Positivity Can Cue Familiarity

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Positivity Can Cue Familiarity

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Given that familiarity is closely associated with positivity, the authors sought evidence for the idea that positivity would increase perceived familiarity. In Experiment 1, smiling and thus positively perceived novel faces were significantly more likely to be incorrectly judged as familiar than novel faces with neutral expressions. In Experiment 2, subliminal association with positive affect (a positively valenced prime) led to false recognition of novel words as familiar. In Experiment 3, validity judgments, known to be influenced by familiarity, were more likely to occur if participants were in happy mood states than neutral mood states. Despite their different paradigms and approaches, the results of these three studies converge on the idea that, at least under certain circumstances, the experience of positivity itself can signal familiarity, perhaps because the experience of familiarity is typically positive.

Keywords: *familiarity; positivity; affect; recognition; heuristic*

Repeated exposure to stimuli generates positive affect. Repeated exposure has long been known to increase preference for the reexposed stimulus itself (Zajonc, 1968; see Bornstein, 1989, for a review) and for other similar stimuli (Gordon & Holyoak, 1983). Repeated exposure also generates more general positive affect, influencing preferences for subsequently presented stimuli from quite different categories (Garcia-Marques, 1999; Garcia-Marques & Mackie, 2000; Monahan, Murphy, & Zajonc, 2000). In addition, a repetition-induced sense of familiarity has been shown to produce more positive types of judgments in general; that is, the more familiarity, the more validity, fame, ease, and so forth, but not the more falsehood, ignominy, and difficulty (for an exception, see Mandler, Nakamura, & Van Brandt, 1987). Finally, repetition appears to generate a diffuse positive affect that leads individuals to report being in better moods when they are exposed to familiar material either supraliminally (Garcia-Marques, 1999; Garcia-Marques, & Mackie, 2000; Harmon-Jones & Allen, 2001) or subliminally (Monahan et al., 2000).

Positive affect is not, of course, the only consequence of repetition. In the memory literature, repetition has been shown to generate a feeling—whether conscious or unconscious—that the repeated stimulus has been encountered before. This phenomenological reaction, which has been loosely referred to as a feeling of familiarity (Schwarz & Clore, 1996; Smith, 2000), is highly associated with the dynamic nature of (re)processing a particular previously seen stimulus known as "fluency of processing" or "perceptual fluency" (Bornstein & D'Agostino, 1994; Jacoby & Dallas, 1981; Jacoby & Whitehouse, 1989; Reber, Winkielman, & Schwarz, 1998; Winkielman & Cacioppo, 2001). Evidence for the idea that fluency underlies the feeling of familiarity and the use of memory as a tool in recognition judgments (Jacoby, Allan, Collins, & Larwill, 1988; Jacoby & Dallas, 1981; Jacoby & Whitehouse, 1989) comes from experiments that show that the artificial enhancement of fluency affects judgments of recognition (Kelley & Jacoby, 1990; Lindsay & Kelley, 1996; Rajaram, 1993). Studies

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also suggest that the experience of familiarity is relatively easily (mis)attributed to other features of stimuli: The more familiarity, the more perceived validity (Begg & Armour, 1991), fame (Jacoby, Kelley, Brown, & Jasechko, 1989), ease (Jacoby et al., 1988), and so forth. This feeling of familiarity appears to be relatively fleeting, diffuse, and not easily distinguished from other feelings (Carlson & Hatfield, 1992; Clark, 1982; Jacoby & Kelley, 1987, 1990; Mandler, 1962; Schwarz, 1990; Truax, 1984).

Repeated exposure has thus been shown to produce both a "feeling of positive affect" and a "feeling of familiarity." We have argued elsewhere (Garcia-Marques, 1999; Garcia-Marques & Mackie, 2000) that the subjective feeling of familiarity that occurs as the result of a match between rudimentary stimulus processing and the contents of memory is experienced as a facilitation in processing that has a positive valence; that is, the experience of familiarity, whether conscious or unconscious, is inherently charged or imbued with positive affect. This view is consistent with some earlier descriptions of familiarity as a "pleasant feeling" (Tichener, 1910), as "a feeling with a positive affective tone" (Pittman, 1992), and as a "subjectively positive experience" (Jacoby & Kelley, 1990; Jacoby, Kelley, & Dywan, 1989).

