

Positive mood, attribution, and the illusion of familiarity

Heather M. Claypool ^{a,*}, Carrie E. Hall ^a, Diane M. Mackie ^b, Teresa Garcia-Marques ^c

^a Department of Psychology, Miami University, Oxford, OH 45056, USA

^b Department of Psychology, University of California, Santa Barbara, CA 93106, USA

^c Instituto Superior de Psicologia Aplicada, Lisbon, Portugal

Received 6 July 2006; revised 2 April 2007

Available online 18 May 2007

Abstract

We investigated the positivity–cues–familiarity effect and the hypothesis that it is caused by a misattribution of positivity to a sense of familiarity. Participants were put in a positive or neutral mood state, and then either did or did not complete a mood-manipulation check question. Participants then rendered old/new judgments of stimuli to which they allegedly had been subliminally exposed. When participants did not complete the mood-manipulation check question, and thus the source of their affect was unclear, they showed the positivity–cues–familiarity effect: those in a positive mood identified more of the stimuli as old than did those in a neutral mood. However, those who had completed the mood-manipulation check question, and for whom the source of their affect was obvious, did not show the positivity–cues–familiarity effect. These findings support the notion that a misattribution process is responsible for the positivity–cues–familiarity effect.

© 2007 Elsevier Inc. All rights reserved.

Keywords: Familiarity; Fluency; Affect; Mood; Attribution

Introduction

For decades, social and cognitive psychologists have documented the link between familiarity and positive affect. Traditionally, these investigations have examined how manipulations of familiarity produce positive responses. The seminal work of Zajonc (1968) uncovered “mere exposure” effects, showing conclusively for the first time that repeated, non-reinforced exposure to a stimulus increases its perceived positivity. Since then, literally dozens of studies have shown that familiarity with a stimulus elicits a multitude of positive reactions, including increased liking (e.g., Zajonc, 1968; see also Bornstein, 1989, for a meta-analytic review), attractiveness (e.g., Moreland & Zajonc, 1982), similarity (Moreland & Beach, 1992; Moreland & Zajonc, 1982), fame (Jacoby, Kelley, Brown, & Jasechko, 1989), validity (e.g., Arkes, Hackett, & Boehm, 1989), and so forth.

More recently, investigators have discovered that the familiarity–positivity connection is bi-directional. In these studies, the positivity of stimuli is manipulated, and respondents are asked to judge the familiarity of those stimuli. For example, Garcia-Marques, Mackie, Claypool, and Garcia-Marques (2004, Experiment 1) manipulated the positivity of faces via facial expression, having some smile and others display neutral expressions. After initially seeing a series of such faces, participants were later asked to make old/new judgments of the original faces intermixed with new smiling and new emotionless faces. When the faces were truly familiar, and participants presumably had a strong memory trace for them, participants were equally likely to label them as “old” regardless of their facial affect. However, when the faces were novel, participants were significantly more likely to mistakenly believe them to be familiar (old) when they were smiling than when they were emotionless.

Monin (2003, Experiment 3) altered the perceived positivity (attractiveness) of average-looking faces by utilizing a contrast manipulation. He found that average faces,

* Corresponding author. Fax: +1 513 529 2420.

E-mail address: claypohm@muohio.edu (H.M. Claypool).

viewed after a set of very unattractive faces, were perceived as more attractive than those viewed after seeing a set of very attractive individuals. More importantly, he also found that average faces were perceived as more familiar if viewed after unattractive than attractive faces.

In the studies just described, supraliminally associating positivity with a stimulus increased its perceived familiarity. Other work suggests that merely associating positivity with a stimulus subliminally will do the same. [Garcia-Marques and colleagues \(2004; Experiment 2\)](#) initially exposed participants to a list of neutrally valenced words. Later, participants saw these words intermixed with a set of novel words, and before each, a prime was presented subliminally. For half of the old and new words, this prime was a smiley face, which served to affectively imbue the subsequently presented words with positivity ([Murphy & Zajonc, 1993](#)). For the other half of the old and new words, the prime was a circle, which was pre-tested to be affectively neutral. Results conceptually replicated the findings of their first experiment: novel words that were subliminally associated with positivity were significantly more likely to be mistakenly labeled as old than were affectively neutral novel words.

Other work suggests that the positivity need not be directly associated with the stimulus to trigger feelings of familiarity; situating positivity in the perceiver may evoke similar feelings. [Garcia-Marques et al. \(2004\)](#) provided some initial suggestive evidence of this possibility. In their Experiment 3, participants were put in a positive or neutral affective state. Then they were led to believe that they had been exposed to sentences subliminally and were asked to judge the truthfulness of those sentences. Since familiarity has been shown to increase perceptions of truth (e.g., [Arkes et al., 1989](#)), the researchers reasoned that manipulations of positive affect should do the same. Consistent with their expectations, participants in a positive mood were more likely than those in a neutral mood to believe the alleged subliminally presented sentences were true.

