

**ASPECTS OF EXPERIENCES: THE ROLE OF NOVELTY IN
RETROSPECTIVE SUMMARY ASSESSMENTS**

Rajesh Bhargave

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A handwritten signature in black ink, appearing to read "Ad. Zuh", with a long horizontal flourish extending to the right.

Supervisor of Dissertation

A handwritten signature in black ink, appearing to read "Eric T. Bradlow", with a horizontal line underneath.

Graduate Group Chairperson

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ABSTRACT

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RETROSPECTIVE SUMMARY ASSESSMENTS**

by Rajesh Bhargave

Gal Zauberman, Advisor

Many consumption episodes involve experiences that extend over time or comprise sequences of outcomes. Whether leisure activities, shopping visits, or service encounters, extended experiences vary in their novelty for consumers. While past work has studied the role of novelty in how episodes are experienced, in this dissertation I ask: How does the novelty of an experience impact its retrospective, overall evaluation? Previous research on the snapshot model observed that overall evaluations are based on only the most accessible snapshots of experiences. This past work largely focused on accessibility differences arising from serial positioning and intensity, whereas novelty stems from differences on stimulus or conceptual characteristics. In this dissertation, while demonstrating that novelty influences accessibility in overall evaluations, I also show that novelty's effect depends on the timing and type of evaluation. As a basic effect, I find that novelty enhances the accessibility of affective experience: Aspects that are normally under-weighted in overall evaluations have a larger influence if these aspects are novel. Further, studying overall evaluations of affect at different points in time, I find that aspects that regularly influence immediate evaluations are more likely to impact delayed evaluations if these aspects are novel. Examining different evaluation types, I show that

novelty has opposite effects for informational evaluations: Retrospective judgments of attribute quality levels are more accurate when an experience is common versus when it is unique—an effect driven by learning advantages that accrue through accumulated experience. Finally, I distinguish novelty from unfamiliarity by showing that novelty varies based on the number of past direct experiences but not indirect experiences (e.g., verbal descriptions of episodes) in a domain. Taken together, these findings augment our understanding of overall evaluations and explicate novelty. This dissertation also unites the snapshot model literature with other work on memory, learning, and affect.

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I. Introduction

An inquisitive visitor touring the marketplace would find people engrossed in extended experiences: An art collector appreciates a series of paintings at a gallery, a crowd gathers to watch a percussion concert on the street, and new parents browse through several baby items at a specialty store. The outsider's visit to the marketplace comes from a cross-sectional angle, viewing each person seemingly paired with one experience. In contrast, for the consumers being observed, their current experience is one of many consumption episodes that they have engaged in. The experience may be a regular activity, or it may be novel—perceived as unlike anything ever ventured. Memories of past episodes may strengthen their understanding of the present, or they may interfere, ultimately influencing how the experience is evaluated retrospectively. This dissertation addresses these issues in consumers' evaluations of extended experiences.

Consumption episodes of many types, including leisure activities, shopping visits, and service encounters, regularly extend over time or comprise sequences of outcomes.

Consumers experience affective reactions and learn attribute information during these episodes. For instance, when visiting an art gallery a consumer would enjoy each painting at different levels, and he would learn about the artists who created these paintings. As I argue in this dissertation, memory for such an extended experience will depend on its novelty. In this dissertation, I control for the effect of novelty on how episodes are

experienced and attended to as they unfold, and I focus on the effect of novelty on how episodes are evaluated retrospectively.

Novelty can be a powerful motivator for consumers as they seek out or avoid novel experiences. Novelty also varies across episodes and over time through consumers' trial of new offerings and accumulation of experiences. I draw on both the psychology and consumer behavior literature in defining novelty: The novelty of an experience inversely relates to the number of prior, relevant experiences and the similarity of those past experiences to the focal experience. I study novelty as a source of memorial differences, investigating episodes that are entirely novel (e.g., when a consumer has never eaten a meal from an exotic cuisine) as well as episodes in which only aspects of the episode are novel (e.g., when one dish in a meal is considered exotic). Importantly, I distinguish novelty from related constructs, such as affective intensity and unfamiliarity, demonstrating how they yield different outcomes on overall evaluations. In sum, one goal of this research is to explicate novelty using overall evaluations as a framework.

Further, the present investigation compares global evaluations of experienced affect with judgments of attribute quality levels. This distinction has also been addressed in the past literature, including work discussing memory for sensory experiences versus memory for market information (Shapiro and Spence 2002) and research examining differences between hedonic versus informational evaluations of extended experiences (Zauberman, Diehl, and Ariely 2006). Conceptually, these characteristics differ in that experienced

affect is based on subjective impressions and feeling states, whereas attribute quality levels are extracted from external sources. Consequently, the novelty of an experience may also have different implications on overall evaluations depending on the type of characteristic evaluated. The role of prior experience in memory for attributes has been discussed in the literature on consumer learning, whereas this dissertation focuses on how novelty influences affective evaluations. Thus, another objective of this research is to enhance extant theory on overall evaluations of experienced affect while also linking this research stream to that on consumer learning.

Because the present research investigates memories for episodes, an additional factor studied is the length of delay between an episode and its overall evaluation. Delayed evaluations are of interest in this dissertation, because consumers' decisions to repeat experiences are likewise delayed in many consumption domains. This work underscores the importance of delayed judgments, both because they differ from immediate judgments and because they are prevalent.