If the subjective experience of repeated exposure is inherently charged or imbued with positive affect, then positivity itself may signal familiarity; that is, if positivity is inherently associated with familiarity, then a positive reaction to a stimulus might well be experienced as an indication that the stimulus itself is familiar. Given the diffuse nature of both familiarity and positivity, it is also possible that positivity induced by sources other than repetition might under certain conditions be mistaken for a cue for familiarity. Thus, not only should manipulations of familiarity promote perceived positivity, as has been amply demonstrated, but manipulations that associate positive affect with stimuli should promote perceived familiarity. In this article, we report three studies designed to show such effects. We sought evidence that manipulated positivity generated well-established effects typically associated with manipulations of familiarity. The first two studies tested the hypothesis that associating positivity with a stimulus would affect recognition in the same way that repeating a stimulus does.

EXPERIMENT 1

If positivity signals familiarity, stimuli that evoke a positive affective reaction should be misjudged as familiar more often than stimuli that do not evoke such a reaction. We tested this idea by showing participants faces that were either novel or familiar and either smiling (and thus positive) or not. We hypothesized that novel smiling faces would be misjudged as familiar more often than novel neutral faces.

Method

PARTICIPANTS AND DESIGN

Sixteen University of California, Santa Barbara (UCSB), men participated in exchange for class credit and completed all procedures and measures individually in computer cubicles. The design was a 2 (old vs. new face) × 2 (neutral vs. smiling face) within-subjects factorial design crossed with two counterbalancing factors (the set of faces that was repeated and the set of faces that was smiling were systematically varied). Because the between-subjects counterbalancing factors had no effect in initial analyses, they were not included in further analyses of the results.

STIMULUS PHOTOS

Participants saw a series of color photos (Computer Vision Laboratory Face Data Base, http://www.lrv.fri.uni-lj.si/facedb.html) depicting men in everyday, causal clothing pictured roughly from head to chest. These photos were presented on IBM PCs and appeared as a 5-in. (high) × 7-in. (wide) block on the screen. Because all the faces were male, we used only male participants to avoid cross-gender perception influences.[1]

PROCEDURE

Participants were told that the two-phase study concerned "how people process faces." In the first phase, they saw 24 male faces presented on the computer screen, each for 1 s. The 24 faces were presented in a different random order for each participant; 12 faces were smiling and 12 had a neutral facial expression.

Next, participants engaged in a roughly 8-min filler task. In this task, an outline of the United States appeared on the computer screen and one of the states was highlighted in yellow. Participants were given 10 s to identify and type out the name of the highlighted state. After the 10 s had elapsed, the computer screen advanced and participants were again shown a map of the United States, this time with a different state highlighted. All 50 states were presented in a different random order for each participant.

After the filler task, participants were instructed about the next phase of the experiment. They were then presented with 48 faces, 24 of which were old (had appeared in the first phase) and 24 of which were novel (had not been seen before). Twelve of the old and 12 of the novel faces were smiling, and 12 of the old and 12 of the novel faces had neutral facial expressions. A face appeared on the screen, with the labels "old" and "new" underneath. Participants were instructed to select "old" if they had seen the photo earlier or "new" if they had not. The 48 faces were presented in a different random order for each participant. As noted earlier, there were two

between-subjects counterbalancing factors. The first counterbalancing factor concerned which subset of the photos was repeated. The second counterbalancing factor was the facial expression of each person. Across the cells of this 2 × 2 design, each pictured person was used as a repeated and as a novel face and had either a smiling or neutral facial expression. After making all 48 old/new judgments, participants completed a few demographic questions, were debriefed, thanked, and dismissed.

Results and Discussion

The number of times a face was labeled as "old" was used as the dependent variable in a 2 (old vs. new face) × 2 (neutral vs. smiling face) repeated-measures analysis of variance (ANOVA). The results revealed the typical significant main effect for repetition, $F(1, 15) = 242.47$, $p < .001$, $MSe = 3.06$. On average, 18.38 of the 24 previously seen faces were correctly identified as "old," whereas an average of 4.75 out of the 24 novel faces were falsely recognized. Of direct relevance to our hypothesis, this main effect was qualified by a significant interaction with facial expression, $F(1, 15) = 4.63$, $p = .048$, $MSe = 1.35$. Faces that were in fact familiar (repeated) were correctly recognized at about the same rate regardless of facial expression ($M = 9.06$ smiling and $M = 9.31$ neutral, both out of 12), $t(15) = -0.56$, $p = .580$. As expected, however, novel smiling faces were significantly more likely to be falsely recognized as familiar ($M = 2.875$, both out of 12) than novel neutral faces, ($M = 1.875$, both out of 12), $t(15) = 2.51$, $p = .024$.