[Phaf and Rotteveel \(2005\)](#) directly tested the notion that positive mood leads to perceptions of familiarity. They had participants contract either their zygomaticus muscles (to induce a smile/positive affect) or their corrugator muscles (to induce a furrowed brow/negative affect), or had them “juggle” a pen in their non-dominant hand (control condition/no affect) while making old/new judgments of neutral words (p. 313). False alarms (responding that a word was old when it was actually new) were higher when participants were smiling compared to when they were frowning or doing something that evoked no emotion.

Thus, there is a growing body of literature that suggests that positivity, be it explicitly imbedded in a stimulus, subliminally associated with a stimulus, or situated in the perceiver, triggers feelings of familiarity. The primary question under consideration in this work is why do manipulations of positivity lead to feelings of familiarity? To answer this question, we must first consider why familiarity triggers positivity.

Familiarity, fluency, and affect

Making a stimulus familiar via prior exposure is one way to increase its fluency, that is, its ease of processing (e.g., [Jacoby et al., 1989](#); [Jacoby & Whitehouse, 1989](#)). The initial processing of a novel stimulus is relatively effortful and complex. It requires that the perceiver extract numerous pieces of information about it including its name, weight, shape, etc., and create a new mental representation of it. In subsequent encounters with the stimulus, processing is much easier. On these occasions, the visual representation of the object is merely “matched” to a now already-existing mental representation, and all relevant information about it can be accessed.

Numerous scholars have argued that this sense of ease or fluency that we experience when processing a fluent (familiar) stimulus feels positive (e.g., [Garcia-Marques & Mackie, 2000](#); [Reber, Schwarz, & Winkielman, 2004](#); [Reber, Winkielman, & Schwarz, 1998](#)). Perhaps the most compelling evidence for this supposition comes from psychophysiological work by [Winkielman and Cacioppo \(2001\)](#), who showed that the processing of high-fluency stimuli was associated with activation of the zygomaticus (“smiling”) muscles but had no effect on the corrugator (“frowning”) muscles.

This positive sensation triggered by fluency is subtle and diffuse, and can thus be easily misattributed to other sources. Therefore, perceivers may believe that the fluent stimulus itself is positive. As [Reber and colleagues \(2004\)](#) stated, “Presumably, perceivers interpret the positive affect elicited by processing fluency as their response to the target, resulting in more positive evaluations” (p. 367). Given this perspective, it is not at all surprising that the positive affect generated by fluency results in many different types of positive evaluative reactions to those stimuli, including increased liking, attractiveness, fame, truthfulness, etc.¹

Importantly, however, there are moderators that reliably predict when fluency will and will not lead to positive evaluations. “Processing fluency feeds into judgments of aesthetic appreciation because people draw on their subjective experience in making evaluative judgments, unless the informational value of the experience is called into question. . . Fluency has a particularly strong impact on affective experience if its source is unknown and fluent processing comes as a surprise. . . [but] the fluency-based affective experience is discounted as a source of relevant

¹ Some models of the mere exposure effect argue that familiarity induces fluency, but that this fluency lacks valence (e.g., [Bornstein & D’Agostino, 1994](#); [Mandler, Nakamura, & Van Zandt, 1987](#); see [Harmon-Jones & Allen, 2001](#) for a summary). The fluency is then misattributed to *any* relevant stimulus dimension assessed. Some early evidence supported this view, such as the finding that familiar stimuli are rated as both lighter and darker than are unfamiliar stimuli ([Mandler et al., 1987](#)). However, this finding has failed to replicate in more recent research ([Seamon, McKenna, & Binder, 1998](#)) and is inconsistent with many other findings in the familiarity and fluency literatures (e.g., [Claypool, Hugenberg, Housley, & Mackie, in press](#); [Reber et al., 1998](#)).

information when the perceiver attributes the experience to an irrelevant source” (Reber et al., 2004, p. 366). Consistent with this view, attribution of the positivity associated with fluency to something other than the fluent stimulus eliminates the fluency-induced positive reactions typically observed (e.g., Reber et al., 2004).

Bornstein’s perceptual fluency/attributional model (e.g., Bornstein & D’Agostino, 1994) makes a similar claim. It argues that familiarizing perceivers with stimuli makes those stimuli more fluent. When later re-presented with a familiar target, perceivers may misattribute the sensation of fluency to other stimulus dimensions, such as liking, attractiveness, etc. Because of this process, the size of the mere exposure effect is likely to diminish when perceivers are made aware of the possible connection between repeated exposure (fluency) and judgment, as perceivers engage in a correction process to discount the effect of previous exposure on their judgments. Support for this model was provided in Bornstein’s (1989) meta-analysis of the mere exposure literature. It found that mere exposure effects are larger when stimuli are originally presented subliminally (i.e., when perceivers are not aware of previous exposure and therefore cannot engage in the correction process) compared to when they are presented supraliminally (see also Bornstein & D’Agostino, 1992).

