Smile: You Haven't Seen This Before! Positivity, False Familiarity, and Consumer Behavior

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This paper presents a meta-analysis of 27 studies, identifying a robust, reliable, and valid small-to-medium effect, whereby positivity triggers false inferences of familiarity. The meta-analysis mines these studies to suggest a process-based explanation for this effect, and also identifies an important boundary condition. Implications for consumer behavior are discussed.

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ABSTRACT

Trinity: A déjà vu is usually a glitch in the Matrix.
(The Matrix 1999)

In the science-fiction action film, The Matrix, reality is expressed as a digital simulation designed to manipulate people’s thoughts, feelings, and behavior. This simulation shares its name with the film’s title; hence, the Matrix represents people’s perceptions of reality. In this sense, the Matrix is analogous to a key marketing communication tactic; that is, marketers often attempt to influence the perceptions of consumers by making use of both mindless, heuristic processing (Williams, Fitzsimons, and Block 2004), and cognitive biases (Kahneman 2003).

Déjà vu is a French term, which translates to “already seen”. Marcovitz (1952) explains it as a feeling that the current situation has previously been experienced, despite the circumstances of the past experience (that is, when, where, and how the earlier experience occurred) being uncertain and/or impossible. Consequently, déjà vu refers not to a prophetic vision, but rather, a false memory; a “glitch” in a consumer’s understanding of what is real.

False memories can influence consumer attitudes (Rajagopal and Montgomery 2011), as well as future consumption-related behaviors; for example, food preferences and choices (Bernstein and Loftus 2009). As such, the antecedents to false memories have received extensive attention from scholars. Research into false memory triggers has spanned several domains, such as conceptual elaboration via the DRM paradigm (Roediger and McDermott 1995; Sherman 2013; Sherman and Moran 2011); misinformation cues in advertising, including those relying on autobiographical recall (Braun, Ellis, and Loftus 2002; Braun-LaTour et al 2004), as well as imagery (Lakshmanan and Krishnan 2009; Rajagopal and Montgomery 2011); time, and perceptual fluency misattributions, leading to the “false fame effect” (Holden and Vanhuele 1999; Jacoby et al 1989; Topolinski and Strack 2010); and positivity-inspired false familiarity (Claypool et al 2008; Lander and Metalfce 2007; Monin 2003). In this study, I use positivity as an umbrella term to refer to an individual’s overall positive emotional state, including their mood, and/or affect.

Positivity is an important element of consumer behavior, having been shown to enhance receptiveness to advertising messages (Batra and Stayman 1990); facilitate brand name learning (Lee and Sternthal 1999); and reduce food preferences in an interpersonal sales context (DeCarlo and Barone 2009). Considering these effects—and in conjunction with the aforementioned consequences of false memories—it is pertinent to understand the potential influence that a positivity heuristic (Bagozzi, Gopinath, and Nyer 1999; Bless et al 1996; Greifeneder, Bless, and Pham 2010) may exert on consumers’ inferences of familiarity. Research of this nature is currently dispersed throughout the cognitive and social psychology fields; however, it must be integrated to contribute to more comprehensive and informative theory development (Peracchio, Luce, and McGill 2014). Thus, in this study, I present a meta-analysis, in an effort to 1) provide a foundational base for a more generalized theory of the relationship between positivity and false familiarity; and 2) identify the implications of this relationship to the understanding and prediction of consumer behavior.

MEMORY, POSITIVITY, AND FALSE FAMILIARITY

To determine the criteria for my literature search, I first reviewed the key concepts relevant to my study. This section provides a brief overview of these concepts, beginning with 1) memory processes; 2) the positivity heuristic; and 3) fluency misattributions, which are responsible for the false inference of familiarity when an individual experiences positivity.

First, memory (that is, recognition) is comprised of familiarity, which is a fast, automatic, and nonconscious feeling that an event was experienced; and recall, which is a slow, controlled, and conscious process involving the elaboration and recollection of the specific details of an experience (Jacoby 1991; Yonelinas 2002). This dual-process conceptualization of memory is supported by findings from the neuroscience field, which suggest distinct brain functions are involved for inferences of familiarity, versus recall (Sauvage, Beer, and Eichenbaum 2010; Yovel and Paller 2004).