Through five studies, I demonstrate how novelty influences overall evaluations. As a basic effect, I find that novelty enhances the accessibility of affective experience: Aspects that are normally under-weighted in overall evaluations have a larger influence if these aspects are novel. Further, studying overall evaluations of affect at different points in time, I find that aspects that regularly influence immediate evaluations are more likely to impact delayed evaluations if these aspects are novel. Novel experiences are distinctive

even when compared to a broad history of accumulated experiences, leading to accessibility advantages that are particularly evident after a delay. This temporal interaction suggests that the basis of evaluations may shift systematically over time, driven by the experience's novelty. Examining different evaluation types, I show that novelty has opposite effects for informational evaluations: Retrospective judgments of attribute quality levels are more accurate when an experience is common versus when it is unique—an effect driven by learning advantages that accrue through accumulated experience. Finally, I distinguish novelty from unfamiliarity by showing that novelty varies based on the number of past direct experiences but not indirect experiences (e.g., verbal descriptions of episodes) in a domain.

Before elaborating on these findings, I first turn to a comprehensive literature review, which will also illuminate the motivation for this research question and the hypotheses tested. I primarily draw on two literatures: the snapshot model in overall evaluations of extended experiences, and novelty in memory, learning, and affect. These literature streams are disjointed, but they share several features that result in a friendly partnership.

II. The snapshot model literature

A. Historical sketch and motivation

With increasing attention devoted to the role of affect in decision making and subjective-well being, many authors studied overall evaluations of extended experiences. This

research stream, known as the ‘evaluation-by-moments’ paradigm or ‘snapshot model,’ investigated how people remembered the overall pain, unpleasantness, enjoyment, and other affective dimensions of experiences that extended over time or comprised sequences of outcomes. These evaluations have been labeled as ‘global evaluations’, ‘overall evaluations’, or ‘remembered affect’ in past work, and they have the common characteristics that such assessments are retrospective (i.e., evaluated after the experience has concluded) and summarized (i.e., one evaluation for the entire experience). The snapshot model is based on the premise that remembered overall affect may not correspond to a simple averaging or summing of affective intensity. Instead, a set of principles can account for discrepancies between experienced and remembered affect. Although the thrust of this research took place from the early 1990s and onwards, the body of work was grounded in much older psychology literature, such as Gestalt psychology and psychophysical perception.

The interest in retrospective, global evaluations of extended experiences was motivated by the heavy reliance on these overall evaluations in judgment and decision making. Kahneman et al. (1993) found that people’s choices adhered to remembered affect rather than experienced affect when the two forms of affect were in conflict. Specifically, participants submerging their hand in ice-cold temperature were more willing to repeat the affective experience they judged retrospectively to be less painful than to repeat the experience their on-line measures revealed to be less painful. Wirtz et al. (2003) replicated this finding in the domain of vacations.

Overall evaluations not only are considered in decisions, but also they impact future utility streams through remembrance (Elster and Loewenstein 1992). When people engage in nostalgia or when they experience painful memories, they rely on distorted views of past experiences biased by their later assessments (e.g., Mitchell et al. 1997). People derive happiness and meaning by looking back at certain types of past experiences, suggesting that utility from remembrance is a significant outcome in its own right (Van Boven and Gilovich 2003; Zauberman, Ratner, and Kim 2009).

B. Theory and past findings

According to the snapshot model, when people evaluate an experience retrospectively they do not replay the entire experience like a film. Instead, they retrieve a few key characteristics or snapshots of the experience. This snapshot metaphor was borrowed by Fredrickson and Kahneman (1993) from Kundera's (1991) fiction novel *Immortality*. Abbreviated memory of experiences often leads to duration neglect, in which the duration of an experience minimally influences overall evaluations (see Ariely, Kahneman, and Loewenstein 2000 for a review of duration neglect). More generally, this simplified representation of a past experience results in people forming overall evaluations based on a summary of the experience that may not reflect average of moment-to-moment affective intensity.

Although past work has consistently portrayed overall evaluations as reflecting limited, summary assessments, there is less coherence in the literature in pinpointing the gestalt characteristics of experiences that influence overall evaluations. Here ‘gestalt characteristics’ refer to the defining features of the whole experience, akin to gestalt in form perception (e.g., Koffka 1922). One highly cited, stylized fact from this paradigm is the peak-end rule, which states that the peak intensity and end intensity heavily influence overall evaluations, and the average of on-line affective intensity provides little explanatory power when included in a regression model with the peak and end intensity (Fredrickson and Kahneman 1993, Redelmeier and Kahneman 1996). The peak-end rule has been replicated in a number of settings, including pain from experimentally-induced episodes, medical procedures, and medical conditions (Ariely 1998; Kahneman et al. 1993; Redelmeier and Kahneman 1996; Redelmeier, Katz, and Kahneman 2003; Stone et al. 2000), annoyance from unpleasant sounds and television signal impairment (Ariely and Loewenstein 2000; Ariely and Zauberman 2000; Hands and Avons 2001; Schreiber and Kahneman 2000), satisfaction from service encounters (Verhoef, Antonides, and de Hoog 2004), and enjoyment for pleasant film clips, television advertisements, and music (Baumgartner, Sujan, and Padgett 1997; Fredrickson and Kahneman 1993; Rozin, Rozin, and Goldberg 2004).

While the peak-end rule continued as a subject of inquiry, subsequent work also uncovered different determinants of overall evaluations. This research has shown that other gestalt characteristics, including the start, local peaks and troughs (Rozin et al.

2004), the timing of peaks (Baumgartner et al. 1997), the final trend, the overall trend, and the rate of change may also heavily influence overall evaluations (see Schreiber and Kahneman 2000 for a list of hypothesized and supported effects). Ariely and Carmon (2000) categorize these gestalt characteristics into two broad strokes: “configural aspects of the experience” and “transient state at key moments.” Previous researchers have also suggested the possibility of other important moments in experiences. For instance, Ariely et al. (2000) conjecture, “that for many experiences, the most important feature may be the aspects of the experience that give it meaning.”