Other work within the familiarity literature supports the notion that the influence of familiarity on judgments is robust when familiarity is not obvious, but is greatly diminished (or even eliminated) when familiarity of the stimuli is salient. For example, Jacoby and colleagues (1989) showed that familiar (fluent) names were more likely to be mistakenly judged as famous 24 hours after initial exposure than were unfamiliar names, when participants’ ability to recognize that the names had been previously seen was diminished. However, no such effect emerged if fame judgments were rendered immediately after initial exposure. In this case, participants presumably realized that any sense of fluency (positivity) they experienced when re-processing the familiar names came from recent exposure and did not allow it to drive their fame judgments. Similarly, Weisbuch, Mackie, and Garcia-Marques (2003) showed that supraliminal prior exposure to the source of a persuasive message increased agreement with that message. However, this effect was eliminated when participants were directly asked to recall if they had seen the source before. Indeed, all but one participant correctly recalled having seen the source, which presumably is what undermined the effect of prior exposure on the source’s persuasiveness.

Overall, then, familiarity seems to produce positive reactions to stimuli via the following process: (1) familiarity induces fluency; (2) fluency itself is “positively marked” (Reber et al., 2004, p. 366); and (3) the positivity is attributed to the familiar (fluent) stimulus itself. Note, however, that the familiarity (fluency) induced positive reactions can be disrupted via (mis)attribution manipulations.

The primary focus of our work concerns why positivity triggers feelings of familiarity. Given the intimate relation-

ship between familiarity and positivity just described, we argue that familiar stimuli are over time repeatedly experienced as positive, and thus positivity begins to serve as a heuristic cue that a stimulus is familiar, especially when other cues to familiarity are lacking (Garcia-Marques et al., 2004; Monin, 2003). That is, just as familiarity has been argued to be misattributed to positivity, we argue that positivity can be misattributed to familiarity. If a misattribution mechanism is responsible for the positivity–cues–familiarity effect (as it has been argued for the familiarity–cues–positivity effect), then alerting perceivers to the true source of their positivity should reduce or even eliminate the effect.

Overview and hypotheses

In this experiment, we sought to replicate the positivity–cues–familiarity effect in a new way, and more importantly, directly investigate whether participants’ ability to correctly attribute their affect to its source would eliminate the effect. In this experiment, we employed a fake subliminal paradigm, in which we asked participants to guess which photos they had been exposed to subliminally earlier in the experiment (in reality they had not seen any of the photos). Before making these judgments, participants read a story designed to elicit positive or neutral mood. We predicted that those who read the positive-mood story would identify a larger portion of the photos as old (familiar) than those who read the neutral-mood story. However, we expected that this effect would disappear in an attribution condition. In this condition, participants completed a mood-manipulation check item after reading the story but before rendering the old/new judgments. By asking participants how they felt, we reasoned that those put in a good mood would correctly attribute their mood to the story and not misattribute it to familiarity. Thus, when then asked to make familiarity judgments, these participants should not label a larger number of the photos as old than those in the neutral-mood condition.

Method

Participants

Seventy-eight introductory psychology students at Miami University participated in exchange for course credit.

Materials

Participants saw a series of color photographs (photos courtesy of Computer Vision Laboratory, University of Ljubljana, Slovenia, <http://www.lrv.fri.uni-lj.si/facedb.html>) of men in casual clothing, pictured from roughly the chest up. Each photo appeared as a 5-in. (tall) × 7-in. (wide) block on the screen. Additionally, participants read

one of two fictitious newspaper articles designed to induce either a positive or neutral mood. The positive-mood article was composed by the second author and describes the heart-warming fate of newborn puppies finding a home at Christmas time. The neutral-mood article was composed by the first author and describes how a Chicago radio station will soon have increased broadcast coverage because of upgrades to its equipment (see Appendix for the articles).

Procedure

Participants were seated at a computer to take part in a study investigating “cognitive processing”. Opening instructions explained that participants would engage in several unrelated tasks to assess different cognitive abilities. The first was characterized as testing long-term memory, in which participants were asked to identify all the US states from a map. A US map appeared on the screen with one state highlighted. Participants were given 10 s to identify the state and type out its name or a guess if they were unsure of the answer. This process repeated itself until all 50 states had been displayed.

Mood manipulation

Next, participants completed a task in which they read a brief newspaper article and responded to it, under the guise of pre-testing these articles for future experiments. There were two versions of this article, one designed to elicit positive and one designed to elicit neutral mood. After reading the article, all participants answered two questions: (1) How much did you enjoy reading this article? (Not at all 1–7 Very much); (2) This article is: (Bad 1–7 Good).