Second, positivity promotes the use of general knowledge structures which, in turn, encourage heuristic processing (Bagozzi et al 1999; Bless et al 1996; Greifeneder et al 2010). When people rely on heuristics, they are prone to substantial errors in judgment, as a result of the mindless and non-elaborative manner in which they process information (Kahneman 2003). Thus, the positivity heuristic can lead people to make false inferences regarding their familiarity to a stimulus.

Finally, fluency misattributions are the mechanism by which positivity triggers false familiarity (Koriat, Goldsmith, and Pansky 2000). Traditional fluency paradigms suggest that ease of processing activates positive affect, which is then misattributed to the source of the fluency, rather than the fluency itself (Reber, Schwarz, and Winkielman 2004; Winkielman et al 2003). However, this effect can also occur inversely, whereby positivity induces a reliance on heuristic cues, freeing cognitive resources for other processing activities (Bagozzi et al 1999; Bless et al 1996; Greifeneder et al 2010). Consequently, individuals experience processing ease (that is, fluency), which they can misattribute—as a result of their heuristic processing—when making intuitive judgments (Kahneman 2003); for example, by making an inference of familiarity.

META-ANALYSIS: METHOD

The preceding review of key concepts led to the establishment of inclusion criteria for studies in the meta-analysis, which guided the literature search process. This process is outlined next, followed by a discussion of the considerations relevant to the calculation of effect sizes.

The Search for Relevant Literature

The identification of studies applicable to the meta-analysis took place during the months of October, November, and December, 2013, as follows. First, using the search term “positivity AND familiarity” (which also incorporates related terms and variations, such as “positive” and “familiar”), a Google Web search yielded 444 displayed results (from a total of approximately 4.3 million), of which eight journal articles and one unpublished Master’s thesis were deemed potentially relevant. Then, a Google Scholar search was undertaken, of which Google displayed 1000 of approximately 13600 results, whereby eight additional journal articles were collected. Next, the PsycINFO database was searched, in which three (that is, two book chapters and one unpublished doctoral dissertation) of the 53 results were added to the list of possibly relevant research. Fi-
nally, the ProQuest database was consulted, leading to the review of 6625 journal articles, and 1840 eBooks (for a total of 8465 results), which ultimately identified one additional journal article for the meta-analysis. The literature search process therefore included journal articles, conference proceedings, books and book chapters, and theses and dissertations—as well as blogs and other non-scholarly work, which was used for any reference to academic research that may have been inadvertently overlooked during the search process.

I carefully scrutinized the 21 pieces of scholarly research that were identified as being potentially relevant to the meta-analysis. First, the reference lists were scoured for 1) the titles of other studies that appeared to examine a similar effect; and 2) other publications by the authors whose work appeared in the applicable pieces of research. This process yielded a further six journal articles; I repeated the process on these articles, but no additional publications were found. Second, the web pages of the university laboratories where the authors of the potentially relevant research are employed (or were employed, at the time their study was conducted), as well as the personal web pages of the authors themselves (if available), were examined, which resulted in a further two journal articles being located.

Next, the inclusion criteria were applied to the 29 pieces of possibly applicable research. I checked for studies within the research that examined the influence of positivity in the generation of false inferences of familiarity, by way of a fluency-related misattribution process. Seventeen pieces of research were consequently excluded, leaving 11 journal articles, and one unpublished Master’s thesis. Within this research, 27 individual studies were selected for the meta-analysis.

I then repeated this literature search process, but no additional research was identified as relevant. As this process is consistent with the recommendations of leading behavioral science meta-analysis (Cumming 2012; Field and Gillett 2010; Hunter and Schmidt 2004), I was confident that I had not overlooked any pertinent studies. Furthermore, to assist in the prevention of an availability bias, I searched the online PsychFileDrawer repository for the following terms: “positivity familiarity”; “positivity heuristic”; “false familiarity”; “false recognition”; “false recall”; “false memory”; and “false alarm”. These searches, however, yielded no relevant results. Finally, the online Retraction Watch blog was consulted, but none of the 12 pieces of research, containing the 27 individual studies, had been retracted. Thus, I began my analysis by categorizing the studies, as follows.

**Classifying the Studies**

I organized the 27 studies into groups, according to the manipulation of positivity that had been employed, in order to demonstrate the versatility of the positivity heuristic’s influence on false familiarity. Three broad categories emerged: 1) mood manipulation, which involved the use of a mood induction procedure (Westermann, Spies, Stahl, and Hesse 1996) to generate positivity in participants; 2) stimulus valence, whereby positivity was primed by both supra-liminal (Dimberg 1988; Lundqvist and Dimberg 1995; Vaughan and Lanzetta 1980) and subliminal (Murphy and Zajone 1993; Niedenthal 1990; Wild, Erb, and Bartels 2001) affectively-laden stimuli; and 3) stimulus correlation ratings, in which associations between positivity and familiarity were assessed.