Two conclusions can be drawn from these findings. First, perceiving a stimulus as positive significantly increased the probability that the stimulus also seemed familiar. Second, this effect was limited to the perception of novel faces: When other cues existed that allowed participants to make old or new judgments confidently, positivity of the stimulus did not influence those ratings. This finding is consistent with the role of familiarity in recognition judgments—as recollection increases, the role of other cues decreases (Yonelinas, 1997).

These results are consistent with our hypothesis that positivity cues familiarity, perhaps because of the close association between familiarity and positivity. In addition, these results are consistent with those of Baudouin, Gilibert, Sansone, and Tiberghien (2000). In their first experiment, for example, participants saw photos of famous and unknown persons, exhibiting both a smiling and neutral expression. On each trial, participants had to decide as quickly and accurately as possible if the face was "familiar" or "unfamiliar." Their results showed that facial expression had no impact on accuracy for identifying famous faces. However, for unknown faces, participants were more likely to label the face as familiar if it was smiling than if it had a neutral expression.

Because both our participant population and our stimulus materials were male, because the smiling and neutral faces were closely similar but not identical, and because attractiveness might have influenced familiarity ratings, however, we tested our hypothesis again in a second study. Moreover, in this second study, we wanted to make perception of the stimulus as positive much more subtle by making this association unconscious. We achieved this within a completely different experimental paradigm.

EXPERIMENT 2

Jacoby and Whitehouse (1989) demonstrated that enhancing the processing fluency of a novel word (by subliminally priming the word with itself) during a test phase enhances the probability of its false recognition. If the subjective experience of repeated exposure is also positive, as we argue, then subliminally imbuing the word with positive affect also should boost false recognition in the same way.

Our experimental paradigm was based on Murphy and Zajonc's (1993) demonstration of subliminal affective priming: Chinese ideographs preceded by subliminal happy faces are evaluated more positively than ideographs preceded by subliminal sad faces. Their findings show that this technique successfully imbues a stimulus with positive affect, as required to appropriately test our hypothesis. We thus presented participants with novel or repeated words, some of each of which were preceded by subliminally presented positive or neutral stimuli. We expected that stimuli imbued unconsciously with positive affect would be falsely reported as familiar more so than those not associated with positivity.

Method

PARTICIPANTS AND DESIGN

A total of 52 (11 male, 41 female) Portuguese undergraduates participated in a 2 (novel and repeated words) × 2 (positive and neutral prime) × 2 (novel or repeated status of word) × 2 (association of positive or neutral prime with words) factorial design. Unfamiliar (novel) and familiar (repeated) words, primed by either a happy face or a similar but neutral stimulus, defined two within-subjects factors. Which words were deemed old and new and which words were preceded by the positive or neutral prime were completely counterbalanced between subjects.[2]

PROCEDURE

The study was presented as a "memory study," where the "study list" of 30 words was presented for 1 s on a computer screen. The 30 words presented were two of four sets of 15 two-syllable Portuguese words of moderate

familiarity (e.g., *boat*, *necklace*) (see Marques, 1997, for details).

Immediately after studying the list of words, participants performed a filler task. During this task, a European map was presented sequentially 20 times on the computer, and each time, a different country was highlighted accompanied by a list of nine countries. Participants were asked to identify the highlighted country by pressing a key corresponding to what they believed to be the correct answer from the list. This task had a mean duration of 15 min.

In the following "recognition task," participants were presented with a list of 60 words (30 previously presented and 30 novel words). They were required to press one key if the word presented on the screen was "new" and a different key if the word was "old." Half of each set of words was immediately preceded by the subliminal (under 12 ms) presentation of either a happy face (☺) or a circle with no details (◯). The diameter of these primes was 3 cm. Pretesting had established that the presentation of these two stimuli was associated with different mood ratings both in a supraliminal condition (happy $M = 6.28$, circle $M = 5.09$), $t(91) = 2.65$, $p < .005$, and a subliminal condition (happy $M = 6.53$, circle $M = 4.71$), $t(85) = 5.12$, $p < .001$, confirming the affective consequences of the manipulation. Words were presented in a circle to completely mask the prime.

