measure.* The pleasantness ratings of the two neutral words, which served as our implicit measure of affect induction, were correlated and conceptually similar (Cronbach’s alpha

= .74), and were averaged to form a single measure. Consistent with numerous findings on positive affect that show that positive material is more accessible to happy people (e.g., Isen et al. 1978), including the findings of Studies 1 and 2 here, we expected that if affect was induced, these individuals would rate neutral objects as more pleasant.

The planned comparison between the positive affect and the control condition (on the averaged pleasantness score) was significant ( $M_{\text{affect vs. control}} = 3.98$  vs.  $3.30$ ;  $t(72) = 3.01$ ,  $p < .01$ ). This indicated, consistent with our expectations, that participants in positive affect were likely to rate neutral stimuli more positively than were participants in neutral affect.

*Explicit Measure.* As described earlier, participants were also asked to rate their affective states on mood scales after completion of the memory task, at the end of the session. The four items of the mood scale (Cronbach's alpha = .90) were averaged to form a single index of positive affect. A planned comparison comparing the two affect conditions on the explicit affect index revealed a significant difference ( $M_{\text{affect vs. control}} = 5.14$  vs.  $4.62$ ,  $t(72) = 1.77$ ,  $p < .04$ ). This indicated, consistent with our expectations, that participants in positive affect were likely to indicate higher positive affect rating on the mood-scale items.

Most studies of affect that use traditional mood scales as a manipulation check might argue that mood ratings at the end of the session indicate that affect was successfully induced and maintained throughout the study, and that any reduction of the effect is attributable to dissipation of the induced affect over time. This is possible. However, one problem with this assumption is that events during the session may have their own influence on the mood-scale ratings that are eventually taken at the end of the session. Thus, while such a procedure successfully avoids the problem of the manipulation check's interfering with the experimenter's main dependent variable of interest (because the manipulation check comes after the dependent

measure is already completed), it is possible that events during the session, such as task performance, will influence responses on the explicit affect measure (because it is after the task). We investigated this possibility in the current study, and data were reanalyzed to reflect the effects of task performance on the explicit mood ratings.

*Effect of Task Performance on Explicit Ratings.* Because the explicit measure of experienced affect was collected after the memory task, performance on that task may have affected explicit ratings of feelings. (In contrast, because the implicit measure was collected immediately after the affect induction, but prior to the task, it is not possible for this measure to have been affected by performance on the task.) In order to investigate the possible impact of task performance on the explicit affect measure, we calculated the total number of brands recalled by each participant, and compared the explicit affect ratings of those who had performed above, versus below, the median level of performance on the memory task. The range for number of brands recalled was seven to 24. Participants were split into two groups, those who recalled 15 brands or fewer, and those who recalled 16 or more brands.

Table 4 presents the means and standard deviations associated with our implicit and explicit measures of affect, by performance and affect condition. Each affect group is split into two, based on performance: participants who scored above the cut-off point, and those who performed below it, on the memory task.

-----

Insert Table 4 about here

-----

A 2 (affect condition: positive vs. neutral) x 2 (performance: low vs. high) between-subjects ANOVA was performed with the averaged explicit-affect measure as the dependent

variable. Interestingly, this analysis revealed a significant main effect of performance ( $F(1, 70) = 8.44, p < .01$ ), indicating that participants who performed better reported higher affect on the explicit mood scale at the end of the session ( $M_{\text{low vs. high}} = 4.54 \text{ vs. } 5.36$ ), and an interaction between affect and performance ( $F(1, 70) = 6.35, p < .02$ ). In this analysis, the main effect of mood was not significant ( $F(1, 70) = 1.83, p < .18$ ), because of the significant interaction with performance.

Planned contrasts exploring the significant interaction revealed that high and low performers in the positive-affect condition did not differ in their affect ratings on the mood scale ( $M_{\text{low vs. high}} = 5.09 \text{ vs. } 5.20; t(35) < 1, ns$ ), but that among participants in our neutral-affect condition, high performers on the task indicated significantly higher affect ratings on the explicit mood-scale than did low performers ( $M_{\text{low vs. high}} = 4.04 \text{ vs. } 5.52; t(37) = 3.67, p < .01$ ). This indicates that something related to performing well on a task increased the subsequent mood-scale rating that participants made, particularly in the Control condition in which affect had not been manipulated prior to the task.

