

Proust phenomenon

Literature



**ASSIGN
BUSTER**

The “ Proust phenomenon” is based on the belief that odors form connections to memories that feel more vivid and emotional than those elicited by other senses. The French novelist Marcel Proust described his reaction when he tasted a petite Madeleine pastry soaked in tea, and was strangely and instantly filled with immense joy, whereupon the long-forgotten memory of his childhood experiences at his aunt’s house in the country came flooding back to him (Proust, 1919).

In a manner consistent with Proust’s observation that olfactory stimuli can enhance or cue memory of events, previous research has shown that learning/memory may be enhanced when an olfactory stimulus is added to the instructional environment. When studying memory, researchers typically utilize either recognition or recall tasks. Recognition tasks require the person to identify (i. e. , recognize) a stimulus from an array of stimuli whereas recall tasks require the person to “ remember” a stimulus without extra-stimulus prompts.

The difficulty in conducting memory experiments with odors is largely due to the fact that odor perception is idiosyncratic, situational, contextual, and ecological. Odors are not stored in memory as unique entities but are interrelated with other sensory perceptions such as taste, cutaneous, visual, auditory, and thermal stimuli. Unlike sensations of sounds and colors, odors cannot be isolated and simple identified by their own idiosyncratic names. As one example of the difficulties in identifying and naming odors, previous research has found sex differences in odor naming (Engen, 1991).

The difficulty comes from discerning whether these observed differences are due to true odor detection differences between males and females or to female's general tendency toward more efficient utilization of linguistic skills (either or both of which may be biologically based and are discussed in greater detail in later paragraphs). Thus, the question may not necessarily be whether males have effective odor recall or recognition but whether they have the appropriate naming skills that allow them to demonstrate odor memory or odor enhanced memory. To explain how odors influence recall and recognition (i. e. memory), researchers generally rely on the principle of cue dependent memory.

The theory of cue-dependent memory posits that a cue that is present during learning can prompt recall of the learned information (Godden & Baddeley, 1975). Herz (1997) support this theory but calls it the encoding specificity principle (Tulving, 1983) rather than cue-dependent memory. This principle states that for an environmental cue to be effective, the cue must be present at both the encoding and retrieval sessions. Thus, an odor used as a cue for memory should only be effective if the same odor is present at both the encoding and retrieval sessions.

Results from a study by Cann and Ross (1989) supported that cue dependent hypothesis and found that creating a context whereby an olfactory cue that was present during both acquisition and recall improved recognition. As another example, Aggleton and Waskett (1999) used cue-dependent theory to explain the effect of re-exposure to uniquely experienced odors.

Participant's ability to recall details about a museum visit with novel odors, a

control set of smells to cue recall of details, or no smell to cue recall was measured.

They found a significant improvement in the participant's recall of details when re-exposed to the specific odors (cues). However, a limitation of this study was that the unique smells (burnt wood, apples, rubbish acrid, beef, fish market, rope/tar, and earthy) were easily related to the answers sought from the questionnaire (e. g. , types of foods eaten, the nature of the buildings, and the classes of items sold in the display). That is, the questionnaire may have cued recall of items instead of the odors themselves.

Perhaps a better method would have been to expose the participants to the odors and have them freely recall as many details as possible without providing additional cues. It is hypothesized that certain odors elicit specific physiology responses in an organism that directly affects memory or performance. For instance, peppermint is believed to have “ alerting” qualities while lavender is thought to have “ relaxing” effects. There is research to support the use of peppermint to increase performance on repetitive tasks (e. g. , Barker et al. , 2003; Sullivan et al. , 1998) and memory tasks (e. g. Hertz, 1997a).

Conversely, Gould and Martin (2001) found no difference between peppermint, no odor and bergamot, another odor with purported to be a relaxing aroma, it has been shown to improve performance on clerical tasks (Howard, 2000) and decrease reaction time (Millott, et al. , 2002), which is inconsistent with a relaxation as it decreased performance on arithmetic

problems and did not improve word recall (Ludvigson & Rottman, 1989). Regarding the effects of specific odors on memory, Herz (1997a; 1997b) suggested that distinctiveness of ambient odors determines their effectiveness as a retrieval cue.

The distinctiveness of an odor is determined by its novelty (familiarity) and contextual appropriateness. Hertz also noted that the contextual appropriateness of an odor was a better determinant of odor cue distinctiveness than odor novelty. For example, a contextually inappropriate odor (peppermint) resulted in better recall of information than did the contextually appropriate odor (clean fresh pine). Osmanthus, a fragrance that satisfies all criteria for distinctiveness, has been shown by Herz in a couple of studies to be superior to other aromas for improving word recall.