Not only have authors proposed different gestalt characteristics as being central to overall evaluations, but also empirical evidence reveals that a given gestalt characteristic may not always have a privileged status. A number of investigations demonstrated muted effects of peak, end, or trend, but these non-significant effects may be explained by differences in task characteristics. For example, Rode, Rozin, and Durlach (2007) in investigating sequences in meals found no evidence of peak, primacy, or recency effects, though they did observe duration neglect. Their muted effect of peak possibly stems from the lack of peakedness of the distribution (i.e., kurtosis) of affective intensity. Similarly, Schreiber and Kahneman (2000) did not find consistent trend effects, but they varied a number of other aspects of the experience which resulted in a less than ideal test of trend.

More importantly, researchers have identified boundary conditions to overall evaluation heuristics through theoretically informed moderators. A number of authors discussed the

relative weighting of peak versus end intensity. Fredrickson (1991) found that when endings were not known, end intensity contributed little to overall evaluations, suggesting that the end effect is not fully explained by recency. On the other hand, Carmon and Kahneman (1996) and Ariely and Carmon (2000) found that when the end outcome is the focus of the experience, such as when experiencing an unpleasant wait in a queue, the end is the only important characteristic, and peak intensity does not influence overall evaluations. Fredrickson and Kahneman (1993) showed that a simple peak-only rule is a parsimonious predictor for explaining overall evaluations for unpleasant stimuli, whereas the peak-end rule is more appropriate for pleasant stimuli. Finally, Branigan et al. (1997) found that when people are expecting to re-experience an aversive episode peak intensity alone characterizes overall evaluations.

Additional observations of moderated effects concern other gestalt characteristics, such as the trend of the hedonic profile. Ariely and Zauberman (2000, 2003) show that the effect of trend on overall evaluations depends on the cohesiveness of the experience, with partitioned experiences exhibiting less pronounced or non-existent trend effects. Zauberman et al. (2006) find that, holding average intensity constant, improving trends are preferred for hedonic evaluations, but declining trends are preferred for informational evaluations. Together these moderators help us understand how overall evaluations vary across real world experiences that differ on a number of dimensions.

C. Past research related to novelty's effect on overall evaluations

Although novelty has not been the focus of any one investigation in the snapshot model, some authors have observed preliminary effects or discussed related constructs. Ariely and Carmon (2000) and Ariely (1998) observed a muted effect of peak pain on overall evaluations when the focal experience was one of many such encounters with the stimulus domain. In their study, participants were long-term patients in a bone marrow transplant unit. These patients were asked to report overall evaluations of the pain experienced during a medical procedure. Long-term patients tended to provide evaluations that were based more on previous experiences and less on their on-line ratings of the focal experience. One interpretation of this result is that patients well-versed with this experience reported overall evaluations that were based on a generalized understanding of this type of experience instead of an integration of the focal episode's affect (see Robinson and Clore 2002).

Kemp, Burt, and Furneaux (2008) investigated students' evaluations of their vacations. These authors found that affect experienced during aspects that were most "unusual" relative to daily life had a high correlation with overall evaluations. However, this finding has a few caveats. The authors did not report the incremental contribution of unusual moments in predicting overall evaluations. Instead, they only reported a high correlation between affect from unusual moments and overall evaluations of affect. In their study, affect derived from different gestalt characteristics of the experience were highly correlated and in some cases identified by the same moments. As such, the reported data do not distinguish unusual aspects of the vacation from aspects of the vacation that were

memorable in other ways. For instance, affect derived from unusual aspects may have been near the same level as affect derived from the peak, and potentially an unusual aspect could have actually been the peak. Further, because the purpose of a vacation is to experience activities that are unlike daily life, unusual aspects may have been more influential because they provided more meaning to these experiences and were more diagnostic for evaluations (see Frederickson 2000).

Montgomery and Unnava (2009) tested the role of stimulus incongruity in two of their studies. In one study involving a written description of a vacation, they found that peak intensity or trough intensity only influenced overall evaluations when these aspects were unexpected. Aspects were pre-tested for their perceived incongruity using a three-item scale measuring how expected activities were relative to participants' knowledge about vacations ("poor example/ good example," "unrepresentative/ representative," "atypical/ typical"). The focal activities tested featured unexpected elements, such as encountering a group of celebrities during an otherwise normal vacation activity. In another study involving a sequence of music clips they found that a music clip's associated affect had a larger influence on overall evaluations if it was presented in an incongruous way relative to other music clips. While other clips were presented without pauses, the focal, incongruous clip was presented with pauses before and after its presentation. Neither of Montgomery and Unnava's (2009) incongruity studies clarifies whether the incongruous elements led to enhanced encoding versus other explanations for greater weighting.

D. Explanations for the snapshot model

Why are some aspects weighted more than others in overall evaluations? One explanation is that gestalt characteristics could be more memorable and thus more likely to influence evaluations. Ariely and Carmon (2000) explain peak effects as emerging from encoding advantages. The strong positive relationship between affective intensity and memory encoding has been observed in the literature on emotion in memory, helping to explain the privileged status of the peak of affect (Gold 1987; Heuer and Reisberg 1990). The end of an experience could be more accessible due to its recency, which is a retrieval advantage (see Miller and Campbell 1959). Memorial differences could occur for two reasons. First, some aspects of the experience may simply be forgotten. According to this availability account, people may be unable to encode and retain all of the moments in an experience, resulting in their weighting only those elements of the experience available in memory. Second, according to an enhanced accessibility account, even if people are capable of recalling several aspects of an experience profile, only some of these aspects will be accessible at the time of judgment, resulting in their higher weighting in overall evaluations (Ariely and Carmon 2000).