The third category, comprising four studies, requires clarification at this point, as it is widely understood that correlation does not mean causality (Aldrich 1995; Holland 1986; Simon 1954). In other words, although positivity and familiarity may be associated, this does not mean that positivity causes familiarity. This assumption is consistent with the three criteria that must be satisfied before causal inferences can be made: 1) concomitant variation; 2) time order occurrence of variables; and 3) elimination of all other possible causal factors (Shadish, Cook, and Campbell 2002). However, as this meta-analysis examines *false* familiarity, the studies were using stimuli that were completely novel to participants. As a result, familiarity was controlled in these four studies, by elimination; that is, the participants could not possibly have been familiar with stimuli they had not previously encountered. Combined with the control of other confounding variables (for example, through experimental design and setting), this fact means that correlations between the ratings of positivity and (false) familiarity—in these four studies—must be due to the influence of positivity (that is, positivity generated false inferences of familiarity). This conclusion converges with the contentions of the authors of these four studies, as well as with the findings of other studies included in the meta-analysis.

With the determination of a list of categorized studies for the meta-analysis, I next calculated the effect sizes for each of the studies, using reported statistics. This step is outlined for the present analysis, below.

**Calculation of Standardized Effect Sizes**

Using formulas described by Cohen (1988), and Lipsey and Wilson (2001), I computed standardized effect sizes for each of the 27 studies. I chose Cohen’s d as the common metric, because the majority of the 27 studies explored the effect of positivity on false familiarity by employing a test of (mean) difference.

It is necessary here to explain several important decisions regarding the determination of effect sizes. First, for some of the studies, it was possible to compute multiple values for Cohen’s d; for example, when 1) different methods of analysis were used on the same data; 2) statistics regarding differences between experimental groups included those between positive and negative moods/stimuli, as well as those between positive and neutral moods/stimuli; and 3) 95% confidence intervals were included for studies reporting averages of correlations. For these instances, I made the decision (prior to the analysis stage) to use only the most conservative effect size measure during analysis. This decision ensured that the overall effect size was not overestimated, in the belief that underestimating the effect has fewer negative consequences; for example, in relation to 1) the influence of an availability bias (Field and Gillett 2010; Hunter and Schmidt 2004; Rosenthal 1979); and 2) generalizability, including the tendency for scholars to overgeneralize research conclusions, especially when undertaking conceptual and theoretical development (Pham 2013).

Second, with specific regard to one of the studies (Corneille, Monin, and Pleyers 2005), the effect size I computed and included in the meta-analysis was based upon the affective explanation for the warm glow heuristic (that is, positivity-inspired false familiarity), as opposed to the prototypical explanation—despite the effect for the latter being weaker. In this case, the weaker (that is, more conservative) effect size was not chosen, because two experiments in prior research had ruled out the prototypical explanation as an adequate account of the warm glow heuristic (Monin 2003, experiments 2 and 5).

**Conducting the Meta-Analysis**

I analyzed the 27 studies using the Exploratory Software for Confidence Intervals (ESCI) software package for Microsoft Excel. ESCI is endorsed by the Association for Psychological Science (Eich 2014), and does not rely on the use of p-values from null-hypothesis significance testing. Geoff Cumming, the developer of ESCI, argues that p-values are not only irrelevant and uninformative (Cohen 1994, 1995; Hunter and Schmidt 2004), but also potentially confounding to
the interpretation of a meta-analysis (Cumming 2012, 2014). Thus, I focus my discussion of the findings on the precision and size of the estimated overall effect; these outcomes are detailed in the following section.

When conducting the analysis, ESCI provides the option of either a fixed-effects model, or a random-effects model. Field and Gillett (2010) state that a random-effects model is considered appropriate when population estimates are assumed to vary widely (that is, they are heterogeneous), and when a goal of the meta-analysis is to make unconditional inferences (that is, to generalize the findings beyond the studies included in the meta-analysis). As these two criteria align with the circumstances and goals of the present study, I used a random-effects model. Furthermore, leading meta-analysts argue that a random-effects model mirrors the real world, and should therefore be the norm in behavioral science research (Cumming 2012; Field and Gillett 2010; Hunter and Schmidt 2004).