Attribution manipulation

Then, half of the participants in both the happy and neutral mood conditions completed one additional question assessing their mood, How do you feel right now (Sad 1–9 Happy)? The other half of the participants did not complete this question. The purpose of this question was twofold. First, it served as a mood manipulation check, to confirm that the newspaper articles had induced the desired mood states. Secondly, asking half of the participants to report their mood state following the article should have made salient to them that the source of their positive (or neutral) affect was the story. Those who did not complete the mood question should have been in the desired mood state, but the source of that mood should have been less obvious to them.

Perceived familiarity

Finally, participants were informed that they had been shown photographs of individuals subliminally earlier in the experiment, during the state-identification task (in actuality, no photos had been presented). In the upcoming task, they would be shown a series of photographs, some of which they had been subliminally exposed to previously

(photos we termed “old”) and some of which they had not been previously exposed to (photos we termed “new”). Participants were then shown 24 head-and-shoulder photographs of males one at a time, in a different random order for each participant. For each photo, participants were asked to decide if it was “old” or “new” by clicking the corresponding label on the computer screen. After rendering these judgments, participants completed demographic questions, were thanked, debriefed, and excused.

Results

Mood manipulation effectiveness

To ensure that the newspaper articles induced the desired mood states, we performed an analysis on the mood-manipulation check item.² It was subjected to an independent-samples *t*-test, which confirmed that those who read the positive story ($M = 7.17$, $SD = 1.30$) reported more positive affect than those who read the neutral story ($M = 5.35$, $SD = 0.93$), $t(36) = 5.00$, $p < .01$. To ensure that the mood states were actually positive and neutral, we performed follow-up analyses, comparing the mean affect in each of these conditions to the scale mid point of 5. As desired, mean affect in the neutral-story condition did not differ significantly from the midpoint, $t(19) = 1.68$, $p = .11$, whereas, mean affect in the positive-story condition did, $t(17) = 7.10$, $p < .001$.

Effects on other (non-mood) reactions to the newspaper articles

All participants were asked how much they enjoyed reading the article and for an overall bad–good evaluation of it. We performed a 2 (Mood: positive, neutral) \times 2 (Attribution: yes, no) between-subjects ANOVA on each of these measures separately. Not surprisingly, for both, we observed a main effect of mood, such that those who read the positive story reported enjoying it more ($M = 4.89$, $SD = 1.23$) and evaluating it more favorably ($M = 5.09$, $SD = 1.17$) than those who read the neutral story ($M = 2.65$, $SD = 1.23$ enjoyment; $M = 4.05$, $SD = 1.22$ evaluation), $F(1, 74) = 63.23$, $p < .01$ and $F(1, 74) = 14.50$, $p < .01$, respectively. No other significant effects emerged, all $p > .38$.

² Only half of the participants completed the mood-manipulation check item because completion of this question itself was a manipulated variable. Results of this analysis suggest that our fictitious articles induced the desired mood states. But, we must acknowledge that this conclusion is based only on a subset of our dataset. Nevertheless, we see no plausible reason to suspect that the mood-manipulation check responses would have been different for those in the no attribution condition had they completed this measure.

Perceived familiarity

Participants were shown 24 photos and asked to classify each as “old” or “new.” For each participant, we summed his or her number of “old” responses, and this served as the primary dependent measure. Recall that none of these photos had actually been shown to participants earlier in the experiment, so all were in fact new. Thus a response of “old” to a photo is best characterized as a perception of familiarity rather than a more “objective” feeling of recall.

This measure was subjected to a 2 (Mood: positive, neutral) \times 2 (Attribution: yes, no) between-subjects ANOVA. It yielded only one significant effect, the predicted interaction between mood and attribution, $F(1, 74) = 4.33$, $p = .041$ (See Fig. 1). As predicted, a simple-effects test revealed that when participants did not complete the mood question before rendering their old/new judgments (in the no attribution condition), they showed the positivity–cues–familiarity effect. Specifically, those who read the positive story classified a larger number of the photos as familiar ($M = 10.90$, $SD = 4.42$) than did those who read the neutral story ($M = 8.10$, $SD = 5.41$), $F(1, 74) = 3.87$, $p = .05$. However, consistent with our hypothesis, the positivity–cues–familiarity effect was not significant for participants who reported their mood state before rendering their old/new judgments. Specifically, in the attribution condition, a simple-effects test showed that there was no difference in the number of photographs labeled as familiar between those who read the positive ($M = 8.56$, $SD = 4.33$) and the neutral stories ($M = 10.00$, $SD = 3.64$), $F(1, 74) = 0.98$, $p = .33$.