Results and Discussion

The number of times participants judged a word to be "old" was analyzed in the mixed ANOVA model associated with the complete design. The results revealed the typical significant main effect for repetition, $F(1, 48) = 171.64$, $p < .0001$, $MSe = 4.87$. On average, 21 of the 30 previously seen words were correctly identified as old, whereas an average of 13 out of the 30 novel words were falsely recognized. Of direct relevance to our hypothesis, this main effect was qualified by a significant interaction with prime valence, $F(1, 48) = 6.47$, $p < .014$, $MSe = 3.36$. Words that were in fact familiar were correctly recognized as such at about the same rate regardless of priming, $F(1, 48) = 2.13$, $p < .15$ (M neutral = 10.72 and M positive = 10.25). As expected, however, novel words primed with happy faces were significantly more likely to be falsely recognized as familiar ($M = 6.89$) than novel words primed with a neutral stimulus ($M = 5.97$), $F(1, 48) = 4.67$, $p < .035$ (see Figure 1).[3]

These results suggest that the association of a positive experience with a novel neutral stimulus was interpreted as if the stimulus were in fact familiar. Thus, positivity apparently signaled familiarity just as actual familiarity, induced through repetition, signaled familiarity, and both increased recognition. Replicating the results of Experiment 1, familiar stimuli were less susceptible to the affect manipulation, suggesting that affective activation does not add anything to an already present feeling of familiarity (Yonelinas, 1997). The two studies thus show the predicted effect emerging with different stimuli (faces in Experiment 1, words in Experiment 2) with the positivity either inherent (Experiment 1) or associated (Experiment 2) with the stimulus and either conscious (Experiment 1) and unconscious (Experiment 2).

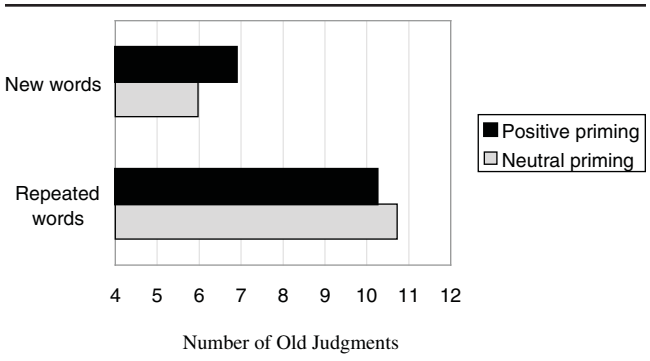

Figure 1 The impact of positive compared to neutral priming on recognition of repeated and novel words, Experiment 2.

In both experiments, we thus demonstrated that associating positivity to a stimulus caused significantly increased false recognition of that stimulus as familiar. We interpret these findings as occurring because the affective feeling generated by the associated smile or happy symbols was easily taken as the positive affective quality attendant on familiarity. In a third experiment, we further tested this hypothesis by assuming that the way perceivers feel at the time of stimuli processing might have a similar effect; that is, we tested the idea that happy perceivers also might be more likely to misperceive stimuli as familiar, perhaps because they used their positive feelings as a familiarity cue.

EXPERIMENT 3

In this experiment, we first induced either nonpositive (neutral) or positive mood states and then led participants to believe (falsely) that they had been subliminally exposed to stimulus sentences whose validity they were then forced to judge.[4] The impact of familiarity on validity judgments is well established: Repeated statements are judged to be truer than novel ones (Arkes, Boehm, & Xu, 1991; Begg & Armour, 1991; Begg, Armour, & Kerr, 1985). We predicted that participants would take the subjective experience of their positive affective state as if they were experiencing familiarity with the sentence and, therefore, that participants in positive moods would make more extreme validity judgments than those in neutral affective states.

Method

PARTICIPANTS AND DESIGN

Sixty (16 male, 44 female) UCSB undergraduates were paid $10 to participate in the study. Participants were randomly assigned to a neutral or positive mood condition.

