

Attributions of Fluency: Familiarity, Preference, and the Senses

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Consumer judgment and decision making is guided by phenomenological experiences (Whittlesea, 1997), also called “non-emotional feelings” (Clore, 1992) associated with cognitions. These feelings, such as certainty, surprise, and confusion, are considered non-emotional because they are feelings associated with a state of knowledge (Clore, 1992), as opposed to emotional feelings of happiness, anger, and sadness, which relate to the state of a person. These feelings, which may arise from incidental exposures to contextual information (e.g., exposure to promotional materials), can influence a person’s memory, and hence affect one’s feelings of familiarity, preference, and sensory evaluation. The role of memory in preference is not clear in most models of judgment and decision making (although see Weber & Johnson, 2006). We believe that the concept of fluency (in general) and more particularly Whittlesea’s (1997) Selective Construction And Preservation of Experiences (henceforth SCAPE) account may be useful as a framework for understanding consumer judgment and decision making.

We focus on fluency, which is a metacognitive cue that reflects the relative ease or difficulty that a person experiences while performing a cognitive operation, and how fluency can lead to inferences about the external environment. We organize our discussion around the role of fluency in familiarity and preference judgments, and attempt to integrate findings from cognitive, social, and consumer psychology to provide new insights into consumer behaviour. We review both laboratory and field studies and propose new ideas about the role of fluency in evaluation about experiential objects involving taste, touch, sound, and smell.

FLUENCY

When people make judgments about previous experiences or current preferences, they have access to both mental contents that are produced (e.g., the perception of a wine's label, including pictures), and the subjective experiences that accompany those contents (e.g., fluency of processing the label's words). The subjective experience of fluency refers to the relative ease or difficulty in processing mental contents. Fluency prompts inferences about many different aspects of the environment, including an item's value or familiarity. People attempt to attribute this ease or fluency to an appropriate source (Whittlesea & Williams, 1998), based on their intuitive theories of cause and effect (Schwarz, 2004).

Fluency can be conceptualized as falling into one of two broad categories of influence. The first category is "perceptual," arising from the subjective ease at processing an item's font, color, or other visuo-perceptual details. Perceptual fluency can arise from prior exposure (Whittlesea, 1993), orthographic regularity (Whittlesea & Williams, 1998), or linguistic regularity (Shah & Oppenheimer, 2008). Perceptual fluency has been found to influence a variety of judgments, including preference (Novemsky, et al., 2007). Unfortunately, there is little known about causes and outcomes of perceptual fluency involving touch, taste, smell, and sound (although see Miller, Lloyd, & Westerman, 2008). The second category of fluency is "conceptual", arising from the subjective ease at processing an item's meaning. Conceptual fluency can arise from priming an item's semantic associations (Whittlesea, 1993). Conceptual fluency has also been found to influence a variety of judgments, including preference (Lee & Labroo, 2004).

The process by which fluency is used as a cue in judgment and decision making is complex. In any type of decision, absolute judgments are much more difficult to make than relative judgments (Weber & Johnson, 2009). For example, in music, absolute or perfect pitch (the ability to name or recreate a musical note played in isolation), is far more difficult and less common than relative pitch (the ability to name or recreate a musical note played after hearing another note) (Sacks, 2007). A person's reference point is determined by the context (e.g., other options in a choice set of wines), general expectations, or specific expectations; people use reference points when making judgments. A common approach is to view fluency as the difference between expected ease (which can be based on anticipation, Jacoby & Dallas, 1981; Whittlesea & Williams, 2001a; 2001b), or the context (Briñol et al., 2006; Unkelbach, 2006), and actual ease, in conditions of uncertainty. If a person had complete certainty about which wine was the best value, there would be no need to rely on other cues, including metacognitive cues such as fluency to make a wine-purchasing decision.