We also directly tested our hypothesis by performing relevant planned contrasts that compared the positive mood/no attribution condition (where perceptions of familiarity should be strong) to all the other conditions (where perceptions of familiarity should be relatively weak), and these latter three “control” conditions with each other. The contrast comparing the positive mood/no attribution condition to the mean of the other three (weights 3, -1 , -1 , -1) was,

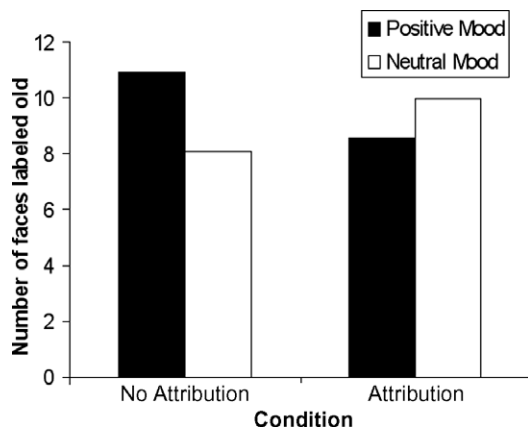


Fig. 1. The effect of mood and attribution conditions on perceived familiarity.

as predicted, significant, $t(74) = 1.73$, $p = .04$, one tailed. No other contrast, comparing the control conditions to each other, reached significance, ($p > .18$).

Discussion

This experiment sought to provide evidence that the positivity–cues–familiarity effect is caused by a misattribution of positivity to a sense of familiarity. We speculated that because familiarity and positivity are intrinsically related, that over time, positivity begins to serve as a cue that a stimulus is familiar. In addition, we reasoned that if the positivity is correctly attributed to its source, perceivers will no longer use that positive feeling to make familiarity judgments. These suppositions were supported.

These findings are important for a number of reasons. First, they provide a direct test of the mechanism responsible for the positivity–cues–familiarity effect. Many scholars working in the mere exposure literature have suggested that it is a misattribution of fluency and/or a misattribution of the positivity associated with fluency that leads to feelings of positivity for familiar stimuli. In this experiment, we showed that a misattribution mechanism also appears to be responsible for the positivity–cues–familiarity effect.

Second, these findings show that the attribution manipulation is successful in eliminating the positivity–cues–familiarity effect when it highlights the source of one’s mood, but not when it merely highlights other, non-mood evaluative responses. After reading the newspaper article, all participants rated how much they enjoyed the article and their overall evaluation of it. Those who read the positive story rated their enjoyment of it higher and evaluated it more positively than those in the neutral condition. Yet, when participants did *not* also answer a question about their mood state, we observed the positivity–cues–familiarity effect. Thus, reporting that the story induced positive reactions (enjoyment of the article and an assessment of it as good) did not eliminate the positivity–cues–familiarity effect: only asking participants how they *felt* eliminated the effect. Therefore, it does not appear that asking participants to render *any* evaluative judgment after a mood induction will eliminate the positivity–cues–familiarity effect. The attribution manipulation must specifically highlight the source of one’s mood state to eliminate the positivity–cues–familiarity effect.

Third, these findings highlight an important boundary condition of the positivity–cues–familiarity effect. When the source of positivity is easily attributable to its correct source, positivity will not cause increased feelings of familiarity. Importantly, this is not the only boundary condition on the effect. In most demonstrations of the positivity–cues–familiarity effect published to date, it appears to emerge most strikingly and reliably under conditions when strong cues to recall or familiarity are absent.

Indeed, in the Garcia-Marques et al. (2004) studies described earlier, positivity only led to an increased sense of familiarity for novel targets. The effect in the current

experiment, as well as in others (e.g., Monin, 2003, Experiments 1, 3 & 4), emerged in a situation in which all stimuli were actually novel, and thus perceivers lacked entirely an objective feeling of familiarity with the stimuli. And, furthermore, Monin (2003, Experiment 5) manipulated the ease with which participants could recall the stimuli. He found that the positivity–cues–familiarity effect was at its weakest when recall of the original stimuli was at its easiest, concluding that the “phenomenon is most likely to occur when people lack a clear recollection of the stimuli under study” (p. 1044). Participants in our experiment certainly appeared to have strong overall feelings of novelty from the photos, as in all of the conditions, participants were correctly labeling the majority of photos as new. Thus, under these conditions, where clear recall of the photos was not possible, positive mood led to feelings of familiarity when participants were not aware of the source of that positivity.

Finally, and most broadly, these findings suggest that real-world perceptions of familiarity may be influenced by transient mood states. Consider an eyewitness to a crime, attempting to make an identification of a perpetrator in a police lineup. If the perceiver has only a vague recollection of the perpetrator’s face, one’s happy mood at the lineup may influence that perceiver’s performance. Specifically, happy perceivers may be more apt to label *anyone* in the lineup as familiar compared to those in a neutral mood state. This might have an unfortunate consequence if the true perpetrator is not included in the lineup, leading, in essence, to false-alarm identifications more frequently for those in positive moods.