PROCEDURE

Participants were invited to sit in front of an IBM-PC computer monitor on which all instructions were presented. Initial instructions indicated that they would first evaluate a newspaper article for use in a future experiment (actually a cover story for the induction of mood) and then participate in a study investigating "unconscious perception."

INDUCTION OF MOOD

A nonpositive (neutral) mood state was induced by having participants evaluate a fake newspaper article, titled "A Different Kind of Physician," which described an experimental program for medical students. Positive mood was induced by evaluation of an article called "Meeting Them More Than Halfway," describing a reunion of old friends at a country inn. Each article was a page in length and was presented in newspaper-like, two-column format to preserve the cover story. These materials were adapted from Kuykendall and Keating (1990) and have been used successfully as mood inductions in this population (Queller, Mackie, & Stroessner, 1996; Wegener & Petty, 1994, Exp. 2; Wegener, Petty, & Smith, 1995, Exp. 2). Participants read the articles and then responded to two 7-point scales indicating "How much did you enjoy reading this article?" and "How good or bad do you think the article was?"

VALIDITY JUDGMENTS

Immediately after, participants were introduced to a "study of unconscious processes." They were asked to attend carefully to a black dot presented in the center of the computer screen. The dot flashed twice before disappearing. Participants were led to believe that each flash signaled the very brief presentation of a short sentence on the screen. They were warned that they would "not be aware of actually seeing the sentences" but that "some aspects of them would be unconsciously processed" and would thus affect subsequent performance on a task asking the participants to guess some of the sentences' features.

A dot was then rapidly presented three times in the middle of the screen, giving the illusion of two flashes (sentences being presented). Participants pressed either the T (true) key or the F (false) key using the first answer that popped into their heads to complete the following sentence: "My feeling is that the two sentences were . . . " (i.e., they made judgments about the validity of both sentences together). After completing this forced decision task, were they asked to rate their perception of the two sentences' validity on a 7-point scale (1 = *certainly false*, 4 = *completely uncertain*, and 7 = *certainly true*). Participants made only one set of judgments to ensure that any potential effects of the mood manipulation were demonstrated before mood started to decay.

CHECK ON MANIPULATION OF MOOD

A "postexperimental control questionnaire" accessed participants' "current mood state" on a two-item scale: (a) "How do you feel right now" (1 = *sad*, 9 = *happy*), and (b) "what is your mood at this very moment" (1 = *bad*, 9 = *good*). Participants then went on to other experiments.

Results and Discussion

EFFECTIVENESS OF MOOD MANIPULATION

Because participants' ratings of their feelings and of their mood were correlated ($r = .79$, $p < .001$), these ratings were averaged to form a general mood index. Those in the positive mood condition rated their mood as significantly more positive ($M = 6.52$) than those in the neutral condition ($M = 5.70$), $t(58) = 2.10$, $p < .02$, one-tailed, $MSe = 1.49$.

VALIDITY JUDGMENTS

Because familiarity is expected to induce an illusion of validity, we expected participants in positive moods to judge the statements they thought they were processing subliminally as truer than would participants in neutral moods. Consistent with this prediction, more than 65.6% of the happy participants judged the sentences to be true, whereas more than 63% of the participants in the neutral mood condition judged them to be false. The difference between these two distributions of responses was significant, $\chi^2(1, N = 60) = 4.79$, $p < .03$.[5]

Assessment of the confidence with which true and false judgments were made (rating scales data) revealed no significant differences between the two mood conditions ($t < 1$). This result seems to be due to the fact that most participants (66%) used the "uncertain" point on the response scale. Nevertheless, the judgment data show that this uncertainty was resolved quite differently for happy participants compared to neutral participants.

Given that no stimuli were actually presented, it seems that participants used their mood state as a cue as to whether the statement to which they thought they had been exposed was true or not in the same way the literature has shown that participants use the feeling of familiarity (Arkes et al., 1991; Begg & Armour, 1991; Begg et al., 1985). Once again, positivity apparently signaled familiarity, just as actual familiarity as induced through repetition has been shown to do. We found these effects

even though the positivity manipulated in this study was a general diffuse feeling state induced prior to (and not simultaneously with) sentence presentation. The results were once again consistent with our hypothesis that positivity engenders perceived familiarity, just as familiarity engenders perceived positivity.