Inference, attribution, and construction are ideas that form the core of Whittlesea's (1997) SCAPE account of memory. According to the SCAPE account, each mental representation is preserved to serve as a resource for perception and performance on future occasions. The effects of prior experiences on current behaviour do not simply involve retrieval of a mental representation, but also pertain to the contextually-driven subjective quality of that retrieval. The account posits that any mental event, regardless of whether it consists of the recall of an experience at a winery, or the identification of taste on the palate, occurs through a constructive process that involves two steps. The first is the production of mental events, whereby ideas are brought to mind. Production

can be the result of an external stimulus (situational cue), such as when a consumer has to make an online stimulus-based choice (e.g., which one of the wines in this flight is my favorite?), or simply the consequence of generating a thought, such as when a consumer has to make a memory-based choice (e.g., which wine from those sampled on last week's wine tour was my favorite? Lynch & Srull, 1982). Either way, production is guided by prior experiences.

The second step in SCAPE is the evaluation of the quality of those mental events (the fluency or elaborateness of processing), producing subjective experience. The purpose of the evaluation function is to evaluate the goodness of the mental event. Ideas about an experience, whether it is in the moment (sampling a wine flight) or a reflection of the past (remembering a winery tour) can come to mind easily, with a lot of detail. The outcome of those ideas (fluency) requires an attribution, linking the subjective experience to an internal or external source. A flood of vivid memories (coming to mind fluently) from a winery tour associated with a specific cabernet franc may lead to the conclusion that that particular wine was the best tasted on the tour.

The evaluation process is inferential and unconscious. The evaluation process is also guided by prior experiences, in interaction with current expectations, based on the context. If repeated exposure to a piece of art produces a metacognitive experience of fluency, a person might interpret that fluency as pleasantness in the context of a preference judgment, or familiarity in the context of a recognition judgment (Whittlesea & Price, 2001). Speculatively, the experience of humor is the result of a violation of expectation between an expected and actual outcome. In the context of a joke, the source of fluency is attributed to humor. The ultimate violation of expectation is

randomness, explaining why comedy relies on randomness as a source of humor. To illustrate:

“Haikus are easy

But sometimes they don’t make sense

Refrigerator.”

(Anonymous quote from a T-shirt)

The reason that humor may rely on surprising fluency is that the most dramatic effects of fluency occur when it is unpredictably high or low compared to some expectation (Whittlesea, 2002; see also Labroo & Kim, 2009). Fluency must be surprising to show an effect on judgment (Whittlesea & Williams, 1998; 2000; 2001a; 2001b). Said another way, when people are aware of the reason for the relative ease or difficulty of processing (hence there is no perceived discrepancy in processing), there is no reason to make an attribution.

Fluency and Familiarity

An essential characteristic of the remembering process is the feeling of familiarity; the feeling’s source provides a useful illustration of the unconscious attribution process. Intuitively, a feeling of familiarity would arise when an event has occurred in the past; the experienced event creates a memory trace, which is activated upon encountering a cue for that event. Contrary to this idea is the notion that feelings of familiarity are mediated by an unconscious attribution process, and do not always rely on having a

memory trace (Jacoby, Kelley, & Dywan, 1989). The illusion of familiarity, created by the enhanced processing of a novel stimulus provides a potent illustration of how the feeling of familiarity is not always a direct result of cueing prior representations in memory. Walking into a winery in Niagara-on-the-Lake, for the first time, and seeing the tasting room (wine bar, wine bottles, oak barrels), smelling the wine, and then being asked what you'd like to try, may produce a feeling of familiarity. In this case, unexpected fluency occurs because of the sense that many of the features of the situation resemble specific features of other, already encountered situations from one's past, in a surprising way. That is, the person's fluency is surprising in the situation, consciously experienced as familiarity (see also Mandler, 1980).

Prior experience with a stimulus enhances the fluency with which that stimulus is processed in the same way that practice makes a skill easier to perform. Because of this veridical link between fluency and actual past experiences, people rely on processing fluency as a heuristic in deciding that they have experienced an event before making an attribution to prior experience (saying "I'm sure I've been to this winery before!"). There is correlational evidence for this attribution process (Jacoby & Witherspoon, 1982) as well as experimental evidence, whereby fluency is experimentally manipulated independent of prior experience through manipulations such as visual clarity (Whittlesea, Jacoby, & Girard, 1990).

It is not just perceptual fluency (Jacoby & Dallas, 1981), but also conceptual fluency of processing, manipulated without participants' knowledge, which can lead to illusions of familiarity (Whittlesea, 1993). The illusion occurs because of an unconscious attribution process that arises without access to memory contents or to the cognitive

processing that may be driven by memory contents. This heuristic process can't differentiate cognitive processing that has been enhanced by actual experience (memory) versus external sources.