Alternative explanations

Our hypothesis is that positive mood cues familiarity because of misattribution, grounded in the literature that individuals often use their feelings to make different types of judgments, assuming their relevance to the judgment is not questioned (e.g., Schwarz & Clore, 1983). However, alternative explanations might be offered to account for our findings because of the methodology used. Because previous research has shown that the positivity–cues–familiarity effect emerges most reliably when strong cues to recall are lacking, we chose (as have others, e.g., Monin, 2003, Experiments 1, 3 & 4) to use only novel stimuli in this study. Namely, we employed a bogus subliminal technique, wherein we told participants that some photos had been subliminally shown to them earlier in the experiment and asked them to identify those stimuli.

One might argue that those in the positive mood condition might be more apt to believe this cover story than those in the neutral mood condition because positive moods tend to lead to less systematic processing (e.g., Bless, Bohner, Schwarz, & Strack, 1990; Bodenhausen, Kramer, & Susser, 1994; Worth & Mackie, 1987), and thus, such participants might have simply accepted this cover story without carefully thinking about its veracity. If those

in positive moods believed that some photos were shown subliminally, they logically would label some as such; whereas if those in the neutral condition failed to believe the cover story, they should have labeled none of the photos as old. If true, this explanation could account for the observed difference in perceived familiarity between those in positive and neutral moods in the no attribution condition. But in fact, no participants in these conditions labeled zero of the photos as old, suggesting that participants in both mood conditions accepted the cover story. Moreover, even if participants in the positive mood condition were more apt to believe the cover story, this should have led to a main effect of mood. This account cannot explain why the attribution manipulation would eliminate the difference in perceived familiarity between mood conditions, resulting in an interaction between mood and attribution. However, our hypothesis predicted such an interaction, which we obtained.

Some might also question whether positive mood might have triggered pro-social (helping) behavior, as it has been shown to do in other domains (see Carlson, Charlin, & Miller, 1988 for a review), and if this motivation could explain our findings. We think this too is unlikely. One reason is that it is unclear how an increase in pro-social motivation would affect participants’ performance in this context. Would a helpful motivation lead participants to label many photos as “old” (which could explain our findings in the no attribution condition)? Or, would a helpful motivation lead participants to try to be especially accurate (which would have produced *fewer* “old” responses in the positive mood condition)? Additionally, even if pro-social motivation would lead to more “old” responses, this would have resulted in a main effect of mood. It would not be able to explain why the attribution manipulation erased the difference in perceived familiarity between mood conditions, resulting in the interactional pattern we obtained. Thus, our proposed explanation for these findings seems most parsimonious.

Negativity and perceptions of novelty?

Our experiment examined the link between manipulations of positivity and perceptions of familiarity. It cannot directly speak to potential effects of negative affect on perceptions of familiarity. One might suspect that if positivity cues familiarity, that negativity might cue novelty. The experiments that have included a negative affect condition and compared it to a control (neutral affect) condition and assessed a familiarity dependent measure are few. The little evidence that does exist is mixed.

Recall that Phaf and Rotteveel (2005) induced perceivers to smile, frown their brow, or juggle an object in their hand (control, no affect condition) while making old/new judgments. They observed more false alarms in the neutral condition compared to the negative affect condition (but this effect was only marginally significant), and a more liberal response bias in the neutral relative to the negative

affect condition. Based on these findings, we might tentatively conclude that there is a negativity–cues–novelty effect. However, such a conclusion is likely premature. In *Monin's Experiment 4 (2003)*, he presented participants with neutral, positive, and negative words and asked them to identify which had allegedly been shown to them subliminally earlier. Positive words were identified as old more than neutral or negative words, but there was not a significant difference between neutral and negative.

Given these inconsistent findings, the question of whether negativity triggers novelty is an open one. Future research should seek to clarify this issue, and if a negativity–cues–novelty effect does exist, future research should also determine if an attribution manipulation can eliminate it.

Conclusion

These findings add to the burgeoning literature showing that positive sensations can influence judgments of familiarity. More importantly, they begin to shed light on the process responsible for this intriguing effect: that when under conditions of uncertainty, we misattribute positive feelings to a sense of familiarity. When the source of that positivity is made salient to us, the positivity–cues–familiarity effect is eliminated. More broadly, these findings show that affect and cognition (memory, attribution) are intimately linked and inform one another.

Appendix

Neutral mood story

Local radio station to broadcast farther

Chicago—WZXW in Chicago will be heard by more listeners in Illinois, Indiana, Wisconsin, and Michigan starting next month. WZXW will be finishing substantial upgrades and repairs to its broadcast equipment and technology in the next few weeks, and subsequently, should be available on the radio dials of several thousand more people. The specific launch date for the expanded broadcast area has yet to be announced, but should be in the next month.

