

CONSUMER SENSES

Measuring Implicit Associations with Non-Visual Sensory Stimuli:

An Example Using Tropical Fragrances

By Paul Conner, Dr. Keith Payne, and Danny Blatt

System 1 is all the rage.^{4,6,8} It's activating a lot of dopamine within behavioral sciences and marketing, which is interesting because dopamine is an important ingredient within System 1 itself!

Another word for System 1 is implicit, more formally implicit processing. Implicit processing is what automatically happens in our peripheral and central nervous systems (commonly known as our bodies and brains) when we encounter external or internal stimuli. From social psychology, "automatic" associated with implicit processing means that it happens quickly, unintentionally, uncontrollably, and in some way non-consciously.⁴⁸

In consumer research and marketing, System 1 is important because it influences many purchase decisions. Consumers are often unaware of why they bought something or, when completing traditional "explicit" consumer research surveys, they may be unwilling to admit why they bought something because it might be socially unacceptable. In addition, consistency between explicit and implicit reactions can help create ease of processing (cognitive fluency) in consumers' minds, facilitating choice and satisfaction in both spontaneous and deliberative buying situations. Given these findings, implicit data collection is important, and consumer researchers are starting to develop and incorporate implicit association measurement techniques into their toolboxes.

One such technique that Emotive Analytics has adapted is the Affect Misattribution Procedure (AMP)¹⁹, developed by Dr. Keith Payne at the University of North Carolina. The AMP has over 10 years of use and has amassed impressive credentials.⁹

In any implicit association technique, a stimulus of interest (SOI) is presented followed by one of a variety of response tasks, which, for the measurement to be truly implicit, has to be "indirect." This means that respondents

cannot evaluate the SOI directly (no matter how fast they're responding to it), otherwise the reaction being measured is explicit.

Speaking of SOIs, the vast majority of SOIs in implicit studies — at least consumer research implicit studies — are visual. Respondents "see" the SOI, which serves as an implicit prime in the response task. Examples include brand names or logos, print or video ads (which obviously involve sound, too), package designs, slogans or short messages, and pictures of celebrities. However, important product- or brand-related stimuli are not always visual. The smell, taste, touch, and sound of many products are critical to their value and ultimate purchase.

Therefore, for a client in the formative stages of seeking a fragrance with a livelier, more energetic appeal, and who was savvy to the importance of implicit influences, we ventured to see if implicit emotional associations are activated and can be measured from the sense of smell. In this study, we sought answers to two important questions:

1. Are different fragrances implicitly associated with different emotions and feelings?
2. If so, how do these implicit associations align with explicit associations with the same emotions and feelings?

About the Authors

Paul Conner (CEO, Emotive Analytics, www.emotiveanalytics.com, paul@emotiveanalytics.com) founded Emotive Analytics in 2004 to assess the emotional dynamics of consumer behavior — including those that are nonconscious. Techniques used include implicit association measurement and various personal interviewing techniques adapted from clinical psychology design.

Keith Payne, Ph.D. (Professor of Psychology & Neuroscience, University of North Carolina, bkpayne@email.unc.edu) specializes in unconscious thought & implicit techniques, notably developing the Affect Misattribution Procedure. He won the International Social Cognition Network Early Career Award and the SAGE Young Scholars Award, and, along with Dr. Bertram Gawronski, is co-author and editor of the Handbook of Implicit Social Cognition.

Danny Blatt (SVP Research Services, Q Research Solutions, www.qrsglobal.com, DannyB@qrsglobal.com) has experience in both FMCG manufacturing and the Flavor and Fragrance industry, and has worked across many categories including Beverages, Ice Cream, Laundry, and Personal Care. He believes that deep consumer insights are key to developing amazing products that delight consumers.

These questions were important because, in addition to helping our client, answering them would open the door for implicit studies that involve non-visual stimuli, whatever that sense may be — smell, sound, taste, or touch. Such studies would expand implicit research applications beyond branding, advertising, communications, and pricing (to name a few) and into sensory product development.

Q Research Solutions (QRS) and Emotive Analytics worked together on this study, with the help of research scientists representing both companies, including Dr. Payne on the Emotive Analytics team. The study was designed and conducted as follows:

- Respondents qualified as users of household air fresheners.
- They were invited to QRS's consumer sensory lab, utilizing state-of-the-art fragrance dispensing and measurement tools.
- When they arrived at the lab, they evaluated four different tropical fragrances (in counter-balanced order) for various explicit hedonics (e.g., overall appeal, strength of fragrance, appeal of fragrance strength) and for whether each fragrance explicitly conveyed ten emotional attributes: happy, sexy, energized, refreshed, comforted, relaxed, content, bored, sad, and irritated.^{3,4}
- Along with the traditional explicit procedure, however, an adapted version of the AMP was incorporated.
- It was positioned as a separate study, conducted by a different research group, but interested in the same attributes as those studying the fragrances.
- In the AMP response tasks, one of the four fragrances was present, serving as the SOI prime, but respondents were asked to evaluate a series of Chinese pictographs in terms of what attributes they conveyed (obviously, the same attributes used in the explicit evaluations).³
- Standardized scores were derived for the explicit and implicit associations of the fragrances with the attributes so that they could be compared.