The fluency heuristic is used selectively for familiarity only when there is an expectation that current processing should be affected by past experience. Assuming this, people are blind to two aspects of their own processing. People are unaware of the difference between fluency of processing arising from prior experience versus fluency of processing arising from an experimental manipulation and that they are making an inference and attributing fluency to something. If the inference becomes conscious the process does not occur (Jacoby & Whitehouse, 1989).

One corollary of the SCAPE framework is the discrepancy-attribution hypothesis. According to this hypothesis, when there is an unexpected or surprising mismatch between expected and actual performance on a given stimulus in a given context, the perceived discrepancy is consciously experienced as the feeling of familiarity, and unconsciously attributed to a prior experience of that stimulus. When a person experiences "surprising fluency", the surprise leads to a feeling of familiarity, and the person attributes the surprise to the past. If thoughts about a winery experience come to mind with surprising fluency, it is the surprise that leads to a feeling of familiarity.

The perception of discrepancy is thought to occur when outcomes either violate or validate expectations in a surprising way (hence, "surprising fluency"). Often this surprise occurs because the expectation is a constrained, indefinite one, so that the relationship between expectation and outcome is ambiguous (Whittlesea, 2002b).

Fluency and Preference

Other illusions that arise when prior experience is manipulated independent of prior experience include illusions of truth (Begg & Armour, 1991), visual clarity (Whittlesea et al., 1990), another person's performance (Jacoby & Kelley, 1987), fame (Jacoby, Woloshyn, & Kelley, 1989), good category membership (Whittlesea & Leboe, 2000), good choice (Novemsky, Dhar, Schwarz, & Simonson, 2007; Bodner & Mulji, in press), and risk perception (Song & Schwarz, 2009). To illustrate the latter, fictitious amusement park rides were rated as less risky if they were easy (Chunta) versus difficult (Vaiveahtoishi) to pronounce.

Fluency can also be misattributed to pleasantness (Zajonc, 1980; Whittlesea, 1993) likeability (Bornstein & D'Agostino, 1992), and valuation (Altar & Oppenheimer, 2006). It is not just the perceptual fluency, but also the conceptual fluency of processing, manipulated without participants' knowledge, that can produce illusions of pleasantness (Whittlesea, 1993). It has been argued that like the illusion of familiarity, the illusion of pleasantness is thought to occur because of an unconscious attribution process that occurs without access to memory contents or to the cognitive processing that may be driven by memory contents. However, the attribution is more pronounced the more "subliminally" the items are presented (Bornstein & D'Agostino, 1992). The effect of processing fluency on pleasantness is non-monotonic: with additional exposures, boredom sets in and pleasantness ratings attenuate (Bornstein, Kale, & Cornell, 1990; see Berger & Fitzimmons, 2008, for a view of how frequent exposures to conceptual cues can "accumulate" to influence product evaluation and choice).

The notion that previous exposures can influence liking is not a new one. One of the most studied findings in social and consumer psychology is the mere exposure effect, which is the finding that, as exposure frequency increases, so does preference (Zajonc, 1968). If a person sees a banner ad for a brand several times (even in peripheral vision), they tend to like that brand more (Fang, Surendra, & Ahluwalia, 2007). This finding occurs even if the repeatedly-presented item is shown for only 5 milliseconds at a time (Bornstein & D'Agostino, 1992). The effect on preference is observed in the absence of recognition, which poses a puzzle. Whittlesea and Price (2001) questioned why it is that fluency – an important cue to recognition – is only associated with increased preference (and not recognition) in mere exposure effect studies. To address this question, participants were shown pictures in a training phase, either one, three, or five times. When participants were asked to justify (i.e., use an analytic processing strategy) why an item was preferred (hence, to not experience the fluency), preference was at chance, whereas when participants were told that they “would have no cues to recognize the items”, but had to use general, categorical familiarity (hence, could experience the fluency), recognition increased with repetition. It is the dimension that is made salient by the task that dictates the source to which the fluency will be attributed.