GENERAL DISCUSSION

Earlier research has repeatedly shown that previous exposure to a stimulus generates both positive feelings (particularly in mere exposure studies) and feelings of familiarity (particularly in implicit memory studies). We reasoned that because familiarity engenders positivity, then positivity might well signal familiarity. When positive affect was explicitly associated with a stimulus in Experiment 1 and subliminally associated with a stimulus in Experiment 2, participants were more likely to think it familiar. When participants believed they were judging statements in Experiment 3, they were more likely to think them true (a typical consequence of familiarity) when in a positive mood than when not. Thus, our results constitute the first demonstration that manipulated associated positivity can be read as a cue to stimulus familiarity. Our results are consistent with the finding that naturally occurring attractive faces and positive words are rated and recognized as more familiar than unattractive faces and neutral or negative words (Monin, 2003).

Alone, the results of Experiment 3 might be explained by arguing that positive mood enhances validity judgments independently of any association with familiarity. To the extent that "truth" ratings can be regarded as positively valenced, the mood-as-information heuristic might operate in this way ("If I feel good, the statement must be good, persuasive, valid, true, etc."). However, it is more difficult to argue from this perspective that positive affect should be experienced similarly to the subjective experience of previously encountering a stimulus. This is, however, exactly what happened in Experiments 1 and 2: Faces consciously associated with positive affect and individual words nonconsciously associated with positive affect were falsely recognized as familiar at a much higher rate than were neutrally posed faces or neutrally primed words. Thus, across the studies, different manipulations of positivity produced judgments (recognition, validity) typically produced by manipulations of familiarity. The most parsimonious explanation of these findings, as well as those arising from the mere exposure and implicit memory studies, is that positivity acts as a cue that the positive stimulus is familiar.

If it could be established that replying "old" in a recognition task and saying "true" in a validity task were either the dominant or the acquiescent responses (themselves empirically debatable propositions), it also might be argued that our results merely suggest that positivity (either as a stimulus property or as an induced mood) increases dominant and acquiescent responses. However, the data from both Experiment 1 and Experiment 2 are inconsistent with such mechanisms. In both studies, truly familiar stimuli were not overrecognized (i.e., the dominant or acquiescent response was not made) merely because positivity was associated with them compared to when they were neutral (see also Baudouin et al., 2000, Experiment 1). Future research might experimentally confirm this finding by manipulating the proportion of old and new stimuli so that the dominant response would be new rather than old or replicating Experiment 3 with judgments that are not related to familiarity.

Future research also might usefully focus on the limits of this effect. Our results indicate that when other, perhaps more definitive, cues to familiarity exist, stimulus positivity might not further increase familiarity judgments. Thus, neither positive old faces nor positive old words were more likely to be recognized than neutral old faces or words. When participants had a good idea that they had seen the stimuli before, affective reactions played no role. We suspect that when people are similarly sure that they have never seen a stimulus before, its affective quality will not influence their judgments.

When uncertainty exists, however, positive affect haws an impact (see also Monin, 2003, Experiment 5). Further investigation of whether or when this influence occurs, whether it is automatic or conscious, and whether it can be corrected or not is warranted. Such work would also shed further light on the mechanism underlying the effect. We argue that the effect depends on a confusion of the positivity associated with familiarity and positivity arising from other aspects of the stimulus or context. Others have suggested that such effects might be due to semantic associations between valanced concepts such as familiarity and positivity (Clore & Colcombe, 2003; Schwarz & Clore, 1983), but the results of Experiments 2 and 3 make this explanation less viable. Another possibility is that people use a "warm glow" heuristic (Monin, 2003) to assess stimulus familiarity by asking "Do I like the stimulus?" Like other misattributional interpretations of familiarity effects, our approach assumes in contrast that such effects might be reduced when people are consciously aware of their liking for the stimulus (Bronstein, 1999). The use of attributional and correctional manipulations and paradigms will help to clarify further differences among these possibilities.