An alternative mechanism is that some aspects of the experience provide more meaning in the global evaluation task than other moments. Frederickson (2000) states that accessibility is not the only explanation for heavier weighting of peak and end intensity. Peaks and ends also provide personal meaning. Specifically, peaks convey capacity requirements—the maximum of affect one must brace for in anticipation of a re-

experience of the episode, and endings convey certainty, providing the opportunity to reflect on the experience once it is safely in the past. Ariely and Carmon (2000) explain trend effects as emerging from extrapolation, in which the final trend helps to predict the intensity of a future re-experience of the episode. Loewenstein and Prelec (1993) argue that trend effects could be driven by savoring and dread, adaptation, and loss aversion. Together these explanations offer different ways in which these gestalt characteristics could be meaningful across a wide range of experiences. Meaning could also be idiosyncratic to the episode, the person experiencing the episode, or the judgment context. Frederickson (2000) proposed that further research should explore “evaluation by meaning” as an addendum to evaluation-by-moments. Ariely, Kahneman, and Loewenstein (2000) also mentioned personal meaning as a determinant of why gestalt characteristics are important. Further, Ariely and Carmon (2001) and Kemp et al. (2008) argue that people’s reasons for their overall evaluations may impact how they form these evaluations.

These two sets of explanations can be synthesized with an accessibility-diagnostics perspective on evaluation-by-moments (Feldman and Lynch 1988). Such a frame would suggest two determinants of how experiences are evaluated retrospectively: A configural aspect or static moment of an experience is weighted in an overall evaluation to the extent that it is accessible at the time of the evaluation, and it is deemed diagnostic in the specific evaluation task. Particular aspects of the experience are more accessible or diagnostic than others, explaining differential weighting of affective moments.

E. Unresolved issues in the snapshot model paradigm

In this dissertation I examine how memorial factors influence overall evaluations, over and above diagnosticity effects in these judgments. Nonetheless, exploring diagnosticity as a mechanism could be a fruitful area for future inquiry. It is unclear how people judge certain aspects to be meaningful to the experience. Do people base their diagnosticity judgments on their own goals, do they have lay beliefs about which moments should be more meaningful, or do they form such judgments at the time of the evaluation?

Accessibility and diagnosticity could also interact in overall evaluations. More accessible aspects, such as the peak and end, may be treated as more diagnostic even when they do not provide additional meaning beyond other moments. Such a relationship is consistent with a mere-accessibility framework (Menon and Raghurir 2003). Another possibility is that aspects of the experience that are deemed meaningful during the experience are encoded better, resulting in their greater accessibility at the time of evaluation.

There are also unresolved issues related to the role of memory in the snapshot model. The availability account (i.e., the argument that only some aspects of the experience are available in memory, and these aspects constitute gestalt characteristics) has failed to receive empirical support thus far. One test of the availability account would be to manipulate the encoding of moments through selective attention tasks, as recommended by Ariely and Carmon (2000). Presumably moments that are experienced with distraction would be less influential in overall evaluations, because they would be unavailable in memory. Such a test would be difficult to administer experimentally, since a distraction

task would also change the participant's subjective experience. Although this methodology has not been pursued, Kemp et al. (2008) tested recall of affect to examine if available moments were more influential in evaluations. Specifically, respondents were asked to reconstruct the day-to-day affect they had experienced during an extended vacation. Such recall of affect was generally poor, correlating less than 0.3 with on-line measures of affect. Even affective intensity of gestalt characteristics, such as peak and end, were reconstructed rather than retrieved, yet overall evaluations correlated highly with recalled intensity of these gestalt characteristics. Together, these findings suggest that even when gestalt characteristics are not more available in memory they are still weighted more, contrary to an availability account.

Enhanced accessibility (i.e., enhanced ability to retrieve only some of the available aspects of the experience) has been demonstrated as a mechanism driving overall evaluations (see Montgomery and Unnava 2009). So far, standard psychological measures of accessibility, such as explicit measures of memory or aided recall tests, have not yet been administered in the snapshot model literature. For many types of continuous experiences the accessibility of specific moments is difficult to measure and instead must be inferred based on how different moments are weighted. For instance, people would be unable to articulate the specific moments in a continuous sauna session that come to mind at the time of a global evaluation. On the other hand, for experiences with discrete elements, accessibility can be tested by differential retrieval cues, which would highlight particular aspects of the experience at the time of evaluation. While these measures of

accessibility can be pursued by future researchers, manipulations of accessibility have already been pursued, lending evidence for the enhanced accessibility account. In Montgomery and Unnava's (2009) studies, moments of experiences that were manipulated to be more accessible were more influential on overall evaluations.

A next step for the snapshot model literature is studying factors that influence how experiences are accessed. Some of the factors studied previously include differences across experiences in how they are configured or differences across forms of evaluations. The literature can also be advanced by studying changes in how a given type of experience is evaluated. In particular, little research has examined how experiences are evaluated after a delay, when accessibility is likely to be diminished. While it is informative to measure overall evaluations of experiences as soon as episodes have concluded, such evaluations are not always formed in real world settings. An overall evaluation may instead be formed later when it is useful for a decision. Indeed, past work on affective evaluations of objects has found that different factors influence delayed evaluations depending on if the evaluation had been formed immediately or only after a delay (Novemsky and Ratner 2003; Pocheptsova and Novemsky 2008). Similar results may occur in evaluations of extended experiences.

How might delay impact overall evaluations? Delay often implies that the later evaluation is in a different setting than the focal experience, resulting in a different set of retrieval cues. In the present investigation, I control for the setting in which an evaluation is

formed and instead focus on passage of time itself. After a delay there is greater error in recalling episodic details. Consequently, overall evaluations may be based on a theory of the experience rather than episodic memory (see Robinson and Clore 2002). Apart from a general increase in error, error may also be systematically different over time. For instance, the end of the experience may not be as accessible after a delay, because the end is not that much more recent than other moments. That recency effects diminish with delay has been demonstrated by prior research on memory (e.g., Bjork and Whitten 1974, Glenberg and Swanson 1986). Montgomery and Unnava (2009), the only empirical investigation that compared immediate with delayed overall evaluations of extended experiences, also found that the end effect held for immediate but not delayed evaluations, consistent with memory research.