In each case, there is a misattribution of fluency to the most likely or available source (see Schwarz, 2004 for a review), due to an unconscious inference. The difference, however, is that the item’s “oldness” (recency; Lee & Labroo; 2004, or frequency; Berger & Fitzimmons, 2008), which causes fluency, is a relevant dimension for recognition, whereas an item’s “oldness” is not a relevant dimension for most

pleasantness judgments (with some exceptions; wine is believed to improve with age), making the attribution erroneous. When an item is fluent due to factors other than its actual “oldness,” the attribution to pleasantness will be erroneous (Whittlesea, 1993).

There is an alternative explanation for the mechanism underlying affective judgments, which differs from the mechanism underlying cognitive judgments (Lee, 2002). Note that cognitive judgments, such as recognition, have correct and incorrect answers (Zajonc, 1980; Lee, 2001). The explanation is as follows: both conceptual and perceptual fluency lead to more positive attitudes. However, only conceptual fluency, when associated with negatively-valenced concepts, can lead to negative attitudes (Lee & Labroo, 2004; Experiment 4). Unlike previous research that shows that fluent processing is positively valenced (Harmon-Jones & Allen, 2001), conceptual fluency can be either positively or negatively valenced because of the possibility of spreading activation to positive or negative constructs in semantic memory (Collins & Loftus, 1975).

This finding that conceptual fluency, when associated with negatively-valenced concepts, can lead to negative attitudes calls into question the need to use a misattribution model to account for effects of conceptual fluency on affective judgment (Lee & Labroo, 2004). According to Lee and Labroo (2004), Whittlesea’s (1993) argument that conceptual fluency is misattributed to pleasantness is based on other data showing how people misattribute perceptual fluency to psychophysical judgments (loudness, brightness, etc.), and there has not been a direct test of the misattribution model on affective judgments.

In a series of studies in line with Lee and Labroo's explanation, we have examined the effect of forming either negative or positive associations in memory on preferences and behavioural intentions. In one study, participants were led to believe that as children, they had gotten sick from strawberry ice cream. After receiving the false suggestion the participants become more confident that they had gotten sick from strawberry ice cream. This false autobiographical belief resulted in a decrease in preference for strawberry ice cream and an intention to avoid strawberry ice cream (Bernstein, Laney, Morris, & Loftus, 2005a). In order to separate those who were susceptible to the false suggestion from those who were not, "believers" were distinguished from "non-believers" based on two criteria. First, participants must have initially indicated a low confidence rating that they had gotten sick from strawberry ice cream, with an increase in confidence after the suggestion. Second, the participants must have generated a specific memory or a non-specific belief ("I just know that it happened, but can't recall when, where, or how") that the critical event had occurred. After separating participants according to these criteria, we found that "Believers" were more likely to "avoid" the critical item and were less inclined to want to eat it than the non-believers. These findings show that providing a suggestion can lead to false memories for negative food-related experiences, and that certain behavioural outcomes emerge such as decreasing preferences toward the food.

In another study, participants received a suggestion that as children, they had gotten sick from dill pickles and hard-boiled eggs. By examining participants' confidence ratings before and after the suggestion we found that those who believed the suggestion significantly increased their confidence ratings that they had gotten sick from

these items when they were a child (Bernstein, Laney, Morris, & Loftus, 2005b).

Furthermore, participants decreased their preferences toward the items and were also more willing to avoid them.

In another study, this time using asparagus as the critical item, we suggested to participants that they loved to eat asparagus as children (Laney, Morris, Bernstein, Wakefield, & Loftus, 2008). “Believers” not only reported more desire to eat asparagus, they rated pictures of asparagus as more appetizing and less disgusting (vs. their pre-suggestion ratings). Believers also increased their willingness to pay for asparagus (vs. a group that did not receive the suggestion). Later studies showed that people who were seduced by the false information actually ate less of the food (Geraerts et al 2008).

The notion of surprising fluency can be used to account for these suggestion effects: that is, people believe the false event (e.g., getting sick from ice cream; having loved asparagus), with confidence, leading to the behavioral consequence (lowered preference for the ice cream; higher ratings towards asparagus). Although Lee and Labroo’s (2004) conceptualization of fluency can also account for the finding that altered memories can lead to both increases and decreases in preference (given that conceptual fluency may entail spreading activation to positive or negative constructs in semantic memory), we believe that their explanation does not account for the full pattern of data. Rather, we think that one must induce belief through elaboration and imagination in order to observe behavioral consequences of the false memory (Bernstein & Loftus, 2009).