Our experiments do not rule out the possibility that any associated affect—not just positive affect—might make a stimulus seem more familiar. We tested the idea that positivity would cue familiarity because of the sub-

stantial empirical record showing that familiarity, induced by repetition, results in positive affective outcomes. Because the fluency of repeated processing and positivity appear closely associated, we reasoned and found that positivity might be used, sometimes mistakenly, as a cue for familiarity. It is possible, however, that the experience of other affective reactions also might produce false familiarity judgments, for a slightly different reason. Perhaps imbuing any stimulus with intense affect results in more fluent processing of the stimulus, an effect that could, under the right circumstances, be misattributed to familiarity. If any affect came to be associated with (even false) familiarity, then that affect also might come to signal familiarity in the future. This possibility awaits empirical testing and is interesting because it suggests that with some conditioning, even negative affect might cue familiarity.

Associating negativity to a stimulus could, of course, be thought to have the opposite effect: stimulus negativity might be expected to generate perceptions of novelty. Although this is clearly an empirically testable possibility, it does not follow from our argument that positivity signals familiarity because the experience of familiarity is positive. Given that both positive and negative affect may well represent two largely independent and orthogonal dimensions, they are just as likely to contribute quite independently to evaluation and judgment (Cacioppo & Berntson, 1994).

We based our hypothesis that positivity could cue familiarity on the assumption that reexposure to a previously encountered stimulus results in a subjective feeling of familiarity that is inherently positive (Jacoby & Kelley, 1990; Jacoby, Kelley, & Dywan, 1989; Pittman, 1992; Tichener, 1910; Winkielman & Cacioppo, 2001). Our results add further empirical support to that assumption. The idea that facilitation of processing is imbued with positive affect also has some support in research on the effects of mood. From our perspective, it is not strange that transient mood state and the fluency associated with familiarity have been induced in the laboratory by exactly the same manipulation: contraction of specific muscles. Stepper and Strack (1993) manipulated the subjective recall experiences of their participants by asking them to contract either the corrugator muscle or the zygomaticus muscle during the recall task. Contraction of the zygomaticus muscle at the upper side of the mouth (used in producing a smile) triggered a feeling of ease or fluency in recall, whereas contraction of the corrugator muscle (producing a furrowed brow), in contrast, was associated with the experience of effort and thus induced a feeling of lack of fluency, a feeling of difficulty in recall. Exactly the same manipulation also has been used both to measure the affective impact of fluency of processing (Winkielman & Cacioppo, 2001) and to manipulate mood: Whereas the contraction of the zygomaticus induces positive feelings, contraction of the corrugator muscle induces more negative feelings (Adelmann & Zajonc, 1989; Bodenhausen, Kramer, & Susser, 1994; Laird, 1984; Strack, Martin, & Stepper, 1988). Our position also is consistent with the fact that the feeling of fluency (whether evoked by repetition or other means) not only increases preferences (Reber et al., 1998) and validity judgments (Reber & Schwarz, 1999) but also produces higher activity over the zygmaticus major, indicating the elicitation of positive affect (Harmon-Jones & Allen, 2001; Winkielman & Cacioppo, 2001). Thus, another implication of this work is that mood states might sometimes be triggered not by the affective features of a stimulus but by its processing status.

The fact that familiarity and positivity are so closely associated that one can lead to the false perception of the other does have some implications for classifications that posit experiences such as mood and familiarity as representing quite different classes of feelings. At least in some views, familiarity has been conceptualized as a cognitive, nonaffective state, as opposed to mood, which is a noncognitive, affective feeling (Clore, 1992; Schwarz & Clore, 1996). According to such views, cognitive states function to indicate the status of one's knowledge, whereas affective feelings function to indicate how much and in what way something is good or bad (Clore & Parrott, 1994). As a cognitive experience, familiarity is not expected to be associated with either goodness or badness, whereas as an affective feeling, mood signals just such valence (Schwarz & Clore, 1996). If, however, as our research seems to indicate, familiarity is affectively charged, such distinctions seem to break down and appear to undermine these criteria for distinguishing states as affective or as cognitive.