Accumulation of experience may be another factor that could change how a given type of experience is evaluated. Compared to the totality of life experience, an episode or aspect of an episode may be perceived as novel due to its unique stimulus or conceptual characteristics. As the experience ceases to be novel, future episodes could be accessed differently. Substantively, studying novelty helps marketers predict how accumulated experience influences consumers' evaluations. Because novelty has been shown to drive various psychological outcomes, studying novelty would also extend our theoretical understanding of how experiences are evaluated.

III. Definition of novelty

Novelty is a rich construct in psychology with a long history. In this section I review extant work on novelty and provide my definition of the construct.

A. Definition of novelty in Berlyne (1960)

The most cited source that discusses novelty is Berlyne (1960). For Berlyne, novelty is one of a small set of “collative variables” which he defines as the following:

...in order to evaluate them it is necessary to examine the similarities and differences, compatibilities and incompatibilities between elements—between a present stimulus and stimuli that have been experienced previously (novelty and change), between one element of a pattern and other elements that accompany it (complexity), between simultaneously aroused responses (conflict), between stimuli and expectations (surprisingness), or between simultaneously aroused expectations (uncertainty). (p. 44)

Berlyne distinguishes “long-term” novelty from “short-term” novelty (p. 19). Long-term novelty refers to the stimulus or experience being new relative to the totality of experience for the organism. I describe experiences that lack in novelty as being ‘conventional.’ Short-term novelty refers to the element either being different from other elements in the immediate context or different from expectations about that context. In this dissertation I focus on long-term novelty, referring to short-term novelty as ‘incongruity.’ Later, I will compare and contrast these two constructs.

Berlyne recognizes the difficulty in establishing a clear-cut definition of novelty.

Novelty is not a dichotomous construct, because any stimulus or experience will have some connection to previously encountered objects or occurrences. For instance, a vacation to an exotic island is still in some ways not novel to the tourist. The tourist may have visited beaches near his hometown or sampled food from that island on another occasion. More promising is Berlyne's conceptualization of novelty as a continuous variable, defined by three dimensions. Berlyne states:

...how novel a particular stimulus is will presumably be inversely related to: (1) how often patterns that are similar enough to be relevant have been experienced before, (2) how recently they have been experienced, and (3) how similar they have been. (p. 22)

Here similarity between the focal stimulus and prior stimuli depends on the degree of stimulus generalization. For instance, a cover band's rendition of a hit song from the 1980s may not be novel, because prior experiences with the very similar, copied song are generalized towards the cover song. In contrast, a new composition from a band that specializes in experimental music could be experienced as novel, because the listener is unable to relate this experience to any other. Novel elements have an enhanced capacity to function as conditioned stimuli, because responses are uncertain and no existing responses are generalized to them (p. 69). According to Berlyne, novelty is a relative phenomenon: A stimulus is novel relative to a specific class of stimuli. For example, a film can be novel relative to other films in terms of its use of visual imagery, plot, or other element, even though the idea of depicting a narrative in film is not in and of itself novel relative to different genres of entertainment.

Berlyne also describes the commonly shared effects of novel elements on subjective experience. According to his habituation hypothesis argument, novel elements differ from conventional elements in that the organism has become habituated to the latter, and as a result the conventional elements have “lost their effects.” In a related vein, Berlyne argues that novel elements induce conflict, whereas conventional elements do not:

A novel stimulus is likely to fall midway between two classes that have figured in a piece of discrimination learning, so that it will arouse both generalized excitation and generalized inhibition of the response, which again means conflict. (p. 21)

Summarizing these ideas, Berlyne argues that organisms try to make sense of novel elements, but they need not take on such efforts for conventional elements.

B. Other definitions of novelty

Cognitive psychologists have studied novelty in various tests of arousal, memory, categorization, and other outcomes. Novelty is often not explicitly defined in their writings, leaving readers to rely on accepted definitions of novelty in common language, such as “Something new, not previously experienced, unusual, or unfamiliar” (“Novelty,” Oxford English Dictionary, 2009). Yet, these authors’ operationalizations of novelty provide an avenue by which to infer how they conceptualized novelty. Later, I will describe how novelty has been tested in the Von Restorff paradigm (e.g., Von Restorff 1933, Hunt 1995) and in other work.

The consumer behavior literature also describes the newness of products, conceptualized on two levels: incrementally new products and really new products (Alexander, Lynch, and Wang 2008; Hoeffler 2003; Moreau, Markman, and Lehmann 2001). This distinction relates to the amount of prior knowledge applicable to the product innovation.

Incrementally new products allow the consumer to import existing knowledge structures to understand the innovation, but really new products are more difficult for consumers to understand, because these types of products are less related to existing product categories (Moreau et al. 2001). Alexander et al. (2008) differentiate really new products (RNPs) from incrementally new products (INP) along the following dimensions:

- (1) RNPs enable consumers to do things that cannot be easily done with existing ways to solve similar problems, and INPs do not;
- (2) The benefits of consumption are more uncertain for RNPs than for INPs;
- (3) Cost-benefit tradeoffs in utility functions are more uncertain for RNPs than for INPs because of consumers' lack of understanding of attribute-to-benefits links or practice in making cost-benefit tradeoffs; and
- (4) Consumers must make greater changes in their own behavior to attain the potential benefits of RNPs than to attain the potential benefits of INPs. (p. 308)

Thus, the novelty of a product innovation is based on the level of knowledge for that product and relevance of prior product experiences. These concepts have parallels with Berlyne's (1960) definition of novelty, in which a stimulus is novel to the extent that other stimulus responses cannot be generalized to it.