To complete the meta-analysis, ESCI requires the input of only two statistics. For each of the studies, these statistics are the sample sizes, and the standardized effect sizes (for which ESCI automatically removes the bias from Cohen’s $d$). With these inputs, ESCI generates both statistical, and graphical, output for interpretation. The outputs and interpretations for this meta-analysis are presented next.

**META-ANALYSIS: FINDINGS**

**Results and Discussion**

Table 1 summarizes the statistics relevant to the meta-analysis, whilst figure 1 displays the results graphically. As shown, the overall effect size was $d = .397 [.255, .539]$, which means that the effect is classified as “small” to “medium” (Cohen 1988). In practical terms, Cohen (1988, 26) suggests that a small effect size (that is, $d = .20$) “is approximately the size of the difference in mean height between 15- and 16-year-old girls”. Conversely, a medium effect size (that is, $d = .50$) “is conceived as one large enough to be visible to the naked eye”; for example, “the magnitude of the difference in height between 14- and 18-year-old girls” (Cohen 1988, 26). Therefore, the positivity heuristic has a discernible influence on false familiarity, but perhaps in a not entirely obvious way. In other words, although this effect is not especially strong, it is nonetheless rigorous, real, and reliable—which means that it can affect consumer behavior.

The meta-analysis revealed a “source awareness” boundary condition for the positivity heuristic, as shown in figure 1 by study 1 and study 12. Study 1 asked participants to rate their current mood state at the immediate conclusion of the mood manipulation task, which drew their attention to the source of their positive mood (Claypool et al. 2008). Meanwhile, study 12 used positively valenced words in the test list (for the familiarity assessment), which Housley (2007) suggested were inferred by participants as the source of their positivity. When these two studies were removed from the meta-analysis, the overall effect size increased, and became more precise ($d = .464 [.353, .574]$), which provides further support for the rigor, reliability, and generalizability of the positivity heuristic in the context of false familiarity.

The positivity heuristic can also be examined by categories, whereby the majority of research has focused on stimuli valence manipulations, thereby rendering the estimates from that category more precise than those of the other two categories. That is, after removing the two studies illustrating the boundary condition, 25 studies remained. Of these studies, four were from the mood manipulation category, 17 were from the stimuli valence category, and four were from the stimuli correlation ratings category. I compared the effect sizes of these categories, and found that inducing positivity with the use of affectively-laden stimuli ($d = .535 [.384, .685]$) produces stronger inferences of familiarity—by point estimate—relative to mood manipulation ($d = .341 [.078, .604]$), and employing stimulus correlation ratings ($d = .337 [.188, .485]$).

Overall, future research might involve further study of the positivity heuristic when mood manipulation is used—with an emphasis on enhancing the precision of findings—to allow additional comparison with the stimuli valence category. Furthermore, prospective studies in this area should prioritize the identification of moderating variables, and other boundary conditions, to assist in maximizing the theoretical and practical utility of this positivity heuristic. For example, Mather and Carstensen (2005) reported that—relative to younger individuals—older people will typically 1) experience fewer negative emotions; 2) retain a higher proportion of positively valenced memories, after being shown affectively-laden stimuli; and 3) distort their memories in a more emotionally gratifying (that is, positive) manner. Thus, age may play a moderating role in positivity-inspired false familiarity; however, as all 27 studies in this meta-analysis used undergraduate student samples, the influence of age—if any—remains unclear.

Finally, there is a question as to how valid these conclusions are. As such, to address this question, attention shifts now to an exploration of the potential limitations of this meta-analysis.

**Assessing the Availability Bias**

There are two main types of bias that can affect a meta-analysis: 1) publication bias (Field and Gillett 2010; Rosenthal 1979); and 2) selection, or retrieval, bias (Cumming 2012; Lipsey and Wilson 2001). Consistent with the recommendations of Hunter and Schmidt (2004), I grouped these biases together, under the umbrella term “availability bias”.

Whilst all due care was taken during the literature search process, to identify studies demonstrating the positivity heuristic in the context of false familiarity, some studies may have inadvertently been overlooked, because this specific effect was often not the focus of the research from which a study was drawn. It is also possible that unknown and/or unpublished studies were not included in the meta-analysis.