What were the results?

"Fragrance Profiles" showing explicit and implicit attribute associations for each fragrance were developed, as were "Attribute Profiles" showing explicit and implicit fragrance associations for each attribute.

The Fragrance Profiles (i.e., the attribute associations for each fragrance) showed relatively strong positive correlations between the explicit and implicit attributes. In other words, automatic implicit associations with the fragrances were relatively consistent with deliberated explicit associations. However, differences between the explicit and implicit attribute associations were seen for the emotional attributes "comforted" and "relaxed". Specifically, all four fragrances showed relatively strong explicit associations with comforted and relaxed, but relatively weak implicit associations. Illustrated by Figure 1, a scatterplot of standardized explicit and implicit association scores, this pattern was most pronounced for Fragrance 822. Notice that comforted and relaxed associations (which were equal, shown by overlapping points) fell within the quadrant representing relatively high explicit associations and relatively low implicit associations.

The Attribute Profiles (i.e., the fragrance associations for each attribute) revealed additional insights. Specifically, six of the ten attributes — happy, sexy, energized, comforted, content, and bored — showed strong negative correlations between the explicit and implicit associations. In other words, fragrances with relatively strong explicit associations for these attributes showed relatively weak implicit associations, and vice versa.

Figures 2-4 show the scatterplots for the attributes with the strongest negative correlations between the explicit and implicit associations — happy (-.93), sexy (-.77), and energized (-.68). The general downward-to-the-

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right direction of the fragrances' positions in the scatterplots reflects these negative correlations. Again, fragrances stronger in explicit associations with these attributes were generally weaker in implicit associations, and vice versa.

Why is this important?

Consistency between explicit and implicit responses is desired for most products and product attributes, especially for hard-to-articulate attributes like fragrance. Consistency allows marketers to avoid developing "dual" campaigns with different messages for implicit and explicit situations. This, in turn, helps them simplify and focus their marketing strategies and executions.

Our results, and our approach in general, are important in two ways:

- First, they helped our client (again, who was in formative development of these fragrances) see that only following explicit reactions would have led them to choose a fragrance that was misaligned with their strategy (wanting a livelier, more energetic fragrance) in implicit, non-deliberating situations (which are common for fragrances). Specifically, they would have chosen Fragrance 650, which was explicitly strong, but implicitly weak for their strategic attributes.
- Second, and more generally, our study demonstrates that implicit emotional associations can be measured for non-visual sensory stimuli, which is relatively uncommon in consumer research today. This can move manufacturers and marketers to add this important type of research to their product development and marketing processes, allowing them to address consumer reactions and behavior more comprehensively.

By applying implicit association measurement to sensory stimuli, we hope we've stoked the System 1 fire a bit, allowing it to continue burning and shed new light on sensory product development.

References

- 1 Stanovich (1999) is credited with introducing the terms System 1 and System 2 and Kahneman (2011) is credited with popularizing them.
- 2 The emotional attributes were ultimately chosen by the client to align to their marketing strategies. Their choice was guided by Russell's Circumplex Model of Affect.
- 3 Since respondents did not speak or read Chinese, these pictographs had little explicit meaning to them. Therefore, although the respondents were not evaluating the fragrances directly, differences in their evaluations of the pictographs would be due to implicit associations with the fragrances.
- 4 Stanovich, K.E. (1999). Who is rational? Studies of individual differences in reasoning. Mahwah, NJ: Erlbaum.
- 5 Kahneman, D. (2011). Thinking, fast and slow. New York: Farrar, Straus & Giroux.
- 6 Gawronski, B. and De Houwer, J. (2014). Implicit Measures in Personality and Social Psychology. In H.T. Reis and C.M. Judd (Eds.), Handbook of Research Methods in Social and Personality Psychology, 2nd edition. New York: Cambridge University Press.
- 7 Payne, B.K., Cheng, C.M., Govorun, O., and Stewart, B.D. (2005). An inkblot for attitudes: Affect misattribution as implicit measurement. Journal of Personality and Social Psychology, 89(3), 277-293.
- 8 Payne, B.K. and Lundberg, K. (2014). The Affect Misattribution Procedure: Ten Years of Evidence on Reliability, Validity, and Mechanisms. Social and Personality Psychology Compass 8/12: 672-686, 10.1111/spc3.12148.
- 9 Russell, J.A. (1980). A Circumplex Model of Affect. Journal of Personality of Social Psychology, Vol. 39, No. 6, 1161-1178.