C. Novelty as defined in the present investigation

Below I define the novelty of a consumption experience:

How novel a consumption experience is will be inversely related to: (1) how often consumption episodes that are similar enough to be relevant have been directly experienced before, and (2) how similar the experience is to previously experienced episodes.

Whereas Berlyne's (1960) definition was drafted to encompass behavior for humans as well as lower-level organisms, this definition focuses on consumer behavior more specifically. As such, I modify Berlyne's dimensions to emphasize the consumption experience context. According to the first dimension, as more similar experiences have been accumulated, the experience ceases to be novel to the consumer. I do not include or modify Berlyne's second component on recency (i.e., how recently similar experiences have taken place), because that component was relevant for incongruity but less relevant for long-term novelty. For instance, if a consumer were to go on two vacations to Hawaii separated by five years, the second vacation may still be perceived as less novel despite the large temporal gap in experiences. The second dimension described here is based off of Berlyne's third dimension. If one can easily understand a target experience with knowledge of other experiences, then the target episode will provide little new experiential information. Importantly, novelty stems from stimulus or conceptual differences, and not from differences in affective intensity alone.

Both dimensions described above depend on direct experiences rather than exposure to information collected from external sources. One might ask: Can people understand new

subjective experiences with objective knowledge alone? This question has been tackled by phenomenological philosophers (e.g., Husserl 1931), and resolving this issue may help delineate humanity's potential for understanding. While philosophers of science address this concern, I have much humbler goals in this dissertation, focusing only on evaluations of experiences. Whether knowing about a new experience is akin to actually experiencing the episode is questionable, but these different forms of knowledge have been shown to *feel* different to consumers. Indeed, consumers believe that direct experience is nonpartisan, and it is more vivid, intentional, and memorable than knowledge acquired from external sources (Hoch 2002). Nelson (1970) argues that consumer purchases can be differentiated as either search or experience goods. For search goods, information for the most important attributes can be acquired prior to purchase, but for experience goods most attribute information must be directly experienced to facilitate understanding. The present investigation focuses on consumption episodes that can be described as experience goods.

The novelty definition articulated above adapts existing definitions in the consumer behavior literature. According to Alba and Hutchinson (1987), product familiarity arises from “advertising exposures, information search, interactions with salespersons, choice and decision making, purchasing, and product usage in various situations.” Moreau et al.'s (2001) research on incrementally new versus really new products defines familiarity as arising from category knowledge. Thus, in these past investigations concerning products, semantic knowledge can make a previously unused product familiar, and

novelty is confounded with unfamiliarity. In contrast, in the present investigation only the accumulation of direct experiences influences the novelty of that type or similar types of experiences. Indirect familiarity with a new experience, such as through exposure to advertising, is not predicted to have the same effects as direct experience.

In the definition of novelty put forth in the present investigation, novelty depends on the individual: A given experience can be novel to one individual but conventional to another. However, in the studies reported here, novelty is not treated as an individual difference variable, because such an operationalization may not sufficiently discriminate novelty from other constructs, such as expertise. Research on consumer expertise indicates that more accumulated experiences is associated with increased expertise, which can make it difficult to test the unique effect of accumulated experiences since it is often confounded with expertise when the two are measured rather than manipulated (Alba and Hutchinson 1987).

One way in which novelty is operationalized in this dissertation is by selecting experiences that are prevalent or infrequent across all participants' natural distributions of life experiences. In an alternative test of novelty I also manipulate exposure to experiences. Specifically, an experience that is new for all participants is presented as a focal episode in a study, and this episode is either preceded or followed by experiences like it. Prior exposure results in the focal episode being perceived as less unique both during its course and at the time of an overall evaluation. Conversely, subsequent

exposure results in the focal episode being perceived as less unique only at the time of a later overall evaluation. These exposure manipulations isolate a dimension of novelty, the number of direct experiences in the domain, and alter the focal experiences from being unique to more common.

IV. Novelty effects on memory

The intuition that novelty influences memory has existed for millennia. This relationship was first encountered in the written record of Western Civilization in the first century B.C. in a series of scrolls known as the *Ad Herennium* in a section on ‘Memoria’ (Wollen and Margres 1987). There is considerable evidence for novelty impacting memory through different mechanisms, including distinctive processing, involvement, rehearsal, and learning. I describe these mechanisms below and explain how they relate to the present investigation.

A. Novelty’s effect on distinctive processing: the Von Restorff effect

Since the advent of experimental psychology, distinctive processing of novel elements has been demonstrated in a variety of settings and with empirical regularity. The most prominent of these findings is the Von Restorff effect, also known as the isolation effect. The eponymous author who discovered this result, Hedwig von Restorff, tested the effect of isolating an item in a list on memory for that item (Hunt 1995; Von Restorff 1933). She found that after a delay of one day memory for isolated items was superior to

memory for decoy items. For instance, in remembering the content of a list that contained one digit and nine words, participants were better able to remember the value of the one digit than any of the nine words. Though word lists are the most common stimuli employed in research on the isolation effect, other domains tested include faces (Brandt et al. 2003), narratives (Davidson 2006), and line drawings (Ellis, Detterman, Runcie, McCarver and Craig, 1971). The memorial advantage of distinctive elements is evident in recognition, free-recall, and cued recall tasks (Worthen 2006).

Since von Restorff's (1933) classic article, distinctiveness has been the subject of a great deal of research activity (for a thorough review, see Hunt and Worthen 2006). A few developments have been particularly important. First, greater memory for distinctive elements has been demonstrated both for incongruous (i.e., short-term novel) and long-term novel elements. Schmidt (1991) provides a similar dichotomy, referring to incongruity as "primary distinctiveness" and long-term novelty as "secondary distinctiveness." Incongruity effects have been demonstrated by isolating features of words from other words in a list, such as through contrasting physical features (Kishiyama and Yonelinas 2003) or membership in an incongruous semantic category (Geraci and Rajaram 2004). Long-term novelty effects have been demonstrated by testing words or combination of letters that are uncommon in the totality of the participant's life experience (e.g., Rajaram 1998).