FLUENCY AND PERCEPTIONS ABOUT THE SENSES

Our discussion has focused on perception (conceptually-driven), and not sensation (data-driven), and on cognitions rather than experiential objects that can be consumed. An examination of perceptions relating to the senses would provide valuable insights into theories of recognition and classification that have not been examined in the context of sensory evaluation judgments, such as the aroma and taste of a wine. Much of the findings from perception may be relevant to experiential evaluations, because cognition and sensory thoughts play major roles in experiential evaluations. Advertisements that mention multiple sensory experiences (smell, sight, and sound) versus a single sensory experience (taste only) can increase the number of positive sensory thoughts a person generates, and subsequently leads to increased perceptions of taste, as measured by tastiness ratings (Elder & Krishna, in press).

Perception and Taste, Touch, Smell, and Sound

Given that cognitions relating to sensation influence taste perception can metacognitive experiences also influence perception that is used in recognition or classification judgments relating to experiential items? When classifying the taste of a wine as one grape varietal over another, what process(es) does a person use? Does fluency play a role in taste judgments? If so, what would “experiential fluency” be?

One potential avenue to address this question comes from the work of Oppenheimer and Frank (2008), who examined the effects of the metacognitive cue of fluency on categorization judgments (perception). The logic used was that typical

exemplars of a category are frequently experienced, easily accessible, and the most primed by their associates in memory. Therefore, over the course of one's lifetime, the metacognitive experience of fluency co-occurs with the judgment of good category membership, making fluency a valid cue to category membership. In their studies, they used natural and artificial categories (mammals, vehicles) and used a fluency manipulation that varied font type. Participants had to perform exemplar verification (bird?) or feature verification (has wings?). Typicality ratings for exemplars were significantly lower in the low fluency condition (10-point Mistral font type) than the control condition (12-point Times New Roman font type).

Oppenheimer and Frank's (2008) findings challenge traditional theories of categorization, including prototype theories (Rosch & Mervis, 1975), exemplar theories (Brooks, 1978; Medin & Schaffer, 1978), and theory and knowledge-based models (Rehder & Hastie, 2001). In general, these models do not take into account metacognitive information in classification. These models may be able to account for fluency if they add it as a "feature" or "knowledge," however future research is needed to examine the role of fluency in sensory thoughts.

An examination of sensory thoughts would not only provide insights into theories of recognition and classification, but also on the role of metacognitive experiences in sensory evaluations. Sensory scientists do not consider the role of metacognitive experiences in sensory evaluation, as they often assume that consumers are rational decision makers (Köster, 2003). While much is understood about bottom-up processing, such as genetic differences leading to variations in taste sensation (Bartoshuk, Fast, & Snyder 2005), top-down processing, such as the role of visual and verbal cues on

cognitive processes that can lead to biased judgment in sensory evaluation, are only beginning to be understood.

In terms of top-down processing, research has shown that a brand name can influence taste perception (Allison & Uhl, 1964), and extrinsic cues, such as information pertaining to ingredients (Lee, Frederick, & Ariely, 2006), or visual cues such as color (Hoegg & Alba, 2007) can change one's taste experience. For haptics (touch), visual ads (e.g., showing a kitten) versus verbal ads can result in higher perceived softness for a product (Mitchell & Olson, 1981).

There has been very limited research examining how metacognitive information independent of sensory evaluation can lead to errors in perceptions of taste, touch, smell, and sound (although see Krishna, 2006). Does a person's fluency of processing cognitions relating to a given sensation (touch, smell, taste, or sound) bias judgments of the quality of that experience? Can the context alter a person's expectations of a sensory experience, thereby altering perception?

When it comes to actual consumption, some have argued that sensory systems have been optimized by evolution (Abdi, 2002), and that sensory inputs are inherently evaluable (Hsee et al., 2009). Thus "sensory utilities" (versus prediction or memory utilities) should not be biased by contextual factors (Hsee et al., 2009). However, would fluency, a metacognitive cue arising from context, affect perception of taste, touch, or smell of the item? If so, is it the physiological perception or intensity that is affected, or the hedonic response, which may include liking or acceptability?