*Mediation Analysis.* Following Baron and Kenny (1986), a mediation analysis was conducted to examine the impact of induced affect on the explicit mood-scale ratings, and to investigate whether performance on the intervening task mediated these ratings. First, a regression of the explicit rating of affect (criterion) on affect condition (predictor) revealed a near-significant beta coefficient ( $b = 0.57, t(72) = 1.77, p < .08$ ). Next, a regression of the explicit rating of affect (criterion) on number of brands correctly recalled (mediator) revealed a significant beta coefficient ( $b = 0.81, t(72) = 2.85, p < .01, M_{\text{affect vs. control}} = 15.67 \text{ vs. } 14.18$ ). Finally, a regression of the explicit rating of affect (criterion) on affect condition (predictor), with number of brands correctly recalled (mediator) as co-variate, revealed a significant beta

coefficient only for the co-variate ( $b = 0.10$ ,  $t(72) = 2.98$ ,  $p < .01$ ), indicating that all of the effect of condition was accounted for by the intervening variable. This analysis, therefore, indicates that, 1) participants in whom positive affect was induced gave higher explicit affect ratings than participants in neutral affect (marginally significant), 2) participants who recalled more brands also reported higher ratings on the mood scale, and 3) importantly, when task performance (number of brands recalled) was included as a covariate in the regression of explicit rating of affect on affect condition, this effect of induced affect on mood-scale rating became non-significant. This indicates that task performance (or something related to task performance, such as memory ability) mediated the explicit mood-scale rating. Note that this analysis does not pertain to any of the implicit measures of affect induction, which were clearly influenced by experimental treatment and measured before any other tasks in the session occurred.

This analysis suggests that task performance may impact ratings that are collected by experimenters at the end of an experimental session. This makes sense, because success on a task is often used itself as a method of affect induction (e.g., Isen 1970; Isen and Means 1983). However, in the present case, since performance on the task was not randomly assigned, but could have depended on pre-existing individual differences among the participants, what caused the elevated explicit affect ratings among the high scorers cannot be said for sure.

Thus, this result raises the possibility that significance on such explicit affect measures need not mean that the actual induction of affect was successful, nor that it was maintained throughout the session. In addition, non-significance on such an explicit measure need not indicate that affect was not induced, because the task, or other factors influencing performance on the task, may alter such ratings at the end of the session. In contrast, the implicit affect

measures, taken right after the affect induction, do indicate that positive affect was induced as intended.

## GENERAL DISCUSSION

These studies found that performance on a creativity task (items from the Remote Associates Test), positivity of associates to neutral stimuli (words and a letter of the alphabet), uncommonness of associates to neutral stimuli (words and a letter of the alphabet), and ratings of positiveness of neutral words are influenced by positive affect and can serve as implicit measures of positive affect. The studies also showed that a common consumer product designed to be refreshing (flavored, sweetened bottled iced tea) can induce positive affect that is similar in its effects to positive affect induced by a wide variety of other methods of affect induction. Those other methods include techniques such as receiving a small gift or free sample, seeing 5 minutes of a comedy film, receiving positive performance feedback, and thinking about positive events, among other things.

Study 2 also included explicit ratings of the “refreshingness” and “pleasantness” of the tea, and these ratings were affected by the affect condition just as were the implicit indicators of affect. People who tasted Brand A tea, or who tasted Brand B Branded, but not those who tasted Unbranded, Brand B tea, reported that the tea was more refreshing and pleasant than did Controls. Such evaluations of a product presented are not actually explicit measures of *affect*, because they do not ask explicitly about the person’s feelings, but they are explicit ratings, because they ask explicitly about the product and the potential of the product to induce feelings. However, they are more subtle and may be used to assess affect without inducing focus on the participant’s own feelings or causing concern about the experimenter’s wishes. Similar techniques have been used in previous studies, where people have been asked to evaluate the

films used to induce affect (e.g., Isen et al. 1987). In the present case, this explicit evaluation of the affect-inducing product/presentation completely paralleled the implicit measures, and reflected the affect induction treatments in its outcome. This helps to validate the implicit measure in still another way.