“We have been looking forward to this for quite a long time,” said station manager Leslie Adams. “We believe our programming is appealing to a broad range of listeners, and soon, there will be more people who can tune in and enjoy what we have to offer. When given a choice of local radio stations to listen to, we feel that many listeners will select WZXW because of our program variety and journalistic integrity.”

WZXW, a news radio station, has been broadcasting to Chicago and the surrounding area since the mid 1960s. When listeners tune in, they hear the top national news stories, local weather, traffic reports, and a variety of other programs. For example, on April 6th of this year, a new show debuted called “Let's Talk Business Tonight.”

Hosted by Keith Jones, this show provides listeners with detailed analysis and deep insight into how the day's events affect business and the stock market. Other shows focus on health, sports, and other forms of entertainment.

The idea to increase the broadcasting area was hatched over five years ago. Technical teams then spent months discussing the most efficient ways to increase the broadcast range of the station without costing a fortune. Once the final plans were completed, the repairs and upgrades began. Originally, the station estimated that the repairs and upgrades would be completed in six months. However, in reality, they have taken nearly a year to complete. Budget problems, technical glitches, and even bad weather, which knocked out power to the station on multiple occasions, slowed the process considerably. “We had hoped to be broadcasting to a wider area a few months ago. But, as is often the case with these sorts of things, there were delays,” says Adams. “But now the bulk of the work is done, and our increased broadcasting range will soon be a reality.”

The next challenge is making people aware that the station is now available to them. “For people who have not had access to WZXW in the past, they won't know to look for us on their radio dial because that frequency was just static for them. We've been blanketing the areas that will be receiving our programming with billboard and newspaper advertising to let folks in those areas know who we are, what we are about, and where to find us on their dial,” said Adams. “So, for any news radio fans out there who have not heard WZXW in the past, we would like to encourage you to tune your radio dial to 610 beginning next month. We think you'll like what you hear.”

Positive mood story

Puppies find a home for Christmas

Chicago—Anita and George Perkins became dog owners in a big way this holiday season. Literally. But, the Perkins don't seem to mind the size of their St. Bernards—their love for them is apparent when they tell the story behind their new family of puppies.

It all began when another couple, Margaret and Seth Andersen, was driving home from a concert just before Thanksgiving. They were struggling to see the road through the snow when Margaret thought she saw a deer about to cross in front of them. Instead of a deer, the figure turned out to be a large black dog. Margaret and Seth decided to take the dog home so it wouldn't freeze. When Seth opened the back door, he was surprised that the dog jumped right in and sat on the back seat and began wagging its tail. On the way home, the dog rested her head on the armrest between the two front seats, and Seth and Margaret knew at once that they were now dog owners. They named their new dog Rosie.

At the vet's office, Margaret noticed that the vet's facial expression changed after feeling Rosie's stomach and quickly asked what was wrong. The vet explained that

Rosie was pregnant and would have puppies in about a week. And indeed, a week later Rosie gave birth. The Andersens knew they couldn't keep the puppies. The vet and dog-food bills were too much for them to handle. They began searching for people to adopt the puppies. But everyone was busy with the upcoming holidays and reluctant to take on a breed of dog that would one day be quite large. Having no luck, they reluctantly decided that they would have to take the puppies to a shelter. They were devastated by this turn of events and decided to wait to take the puppies to the shelter until the day after Christmas.

This is where Anita and George Perkins come into the story. On Christmas Eve, George was waiting in line at the local grocery store when he saw an odd sight. A woman carrying a basket containing only dog food was walking toward the line he was standing in. When he asked her what type of dogs she had, she told him the entire story about Rosie and the puppies.

George had a flash of inspiration. He and his wife Anita had bought a small farm outside of town a few months ago in order to escape from the congestion in the city. However, Anita was having a difficult time adjusting to the isolation. George told Margaret he would talk to Anita and see if she would want to adopt the puppies.

Anita was thrilled. She loved dogs, and now that they lived on a farm there would be plenty of room for the dogs to run and play. George arranged to pick up the puppies Christmas morning. Six months later, the puppies are doing wonderfully, and the Andersens often take Rosie out to the farm to play with her puppies. It's difficult to imagine a better ending to this Christmas story.