A second possible implication of our claim is that some effects attributed to positive mood may be explained by its integral relation with familiarity. For example, we have argued elsewhere that this close relationship between familiarity and positive affect may help to explain the impact that such affect has in information processing (Garcia-Marques & Mackie, 2000). The experience of a general diffuse state of positive affect reliably increases top-down, less-detailed processing in a variety of domains (for a review, see Garcia-Marques, 1999; Schwarz & Clore, 1996). This is just the impact that some theorists have claimed for familiarity (Johnston & Hawley, 1994; Reder & Ritter, 1992). Not surprisingly, then, we have been able to show that familiarity exerts parallel effects to positive mood in the moderation of processing modes, with familiarity, similar to positive mood, engaging nonanalytical, superficial processing of information (Claypool, Mackie, Garcia-Marques, McIntosh, & Udall,

in press; Garcia-Marques & Mackie, 2001). We suggested that positive mood may have this effect even when it arises from other unrelated sources because of its inherent association with familiarity. Because familiarity triggers nonanalytic processing and familiarity is positive, the experience of positivity is often misattributed to familiarity, with a concomitant decrease in analytic processing. We also suggest that mood state, rather than necessarily reflecting how benign our environment is, may reflect how familiar our environment is.

Although theoretically important, our results imply some practical advice. Imagine being considered as a possible suspect for a crime and having to participate in a police lineup, in which an eyewitness is asked to identify anyone he or she might have previously seen at the crime scene. Remember not to smile: Especially if you are in fact a novel stimulus, any associated positive affect might increase your chances of being falsely recognized!

NOTES

1. In a pretest, we verified that smiling faces were perceived more positively than faces with neutral expressions. Fifteen male University of California, Santa Barbara (UCSB), students viewed 20 photos on a computer screen, each for 2 s. Each participant saw the photos in a different random order. Ten of the photos had men with a smiling facial expression and 10 had a neutral expression. There was a between-subjects counterbalance condition with two levels. For roughly half of the participants, a particular pictured individual had a smiling expression, but for the other half of the participants, that same person had a neutral expression. Thus, across these two conditions, all persons were seen both with a smiling and a neutral expression. This factor resulted in no main effects or interactions so it was dropped from the analysis. Participants were asked to rate how positive they believed each face to be on a 7-point scale. A repeated-measures ANOVA revealed a main effect of facial expression, $F(1, 14) = 194.469$, $p < .001$. Smiling faces were judged as more positive ($M = 5.32$) than those with neutral expressions ($M = 2.92$).

2. To ensure the validity of our paradigm, we first replicated repetition and priming effects with the materials developed for Experiment 2. Following Jacoby and Whitehouse (1989), we asked 58 participants to study 30 neutral Portuguese words presented for 1 s on the computer screen. After a filler task (in which they identified 20 different European countries), participants were shown 60 words, half of which were old (seen in the study phase) and half new. Half of the old and half of the new words were first presented subliminally before appearing supraliminally, and the other half of the old and new words were not. Results show a main effect of repetition, $F(1, 56) = 190.63$, $p < .0001$, such that old words were correctly recognized as old compared to new words, and a main effect of priming $F(1, 56) = 6.53$, $p < .014$, such that self-primed words were more likely to be judged as familiar than non-self-primed words. These results replicate Jacoby and Whitehouse's findings and indicate that our materials were capable of producing familiarity effects in a standard repetition-priming paradigm. Following Murphy and Zajonc (1993), we also ascertained that subliminally preceding 30 Greek characters with either the happy face or circle as within-subject primes resulted in participants preferring the characters preceded by a happy face ($M = 3.7$, $SD = .51$) as opposed to those preceded by the circle ($M = 3.4$, $SD = .53$), $t(46) = 2.28$, $p < .02$. Thus, our materials also were capable of producing the affective priming effects.

3. Type of prime also interacted with the particular set of words with which it was associated, $F(1, 48) = 11.53$, $p < .002$, $MSe = 4.87$, suggesting that some words facilitate positive recognition judgments regardless of condition. Of importance, the particular material set used did not qualify the interaction with the old or new status of the words.

4. Because feelings of familiarity might vary with, and thus affect the judgment of, any actual stimulus sentence (Begg & Armour, 1991), and because such feelings of familiarity might disrupt a manipulation of mood, we created a situation in which participants could use only their affective state in making their judgments.

5. The proportions of true responses also were analyzed regarding guessing. The statistics associated with the one-sample test for the parameter of a binominally distributed variables and the one-tailed p values associated with it were then computed for each condition. Results show that true responses of positive mood participants were significantly higher than 50% ($Z = 1.71$, $p < .044$) and true responses of nonpositive mood participants were marginally less than 50% ($Z = -1.41$, $p < .079$).

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