Study 2 included two different samples of tea, and both branded and unbranded presentation modes. Our measures (both implicit and explicit) indicated that one tea sample (the familiar one), but not the other, induced positive affect and influenced cognitive processes. Further, when the unsuccessful tea was presented together with its well-known brand name and attractive packaging, it too induced positive affect and influenced cognitive processes. These results indicate that any suggestion that the effects of tasting the tea may have been attributable to a physiological effect of sugar and/or caffeine is not plausible. Further, the fact that the gift-of-candy that was not consumed or sampled had the same effect on affect and cognitive processes as tasting the successful sample of tea, further undermines that interpretation of the findings.

In Study 2, the results indicated that inclusion of a respected, trusted brand name improved the ratings of tea that was not successful in inducing pleasant feelings when presented in unbranded format, and also influenced both the implicit indicators of positive affect (task performance, positivity, and unusualness, of associates to neutral material) and the explicit rating of refreshingness and pleasantness of the tea. This is the first time that a brand name specifically has been found to play a role in inducing positive affect. Although we did not test the range of tastes that could be aided by brand information, it makes sense that this effect may be limited to products that are in the moderate range of pleasantness. One cannot expect a good brand to help a truly unpleasant product, and in fact the brand itself may be harmed by such pairing. This topic

has been addressed to some extent in the brand equity literature (see, for example, Aaker 1991; Keller 1998), but it would make an interesting one for further investigation.

Brand B bottled iced tea was not available in the geographic area in which the study was conducted at that time, and therefore it may be that the reason that Brand B failed to induce positive affect when unbranded was that its taste was unfamiliar. However, the brand name itself was quite familiar in that area, and was (and is) associated with a wide variety of successful food and beverage items. Inclusion of this respected, trusted, familiar brand name, therefore, may have made a difference for any of the following reasons: 1) it may have reduced people's uncertainty about the unfamiliar tea by providing reassurance of its quality; 2) its familiarity may have transferred to the tea itself and rendered the unfamiliar tea more familiar and therefore better-liked, as has been found in "mere exposure" studies (Zajonc 1968); 3) it may have made a difference just because people thought they "should" like a tea put out by this brand, or 4) it may be that positive associations linked to this brand name may have transferred to the product.

The first three of these four possibilities seem less likely as the reason that the brand name was effective. First, there is no indication in our data that tasting Brand B Unbranded tea induced negative affect, and thus, there is no reason to hypothesize that the brand name "reduced" negative feeling. Moreover, if there was uncertainty about the tea and that was reduced by provision of the well-known brand name, that would still not account for the effects that we observed, which indicate that positive affect was induced. Second, our results cannot be explained by the idea that the familiar brand name increased the liking of the tea, because "mere exposure" has only been found to increase liking for the particular stimuli that are frequently encountered, not for other neutral material. Further, the mere-exposure effect pertains to liking, but it has not been found to increase unusual responses to neutral material, nor to improve

performance on the RAT. It is especially noteworthy that the unusualness of people's responses increased when the brand name was provided (as it did with all of the other positive affect inductions, as well), because this increase in unusualness of responses is incompatible with the idea that brand name increased the familiarity of the unfamiliar tea and increased liking or affect in that way. Third, if people only thought they "should" like a tea by the famous maker, then one might have expected that implicit measures (in contrast to explicit measures) might not have been affected. On the other hand, extension of positive meaning associations from the brand to the tea sample could account for the positive affect induction that we found reflected in both the implicit measures and the explicit evaluation of the Brand B Branded (but not Unbranded) tea.

It should be noted that questions about general, overall well-being, and about amount willing-to-pay for a bottle of tea or water, were not affected by any of the affect inductions used in this study. These measures were included for purposes of discriminant validation, to show that positive affect does not simply increase all responses or evaluations (see, for example, Isen 1999, for discussion). The result shows, again, that the influence of positive affect is not just a response bias or an influence on the way rating scales are used, because not all of the measures were influenced in the same way by affect.