In terms of metacognitive ease, one issue that has arisen in the Niagara region in Canada is the debate between whether to focus marketing efforts at promoting our Riesling, versus focusing efforts at promoting our Gewürztraminer. Critics of the latter idea claim that “no one can even pronounce it”, “it’s so frustrating to say”, or “how can someone enjoy something they can’t even read?” It is a question open to investigation: does fluency of the grape varietal name lead to changes in taste perception, or discrimination between the two grape varietals? One way to test this notion is to provide participants with the identical wine, however, with labels of grape varietals that are either familiar (Merlot), fluent but non-familiar (Moscato), or disfluent and non-familiar (Mtsvane). Then ask participants to rate their preference and willingness to pay for the wine. Would people’s taste experience (physiological, or hedonic) be altered by the label manipulation? We have studies in progress exploring this issue.

Sensation: Sensing Touch, Taste, Smell, and Sound

Bottom-up sensory evaluations are made using a variety of tasks including identification and discrimination. In discrimination tests, participants are provided with 3 samples whereby 2 are the same, and 1 is different. This is typically called a triangle test. Participants have to identify which of the 3 samples is the different one (Raghubir, Tyebjee, & Lin, 2009). The number of people who correctly choose the different sample must be corrected for guessing. In the repeated-pair test, participants are asked to evaluate 2 different samples (using preference, identification, or discrimination) repeatedly, and the consistency of their ratings is examined (Buchanon & Henderson, 1992). In another version of the discrimination task that uses a scale, several pairs of samples are provided to participants (some same, some different), and participants

make similarity ratings on a scale (1 = identical taste; 7 = different taste) (Hoegg & Alba, 2007).

Although these tasks involve low-level sensory discrimination, it may be the case that even low-level sensory discriminations can be influenced by top-down, metacognitive influences. There are virtually no studies examining the influence of metacognitive experiences on sensory discrimination. Could fluency influence changes in sensory discrimination? This is an important question because accurate sensory discrimination is the basis for differences in consumer preference (Raghubir et al., 2009). One way to address this issue is to manipulate fluency related to sensory experience, and then assess whether fluency can affect discrimination. The example above with pronouncing grape varietal names is one in which the fluency experience is rather divorced from the sensory judgment, but it might still affect the sensory experience of discrimination. One way to test this would be to give participants a repeated-pair test, and examine discrimination ability. One pair would contain a wine in a juice glass and a juice in a wine glass. The same pair would be repeated, although on the second trial, the juice would be in a juice glass and the wine would be in a wine glass. Here, the experience of the drinks (in terms of evaluation, preference) might be affected by one's expectations about what will be tasted and the actual taste.

One could extend the notion of fluency into auditory sensory judgments: Listening to a choral concert in a medieval church versus in a baseball stadium, for example. The former produces a rich sensory and perceptual experience, while the latter does not. The same idea applies to touch: How do people experience the feel of accidentally

stepping on a rogue tomato in a produce store versus stepping on the same tomato during the energizing Tomatina Festival in Spain?

Taken together, the metacognitive cue of fluency that a person experiences while performing a cognitive operation can lead to inferences about the external environment. According to the SCAPE account, each mental representation (whether motoric, cognitive, or sensory) is preserved as a resource for perception and performance on future occasions. The effects of prior experiences on current behaviour are the result of a constructive process that involves two steps, production of mental events, and the evaluation of the quality of those mental events (the fluency or elaborateness of processing), producing subjective experience. The purpose of the evaluation function is to evaluate the goodness, or the source, of the mental event, based on current expectations, which are guided by the context, which can be an event, or an item associated with the to-be-judged object.

The metacognitive experience of surprising fluency, which may arise from incidental exposures to contextual information, false feedback, or other experimental manipulations discussed here, can influence a person's memory, and therefore one's feelings of familiarity, preference, and sensory evaluation. The ideas presented here contribute to the literature on the role of memory in preference judgments (Weber & Johnson, 2006). We believe that the concept of fluency (in general) and more particularly Whittlesea's (1997) Selective Construction And Preservation of Experiences account may be useful as a framework for future research on consumer judgment and decision making.

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