Despite the seeming importance of odor distinctiveness for recall (memory), it may not be necessary for boosting performance on other types of tasks as researchers have found the scent of lemon, a very common fragrance, to result in enhanced functioning on anagram tasks (Baron & Thomley, 1994) and clerical tasks (Howard, 2000). The results from the Butler and Watson (2002) study supported the hypothesis that odors could enhance recall of previously learned information. Further, it appeared that some odors were more effective than others (osmanthus appeared to be the most effective).

In addition, these findings on an educationally relevant task were generally consistent with those of previous research on various tasks. Because certain odors were shown to enhance delayed recall, the next step was to determine if the same odor had to be present at both the encoding and delayed recall

session to enhance delayed recall. In other words, are there odor-specific effects such that the idiosyncratic properties of certain odors are more effective at enhancing recall, or is it that the mere presence of an odor enhances recall?

This was the question that formed the basis for the current study.

Participants A total of 30 participants were recruited from undergraduate psychology and educational psychology classes. Of these, 15 were male and 15 were female. The average age was 20.2 years (range, 17-48 years). There were 7 African-Americans, 22 Caucasians, and 1 other. Seven freshmen, 2 sophomores, 16 juniours, and 5 seniors participated in the current study. The mean GPA for the five experimental conditions ranges from 2.99-3.20, on a four point scale.

For more complete demographic information for participants by experiment condition, please see Table 1. Chi-square tests were used to determine whether the observed values deviated significantly on these variables. Analysis of variance (ANOVA) for GPA by experimental condition was not significant. Random assignment may have resulted in greater equivalency between the experimental conditions, but was not used because of the difficulty of scheduling randomly assigned college students participants in prearranged time slots.

However, given that there is either contradictory evidence (i. e. , gender) or no evidence from previous literature (i. e. , ethnicity and class) indicating differential effects of olfactory stimuli based on these variables, these significant chi square values were not viewed as problematic. Material and

Measures Odors. The odors used in the present study were lavender favor's plug-in-freshener to give a room a scent and another room has no scent/odor. Novel Word List

The word list used in the present study was a group of 20 novel animal names taken from a face-name mnemonic techniques study (Carney & Levin, 2001) and used in Butler & Watson (2002). All words were nouns between four and nine characters in length (see Appendix A). Demographic Questionnaire A basic demographic questionnaire was designed for this study. In addition to questions regarding race, age, etc. , other questions asked participants to indicate any physical conditions that might be related to odor perception (e. g. , allergies, colds, sinusitis) (see Appendix B).

Odor Perception Questionnaire This questionnaire, given at the delayed recall session, probed for odor recognition, description on the odor, distractibility of the odor, and a prediction as to how the odor affected their ability to recall the animal names. General questions also included if the participant perceived the odor to be the same for both conditions, if the words were practiced between the sessions, how many words they thought they correctly recalled at delayed recall, how they rate their ability to smell, and if they smoked cigarettes (See Appendix C).

Participants were not eliminated from the study due to conditions such as colds, sinusitis, or being a current smoker. These data were collected for future analysis and were not used for the current study. Immediate and delayed Recall Forms. Recall of the novel word list was measured at two different times: immediate and delayed (see Appendix D). In the immediate

recall session, participants recalled the animal names on a sheet of paper with 20 blanks and directions to print the words that they learned at the beginning of the session.

The directions stated that the words did not have to be in any specific order and to spell the words the best that they could. In the delayed recall session, which occurred 48 hours after the immediate recall session, participants were instructed to recall the animal names on a sheet of paper with 20 blanks. The same rules were in effect for order and spelling was errorless. Items were scored as correct or incorrect with no partial credit awarded. Two graduate students independently scored 33% of the immediate and delayed recall sheets. Agreement was identified as both scores indicating the entire word was spelled correctly.

Agreement was calculated for each recall sheet by dividing the lower number of words scored as correctly spelled by the higher number of words scored as correctly spelled with the result multiplied by 100%. For example, if one scorer counted 14 words correct and the other scorer counted 16 words correct on the same sheet, 14 would be divided by 16 (equaling . 875), and the . 875 would be multiplied by 100% yielding an agreement for that sheet 87. 5%. Agreement ranged from 95% to 100% and averaged 98% across both immediate and delayed recall sheets.