The fact that overall general well-being was not affected may indicate that such a question is not meaningful to respondents or that they do not know how to answer it. Another possibility is that perhaps this question is not governed by affect but is usually answered in the same way, by habit, and therefore is rather stable regardless of what people are feeling. The fact that this question did not mirror the other indicators of affect suggests that it is not a useful indicator of affect, nor does it predict performance, liking for likable things, differentiation between liked and less liked stimuli, or any of the other effects of happy feelings examined in the

literature (e.g., Isen et al. 1985) and in the current studies. Whatever the reason, this question appears not to be influenced by current feeling state as measured, either explicitly or implicitly, in these studies.

Similarly, that willingness-to-pay was not influenced by positive affect indicates again that positive affect does not lead to irrational or careless responding, and that it does not lead to a response bias in using rating scales (see, e.g., Isen 2001, for discussion). Rather, positive affect specifically influences accessibility and organization of positive material (and, possibly other categories of material) from memory. Where the judgment is being made “on line,” and the material being judged contains at least some positive aspects, induced positive affect facilitates access to that positive material and enhanced ability to organize it and think about it. But thinking about the positives about an item should not mean that one should be willing to pay more for the same thing one is accustomed to buying at a given price; thus, positive affect would not be expected to result in willingness to pay more for a familiar item.

In a related vein, it should be noted that these studies revealed compatible responses, whether explicit measures or implicit measures were used, and this was true for all three types of positive affect inductions, receiving a gift, tasting a familiar tea, and tasting a respected brand of unfamiliar tea. Thus, our results also suggest that affect is not blocked by thinking or by cognitive factors (because presence of a brand name induced affect in response to tea that otherwise did not induce affect). Likewise, they support the findings that positive affect does not interfere with systematic thinking or problem-solving (because task performance on the RAT was improved by positive affect), as has been found in other research (e.g., Erez and Isen 2002).

Study 3 included an explicit, self-report assessment of affect at the end of the session, which is often used in research as a check on the induction of affect. This measure confirmed

and thus helped to validate the implicit measures. However, it also pointed to the importance of developing implicit measures that can be administered immediately after affect induction, because the explicit measure of affect, which can be administered only at the end of the experimental session, was influenced by task performance (or factors related to task performance) during the session.

These results, taken together, indicate that there is less distinction between explicit and implicit positive affect than some authors have argued recently. Those authors suggest that a distinction be made between “anticipated” affect, where thoughts or associations or expectations lead to positive feelings (e.g., in our study, this would be represented by the condition in which we presented the brand name), and “anticipatory” affect, where presence of an affective stimulus evokes immediate affect (e.g., as where our participants tasted a refreshing tea). If such a distinction did exist, then it might be expected that the branded and unbranded tea would have evoked the same evaluation or, if different, that the presence of the brand name would only have affected the explicit measures of affect but not the implicit. In contrast, the results showed that people’s responses to the same tea differed, depending on presence or absence of the brand name, and that the implicit measure reflected this factor, brand name (as did the explicit rating of “refreshingness”).

The similarity of the results obtained on implicit and explicit measures, then, raises the question of why to bother with implicit measures of affect, rather than relying on direct questions about affect or products. Our point here is a simple one: It is that implicit affect measures are more versatile and can be used in more different circumstances, are less likely to disrupt the affect itself by focusing people’s attention on their feelings and the experimenter’s motives for asking about their feelings, are less likely to disrupt subsequent performance, and are not as

subject to influences other than affect. Thus, especially if one wants to verify an affect induction, or wants to assess people's responses to products, implicit measures allow those assessments more validly, more unobtrusively, and at more appropriate, and possibly even repeated, times during the session than do explicit measures.

In this way, implicit measures may be truer indicators of the affect that has been induced than are explicit measures, but we want to point out that we are not suggesting that they reflect a different *type* of affect. We are speaking of implicit measures of affect, not proposing a concept of implicit affect; and, in fact, our data suggest, if anything, that there are not two different types of positive affect, implicit and explicit, governed by different rules and responsive to different conditions. It is always possible that such different types of affect will be established at some later time, but for now it does not seem appropriate to draw such a conclusion.