Second, distinctiveness has been shown not to be a property of the isolated element, but instead a psychological process that depends on the relationship between the isolated element and the other elements. An object that is distinctive in an incongruous context, such as a soda can stocked alongside hand soaps, will not be distinctive in a congruous context, such as when the soda can is included with other soft drink cans. Similarly, an element that is novel in the long-term sense will not be distinctive if it is included in a set of other novel elements (Hunt 2006). For an element to be distinctively processed, it must be different in the context of similarity. That is, the element must be different from all other elements, and the other elements must be similar to each other. This implies that long-term novel elements are only distinctively processed if they are included in a set of conventional elements (Hunt and Elliot 1980).

Third, past work has demonstrated that the isolation effect occurs due, in part, to enhanced retrieval of distinctively processed elements. Novel elements may be retrieved better because their features provide diagnostic information that benefits memory performance (Hunt and McDaniel 1993). In particular, isolated elements exhibit enhanced discriminability from other elements. As well, distinct elements are easier to retrieve because they are part of a smaller category set (Bruce and Gaines 1976). In sum, the retrieval explanation suggests that novel aspects of experiences will be more accessible due to less interference in memory.

Fourth, elaborate encoding has been shown to be an additional but not necessary account for the isolation effect. The encoding explanation is supported by involvement mechanisms described below, such as differences in the orienting response, arousal, and processing. However, the isolation effect occurs for incongruous elements even when the isolated element is the first one encountered, when it is not evident that this element will be distinctive within the set (Hunt 2006). This result suggests that elaborate encoding alone cannot explain the isolation effect. Still, encoding is often affected when novelty is manipulated.

B. Novelty's effect on involvement in the experience

Below, I describe three mechanisms by which novelty has the potential to alter involvement in an experience, which in turn may influence how the experience is encoded.

1. Mechanism 1: Novelty's effect on the orienting response

Organisms are bombarded with an immense set of stimuli and experiences that grab at their attention in any natural environment. What will they process? A large stream of literature supports the finding that novel elements are more perceptually salient, resulting in an orienting response, “a change in posture, in the orientation of sense organs, or in the state of sense organs” (Berlyne 1960 p. 79). An orienting preference for novelty has been tested extensively with infants, demonstrating that infants gaze at novel patterns more

than conventional patterns (Fantz 1964). Adult humans have also shown this effect (Berlyne 1971; Berlyne and Ditkofsky 1976) across the auditory (Friedman, Cycowicz, and Gaeta 2001), visual (Polich and Comerchero 2003), and somatosensory (Yamaguchi and Knight 1991) modalities. Orientation towards novel elements occurs both for incongruous (short-term novel) elements as well as elements that are novel in the long-term sense (Cycowicz and Friedman 2007). Studies of the brain demonstrate that there is a particular region associated with this orienting response. These brain studies also show that such orientation can occur incidentally and non-consciously (Cycowicz and Friedman 1997, 1998, 1999). Further work on rats and other animals demonstrated that this result extends across many mammalian species (e.g., Dias and Honey 2002).

The orienting response to novelty has been tied to adaptive mechanisms. For instance, Shinskey and Munakata (2005) discuss infants' orientation to novel patterns:

“Novelty preferences reflect the efficiency of immature organisms' information processing: Once infants have mastered all the information one stimulus offers, attending to a new stimulus is an adaptive strategy for acquiring large amounts of information in a short time.”

The orienting response research emphasizes perceptual involvement as a mechanism to explain differential encoding for novel versus conventional elements (Cycowicz and Friedman 1998). Novel elements are more likely to be directly perceived and encoded than conventional elements, and as a result their affective value may be more available at the time of a memory test. Such an explanation has particular relevance for busy stimuli fields in which several inputs need to be encoded, and only some can receive attention.

For instance, it is possible that consumers in some contexts will attend to novel aspects of experiences but not conventional aspects, which they will not even perceive. However, in the studies reported here all participants are explicitly instructed to attend to the experience regardless of its novelty. Because people attend to events that are relevant to their goals, this type of instruction can equalize orientation towards conventional and novel experiences (see Wilson, Centerbar, Kermer, and Gilbert 2005).

2. Mechanism 2: Novelty's effects on arousal

Berlyne (1960 p. 48) describes arousal as “how wide awake the organism is,” and he argues that novelty can enhance arousal. Arousal has a complex history in psychology. There are a number of investigators who support arousal as an explanatory variable (e.g., Anderson 1990) and others who have abandoned it altogether (e.g., Neiss 1990). Those who have researched arousal have distinguished the orienting response from it. The orienting response has a direct effect on whether the element is perceived in the first place, whereas arousal refers to the subjective experience for the organism, conditional on perception. Arousal is intertwined with attention, directing information processing (Lynn 1966).

When people have been exposed to an experience on multiple occasions, they become habituated to it. According to some prior research, experiences can be less intense—and by extension less arousing—as a result of accumulated experience (Bindra 1959; Frijda 1988; Mellers, Schwartz, and Ritov 1999; Sharpless and Jasper 1956; Stein 1966).

Berlyne (1960) argues that more arousing stimuli are also more salient, because they are perceived distinctively compared to surrounding stimuli. Thus, higher arousal may mediate novelty's effect on involvement. If novel experiences are more arousing, they may be encoded better and be more accessible at the time of later memory tests.