References

- Arkes, H. R., Hackett, C., & Boehm, L. (1989). The generality of the relation between familiarity and judged validity. *Journal of Behavioral Decision Making*, 2, 81–94.
- Bless, H., Bohner, G., Schwarz, N., & Strack, F. (1990). Mood and persuasion: A cognitive response analysis. *Personality and Social Psychology Bulletin*, 16, 331–345.
- Bodenhausen, G. V., Kramer, G. P., & Susser, K. (1994). Happiness and stereotypic thinking in social judgment. *Journal of Personality and Social Psychology*, 66, 621–632.
- Bornstein, R. F. (1989). Exposure and affect: Overview and meta-analysis of research, 1968–1987. *Psychological Bulletin*, 106, 265–289.
- Bornstein, R. F., & D'Agostino, P. R. (1992). Stimulus recognition and the mere exposure effect. *Journal of Personality and Social Psychology*, 63, 545–552.
- Bornstein, R. F., & D'Agostino, P. R. (1994). The attribution and discounting of perceptual fluency: Preliminary tests of a perceptual fluency/attributional model of the mere exposure effect. *Social Cognition*, 12, 103–128.
- Carlson, M., Charlin, V., & Miller, N. (1988). Positive mood and helping behavior: A test of six hypotheses. *Journal of Personality and Social Psychology*, 55, 211–229.
- Claypool, H. M., Hugenberg, K., Housley, M. K., & Mackie, D. M. (in press). Familiar eyes are smiling: On the role of familiarity in the perception of facial affect. *European Journal of Social Psychology*.
- CVL Face Database. Retrieved October 21, 2006 from <http://www.lrv.fri.uni-lj.si/facedb.html>.
- Garcia-Marques, T., & Mackie, D. M. (2000). The positive feeling of familiarity: Mood as an information processing regulation mechanism. In H. Bless & J. Forgas (Eds.), *The message within: The role of subjective experience in social cognition and behavior* (pp. 240–261). Philadelphia: Psychology Press.
- Garcia-Marques, T., Mackie, D. M., Claypool, H. M., & Garcia-Marques, L. (2004). Positivity can cue familiarity. *Personality and Social Psychology Bulletin*, 30, 585–593.
- Harmon-Jones, E., & Allen, J. J. B. (2001). The role of affect in the mere exposure effect: Evidence from psychophysiological and individual differences approaches. *Personality and Social Psychology Bulletin*, 27, 889–898.
- Jacoby, L. L., Kelley, C., Brown, J., & Jasechko, J. (1989). Becoming famous overnight: Limits on the ability to avoid unconscious influences of the past. *Journal of Personality and Social Psychology*, 56, 326–338.
- Jacoby, L. L., & Whitehouse, K. (1989). An illusion of memory: False recognition influenced by unconscious perception. *Journal of Experimental Psychology: General*, 118, 126–135.
- Mandler, G., Nakamura, Y., & Van Zandt, B. J. S. (1987). Nonspecific effects of exposure on stimuli that cannot be recognized. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 13, 646–648.
- Monin, B. (2003). The warm glow heuristic: When liking leads to familiarity. *Journal of Personality and Social Psychology*, 85, 1035–1048.
- Moreland, R. L., & Beach, S. R. (1992). Exposure effects in the classroom: The development of affinity among students. *Journal of Experimental Social Psychology*, 28, 255–276.
- Moreland, R. L., & Zajonc, R. B. (1982). Exposure effects in person perception. *Journal of Experimental Social Psychology*, 18, 395–415.
- Murphy, S. T., & Zajonc, R. B. (1993). Affect, cognition, and awareness: Affective priming with optimal and suboptimal stimulus exposures. *Journal of Personality and Social Psychology*, 64, 723–739.
- Phaf, R. H., & Rotteveel, M. (2005). Affective modulation of recognition bias. *Emotion*, 5, 309–318.
- Reber, R., Schwarz, N., & Winkielman, P. (2004). Processing fluency and aesthetic pleasure: Is beauty in the perceiver's processing experience? *Personality and Social Psychology Review*, 8, 364–382.
- Reber, R., Winkielman, P., & Schwarz, N. (1998). Effects of perceptual fluency on affective judgments. *Psychological Science*, 9, 45–48.
- Schwarz, N., & Clore, G. L. (1983). Mood, misattribution, and judgments of well-being: Informative and directive functions of affective states. *Journal of Personality and Social Psychology*, 45, 513–523.
- Seamon, J. G., McKenna, P. A., & Binder, N. (1998). The mere exposure effect is differentially sensitive to different judgment tasks. *Consciousness and Cognition*, 7, 85–102.
- Weisbuch, M., Mackie, D. M., & Garcia-Marques, T. (2003). Prior source exposure and persuasion: Further evidence for misattributional processes. *Personality and Social Psychology Bulletin*, 29, 691–700.
- Winkielman, P., & Cacioppo, J. T. (2001). Mind at ease puts a smile on the face: Psychophysiological evidence that processing facilitation elicits positive affect. *Journal of Personality and Social Psychology*, 81, 989–1000.
- Worth, L. T., & Mackie, D. M. (1987). Cognitive mediation of positive affect in persuasion. *Social Cognition*, 5, 76–94.
- Zajonc, R. B. (1968). Attitudinal effects of mere exposure. *Journal of Personality and Social Psychology*, 9, 1–27.