## REFERENCES

- Aaker, David A. (1991), *Managing Brand Equity*. The Free Press.
- Ashkanazy, Neal (forthcoming), "Emotions in Organizations: A Multilevel Perspective," in *Research in Multi-Level Issues*. F. Dansereau and F. J. Yammarino (Eds.). Greenwich, CT: JAI Press.
- Baron, Reuben M. and David A. Kenny (1986), "The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations," *Journal of Personality and Social Psychology*, 51 (December), 1173-1182.
- Barone, Michael J., Paul W. Miniard, and Jean B. Romeo (2000), "The influence of positive mood on brand extension evaluations," *Journal of Consumer Research*, 26 (March), 386-400.
- Cacioppo, John T, Richard E. Petty and Chuan F. Kao (1984), "The efficient assessment of need for cognition," *Journal of Personality Assessment*, 48 (June), 306-307.
- Carroll, Marie and Kim Kirsner (1982), "Context and Repetition effects in lexical decision and recognition memory," *Journal of verbal learning and verbal behavior*, 21 (February), 55-69.
- Erez, Amir and Alice M. Isen (2002), "The Influence of Positive Affect on the Components of Expectancy Motivation," *Journal of Applied Psychology*, 87 (December), 1055-1067.
- Estrada, Carlos A., Alice M. Isen, and Mark J. Young (1994), "Positive affect influences creative problem solving and reported source of practice satisfaction in physicians," *Motivation and Emotion*, 18 (December), 285-299.

- , ---- , and ---- (1997), "Positive Affect Facilitates Integration of Information and Decreases Anchoring in Reasoning Among Physicians," *Organizational Behavior and Human Decision Processes*, 72 (October), 117-135.
- Fazio, Russel H., David M. Sanbonmatsu, Martha C. Powell, and Frank R. Kardes (1986), "On the automatic activation of attitudes," *Journal of Personality and Social Psychology*, 50 (February), 229-238.
- , Joni R. Jackson, Bridget C. Dunton, and Carol J. Williams (1995), "Variability in automatic activation as an unobtrusive measure of racial attitudes: A bona fide pipeline?" *Journal of Personality and Social Psychology*, 69 (December), 1013-1027.
- Fishbein, Martin and Icek Ajzen (1974), " Attitudes towards objects as predictors of single and multiple behavioral criteria," *Psychological Review*, 81 (January), 59-74.
- Graf, Peter, George Mandler and Patricia Haden (1982), "Simulating amnesic symptoms in normal subjects," *Science*, 218 (4578), 1243-1244.
- Isen, Alice M. (1970), "Success, failure attention and reactions to others: The warm glow of success," *Journal of Personality and Social Psychology*, 15(4), 107-112.
- (1987), "Positive affect, cognitive processes and social behavior," In L. Berkowitz (Ed.), *Advances in experimental social psychology*, 203-253. New York: Academic.
- (1999), "Positive affect," In T. Dagleish and M. Power (Eds.), *Handbook of Cognition and Emotion*, Sussex, England: Wiley, 521-539.
- (2001), "An Influence of Positive Affect on Decision Making in Complex Situations: Theoretical Issues with Practical Implications," *Journal of Consumer Psychology*, 11 (September), 75-85.

- and Kimberly A. Daubman (1984), "The influence of affect on categorization," *Journal of Personality and Social Psychology*, 47 (December), 1206-1217.
- , ----, and Joyce M. Gorgoglione (1987), "The influence of positive affect on cognitive organization: Implications for education," In R.E. Snow and M.J. Farr (Eds.), *Aptitude, Learning, and Instruction*, 143-164). Hillsdale, NJ: Lawrence Erlbaum Associates.
- , ----, and Gary P. Nowicki, (1987), "Positive Affect Facilitates Creative Problem Solving," *Journal of Personality and Social Psychology*, 52 (June), 1122-1131.
- and N. Geva (1987), "The Influence of Positive-Affect on Acceptable Level of Risk: The Person with a Large Canoe has a Large Worry," *Organizational Behavior and Human Decision Processes*, 39 (April), 145-154.
- , Mitzi Johnson, Elizabeth Mertz, and Gregory Robinson (1985), "The influence of positive affect on the unusualness of word associations," *Journal of Personality and Social Psychology*, 48 (June), 1413-1426.
- and Barbara Means (1983), "The influence of positive affect on decision-making strategy," *Social Cognition*, 2 (1), 18-31.
- , Thomas Shalcker, Margaret Clark, and Lynn Karp (1978), "Affect, accessibility of material in memory, and behavior: A cognitive loop?" *Journal of Personality and Social Psychology*, 36 (January), 1-12.
- Kahn, Barbara and Alice M. Isen (1993), "The influence of positive affect on variety-seeking among safe, enjoyable products," *Journal of Consumer Research*, 20 (September), 257-270.
- Kawakami, Kerry, Kenneth L. Dion, and John F. Dovidio (1998), "Racial prejudice and stereotype activation," *Personality and Social Psychology Bulletin*, 24 (April), 407-416.