To examine the extent of availability bias, I used Begg and Mazumdar’s (1994) correlation method, which involves a statistical assessment, using Kendall’s tau, of the association between the unbiased effect sizes, and 1) the variances ($\tau = .091$, NS); 2) the sample sizes ($\tau = .058$, NS); or 3) the standard errors ($\tau = .034$, NS), of each of the studies. All correlations were trivial in nature (as well as statistically non-significant), which indicates that the meta-analysis was not subject to an availability bias (Begg and Mazumdar 1994; Field and Gillett 2010; Hunter and Schmidt 2004). Consequently, the conclusions of the meta-analysis—especially those regarding the size and strength of the positivity heuristic—were deemed valid.

In summary, I have demonstrated, using this meta-analysis, that the positivity heuristic is a robust phenomenon. Therefore, this heuristic has implications for the understanding and prediction of consumer behavior, as follows.

**IMPLICATIONS AND CONCLUSIONS**

By integrating the findings of 27 studies spanning the cognitive and social psychology literatures, I have shown that positivity, in and of itself, can lead individuals to infer familiarity to completely novel stimuli. As familiarity is one of two key components (along with expertise) that determine consumer knowledge (Alba and Hutchinson 1987, 2000), positivity-inspired false familiarity could potentially result in the misuse of knowledge by consumers. In turn, knowledge contributes to attitude certainty (Rucker et al. 2014), which suggests a
TABLE 1
RESULTS OF A META-ANALYSIS (RANDOM-EFFECTS MODEL) EXAMINING THE INFLUENCE OF THE POSITIVITY HEURISTIC ON FALSE INFERENCES OF FAMILIARITY

<table>
<thead>
<tr>
<th>Study</th>
<th>Weight</th>
<th>Cohen’s $d_{unbiased}$</th>
<th>N</th>
<th>Variance</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>15. Lander and Metcalfe (2007): experiment 1, positive-neutral difference</td>
<td>4.0</td>
<td>.997 [.717, 1.293]</td>
<td>70</td>
<td>.02107</td>
<td>.01735</td>
</tr>
<tr>
<td>18. Phaf and Rotteveel (2005): experiment 1, overall positive false alarm rate</td>
<td>3.5</td>
<td>1.072 [.676, 1.505]</td>
<td>36</td>
<td>.04254</td>
<td>.03438</td>
</tr>
</tbody>
</table>

Overall effect size

| N/A | .397 [.255, .539] | 1065 | .00526 | .00222 |

Note.—The description following a study name does not refer to the method used in a study; rather, it is provided to clarify which specific experiment or analysis the data came from, using a defining characteristic (which should be clear when the original research is consulted).
FIGURE 1
FOREST PLOT SHOWING ESTIMATES OF EFFECT SIZES AND 95% CONFIDENCE INTERVALS, FOR A META-ANALYSIS (RANDOM-EFFECTS MODEL) EXAMINING THE INFLUENCE OF THE POSITIVITY HEURISTIC ON FALSE INFERENCES OF FAMILIARITY
possible explanation for why Alba and Hutchinson (2000) concluded that most consumers are overconfident.

Attitude certainty is dependent upon a consumer’s use of various appraisals, including accuracy and completeness—the latter of which is directly affected by confidence (Rucker et al. 2014). As such, if a consumer uses positivity as a heuristic, this can lead to false familiarity, which can form the basis of an attitude they are highly certain about. However, this attitude will be grounded upon inaccurate and/or incomplete knowledge, meaning that the consumer’s ability to use their knowledge appropriately will be comprised; for example, in the context of responding to a persuasion attempt (Friestad and Wright 1994). Additionally, attitude certainty has been shown to decrease information processing (Maheswaran and Chaiken 1991; Rucker et al. 2014; Wan and Rucker 2013) which, in turn, could make consumers more likely to rely on heuristics (such as positivity), thereby exacerbating these issues.

In conclusion, these implications represent the foundations of a generalized, integrative theory of emotion, memory, cognitive processing, attitude formation, and persuasion. Together, these elements are of great interest to academics, marketers, and consumers (Pham 2013). Thus, consumer behavior scholars should seek to build upon the results of this meta-analysis, and further integrate research findings, to build a cumulative, evidence-based discipline. In doing so, the consumer research field will benefit from a richer understanding of the interrelated processes guiding consumer behavior (Peracchio et al. 2014).

REFERENCES

(asterisks denote research containing studies that were used in the meta-analysis)


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