- Keller, Kevin L (1998), *Strategic Brand Management, Building, Measuring, and Managing Brand Equity*, New Jersey: Prentice-Hall Inc.
- McKoon, Gail and Roger Ratcliff (1995), "Conceptual combinations and relational contexts in free association and in priming in lexical decision and naming," *Psychonomic Bulletin and Review*, 2 (December), 527-533.
- Mednick, Martha, Sarnoff Mednick and Edward Mednick (1964), "Incubation of creative performance and specific associative priming," *Journal of Abnormal and Social Psychology*, 69(1), 84-88.
- Neely, James H. (1976), "Semantic priming and retrieval from lexical memory: Evidence for facilitatory and inhibitory processes," *Memory and Cognition*, 4 (September), 648-654.
- (1977), "Semantic priming and retrieval from lexical memory: Roles of inhibitionless spreading activation and limited-capacity attention," *Journal of Experimental Psychology: General*, 106 (September), 226-254.
- Richardson-Klavehn, Alan and Robert A. Bjork (1988), "Measures of memory," *Annual Review of Psychology*, 39, 475-543.
- Roehm, Michelle and Brian Sternthal (2001), "The Moderating Effects of Knowledge and Resources on the Persuasive Impact of Analogies," *Journal of Consumer Research*, 28 (September), 257-272.
- Schacter, Daniel L. (1987), "Implicit Memory: history and current status," *Journal of Experimental Psychology: Learning, Memory, Cognition*, 13 (July), 501-518
- Schwarz, Norbert and Gerald L. Clore (1983), "Mood, misattribution, and judgments of well-being: Informative and directive functions of affective states," *Journal of Personality and Social Psychology*, 45 (September), 513-523.

- Shapiro, Stewart (1999), "When an ad's influence is beyond our conscious control: Perceptual and conceptual fluency effects caused by incidental ad exposure," *Journal of Consumer Research*, 26 (June), 16-36.
- Staw, Barry M and Sigal G. Barsade (1993), "Affect and managerial performance: A test of the sadder-but-wiser vs. happier-and-smarter hypotheses," *Administrative Science Quarterly*, 38 (June), 304-331.
- Tulving, Endel and Daniel L. Schacter (1990), "Priming and human memory systems," *Science*, 247(4940), 301-306.
- Webb, Eugene J, Donald T. Campbell, Richard D. Schwartz, and Lee Sechrest (1966), *Unobtrusive measures: Nonreactive research in the social sciences*, Oxford, England: Rand McNally.
- Weiss, Howard M., Jeffery P. Nicholas and Catherine S. Daus (1999), "An examination of the joint effects of affective experiences and job beliefs on job satisfaction and variations in affective experiences over time," *Organizational Behavior and Human Decision Processes*, 78(1), 1-24.
- Zajonc, Robert B (1968), "Attitudinal Effects of Mere Exposure," *Journal of Personality and Social Psychology*, 9(2), 1-27.

TABLE 1

MEAN NUMBER OF REMOTE ASSOCIATE ITEMS ANSWERED CORRECTLY, AND  
 MEAN PLEASANTNESS AND UNCOMMONNESS SCORES OF “H” WORDS  
 (STANDARD DEVIATIONS IN PARENTHESES)

	Control (n= 14)	Gift (n= 15)	Water (n= 18)	Brand A (n= 15)	Control Combined (n= 32)	Affect Combined (n= 30)
Number of RAT items correct	.29 (.47)	1.13 (1.58)	.50 (.70)	1.00 (1.06)	.41 (.60)	1.07 (1.33)
Pleasantness of Associates	.09 (.15)	.20 (.17)	.09 (.16)	.17 (.14)	.09 (.15)	.19 (.16)
Uncommonness of Associates	.13 (.13)	.32 (.19)	.22 (.24)	.28 (.18)	.18 (.21)	.30 (.19)

NOTE: RAT scores range from 0-7 correct. Mean Pleasantness and Uncommonness of Associates Scores, based on completion of five “H” fragments, range from 0-1, with higher scores indicating more rated pleasantness or unusualness.

TABLE 2

MEAN NUMBER OF REMOTE ASSOCIATE ITEMS ANSWERED CORRECTLY, AND MEAN PLEASANTNESS AND UNCOMMONNESS SCORES OF FIRST ASSOCIATES TO FIVE NEUTRAL WORDS (STANDARD DEVIATIONS IN PARENTHESES)

	Control (n = 10)	Gift (n = 12)	Brand A (n = 12)	Brand B Unbranded (n = 13)	Brand B Branded (n = 12)	Affect Combined (n = 36)
Number of RAT items correct	1.60 (.97)	2.83 (1.59)	2.92 (1.93)	1.92 (1.32)	2.92 (1.38)	2.89 (1.60)
Pleasantness of Associates	.12 (.10)	.37 (.24)	.27 (.20)	.06 (.10)	.22 (.16)	.28 (.20)
Uncommonness of Associates	.16 (.16)	.33 (.21)	.40 (.31)	.18 (.17)	.27 (.16)	.33 (.23)

NOTE:

1. RAT scores range from 0-7. Mean Pleasantness and Uncommonness of Associates Scores, based on first associate to each of 5 neutral words, range from 0-1, with higher scores indicating more rated pleasantness or unusualness.

2. “Affect Combined” includes Gift, Brand A and Brand B Branded only, because Brand B Unbranded failed to induce affect.

TABLE 3

MEAN RATINGS ON IMPLICIT AND EXPLICIT AFFECT SCALES (STANDARD DEVIATIONS IN PARENTHESES), FOR PARTICIPANTS IN POSITIVE OR NEUTRAL AFFECT

	Neutral Affect	Positive Affect
Implicit Measure	3.30 (1.05) n = 38	3.97 (.85) n = 36
Explicit Measure	4.62 (1.48) n = 38	5.13 (.93) n = 36

NOTE: The Implicit Measure is the averaged pleasantness rating for two neutral words “table” and “pencil” which were taken immediately after the affect induction. Pleasantness was measured for each word on a seven-point Likert scale, where 1= “not at all” and 7 = “extremely.” For the explicit measure, taken on conclusion of the session, entries are the average of four ratings on seven-point Likert scales, in response to the four mood items, sad (1)-happy (7), bad (1)-good (7), irritable (1)-pleased (7), and depressed (1)-cheerful (7).

TABLE 4  
 MEAN RATING ON IMPLICIT AND EXPLICIT AFFECT SCALES (STANDARD  
 DEVIATIONS IN PARENTHESES) FOR PARTICIPANTS WHO SCORED ABOVE OR  
 BELOW THE MEAN ON THE INTERVENING MEMORY TASK, BY CONDITION

	Neutral Affect		Positive Affect	
	High Performance	Low Performance	High Performance	Low Performance
Implicit Measure	3.36 (.93) n = 15	3.26 (1.15) n = 23	4.13 (.95) n = 15	3.87 (.79) n = 21
Explicit Measure	5.51 (1.01) n = 15	4.04 (1.47) n = 23	5.20 (1.13) n = 15	5.09 (.78) n = 21

NOTE: The Implicit Measure is the averaged pleasantness rating for two neutral words “table” and “pencil” which were taken immediately after the affect induction. Pleasantness was measured for each word on a seven-point Likert scale, where 1= “not at all” and 7 = “extremely.” For the explicit measure, taken at the end of the session, entries are the average of four ratings on seven-point Likert scales, in response to the four mood items, sad (1)-happy (7), bad (1)-good (7), irritable (1)-pleased, and (7), depressed (1)-cheerful (7).