This line of reasoning, linking novelty to greater memorability through higher arousal, has two limitations. First, because arousal depends on intensity, this argument assumes that novel experiences are more intense—an assumption that is not warranted in many comparisons (Berlyne 1960). Novel experiences of one type may not be as intense as conventional experiences of another type. For instance, eating Norwegian cuisine may be perceived as novel for Mexicans, but Mexicans may find that eating their own, conventional cuisine is more intense (perhaps because Mexican food is spicier). As such, any comparison between novel and conventional experiences must control for intensity differences. It is also unclear whether a given experience will be subjectively more or less intense as it becomes less novel over time through accumulated experience. Habituation (Stein 1966) or sense-making (Wilson and Gilbert 2003; Wilson, Gilbert, and Centerbar 2002) could reduce intensity. On the other hand, a conventional experience could feel more intense due to the organism having learned a response to it (Berlyne 1960), or because greater fluency is experienced with more exposure (Zajonc 1968). For instance, the first time a consumer drinks a wine with a subtle flavor he is likely to experience a mild reaction to it. Over time, he may learn to appreciate the wine better, and the wine tasting experience may be more intense on subsequent occasions. In fact, some of

consumers' very enjoyable and exciting consumption episodes may be those that they experience regularly.

Second, arousal has an inconsistent effect on memory for the arousing experience. If salience occurs due to enhanced arousal, the effect on memory cannot be anticipated. Park (2005) reviewed the literature linking arousal and retention in memory. This research demonstrates that for short-term retention intervals low arousal aids in memory, but for long-term retention high levels of arousal are beneficial. Additionally, arousal does not have a monotonic relationship with memory for information. Earlier writers (Berlyne 1950; McDougall 1908) mention that moderate levels of arousal are superior in evoking long-term memory effects compared to maximum levels of arousal. This result possibly stems from people having an optimal level of arousal. The inverted-U relationship known as the Yerkes-Dodson law states that performance is often best at moderate levels of arousal (Yerkes and Dodson 1908). Moderate arousal often leads to optimal vigilance, which has downstream implications for liking, remembering, and a host of other outcomes. Berlyne (1971) discusses two different conflicting processes that result in the inverted-U relationship: A primary reward system generates positive affect whenever arousal potential increases, but a primary aversion system generates negative affect whenever arousal increases past an optimal tipping point (see also Silvia 2005). These competing forces result in an experience being processed optimally at moderate levels of arousal.

Together, these disparate findings on arousal paint a complicated picture of novelty's effect on encoding. As such, I do not champion arousal as a mechanism driving the results reported in this dissertation. Nonetheless, it is important to control for arousal differences in the present investigation. For instance, novel and conventional experiences can be matched on intensity levels by measuring affective intensity. Alternatively, a given experience can be rendered less novel through subsequent exposure to similar experiences. In this case, the focal episode will be similarly arousing to all participants, regardless of the subsequent episodes they experience.

3. Mechanism 3: The Novelty-Encoding Hypothesis

The novelty-encoding hypothesis also predicts greater salience of novel stimuli. Tulving, Habib, and colleagues (Habib 2001; Habib et al. 2003; Habib and LePage 2000; Tulving and Kroll 1995) identified neurophysiological substrates for novelty assessment. According to their model, the brain has a specialized system for identifying novel stimuli. The medial temporal lobes assess the degree of novelty for each stimulus by comparing the stimulus to information in memory. Based on the relative novelty of stimuli, the prefrontal monitoring mechanism differentially weights stimuli to be encoded into memory, with novel stimuli receiving higher weights (Tulving and Kroll 1995).

The explanation for novelty-encoding is that stimuli deemed distinctive or novel require elaborate processing resources (Brandt, Gardiner, and Macrae 2006). Thus, the novelty encoding hypothesis relies on processing involvement as the mechanism for superior

recollection of novel stimuli. This explanation is also consistent with Berlyne's (1960) notion that novel stimuli generate conflict. However, because the novelty-encoding hypothesis has largely been tested on word lists and simple perceptual stimuli, it may not apply as well to stimuli that are intentionally experienced and recalled, as often occurs in consumer behavior. Consumers have more volition in the types of consumption experiences they undergo, and they may allocate processing resources depending on their preferences or goals rather than the novelty of the experience itself.

C. Novelty's effect on post-experience rehearsal

After an experience has concluded, thoughts about the episode may continue, and novelty may impact such rehearsal of the experience. Wilson, Gilbert, and Centerbar (2002) argue that after a novel event occurs, "people automatically engage in cognitive work that makes the event seem predictable and explainable." They refer to this sense-making process as "ordinization." Ordinization implies that experiences encountered regularly are less likely to spur further reflection. Berlyne (1960) also argues that novel stimuli are associated with conflict and uncertainty, which tend to activate thoughts to resolve them. As such, novel experiences lead to more rehearsal than conventional experiences. This greater rehearsal could in turn enhance the memorability of novel experiences.

Ordinization suggests a stronger effect of novelty on memory than does the Von Restorff effect. Whereas the Von Restorff effect predicts that novel experiences will be more accessible given a retrieval cue (e.g., an overall evaluation probe), ordinization predicts

that novel experiences will also be more *chronically* accessible, even without a direct memory probe. Wilson et al. (2002) report a study in which they manipulated how explainable an experienced romantic interaction was. Later, they measured the accessibility of romance-related thoughts with an ostensibly unrelated word completion task. Participants for whom the romantic interaction was not ordinized (i.e., if the interaction was not explainable) were more likely to complete these words with romance-related concepts. This finding suggests that a novel experience will engender thoughts about the experience that may last well past the end of the experience. The experience may still be top of mind at the time of a delayed overall evaluation.

Whether longer rehearsal of novel experiences will actually influence overall evaluations depends on the length of delay studied, the intensity of the experience, participants' goals, and other factors that contribute to whether the experience continues to be rehearsed. The types of experiences studied in the present investigation may not be personally significant enough to stimulate rehearsal over any extended period. As such, I do not focus on rehearsal effects in the empirical investigation. Nonetheless, differences in rehearsal are important to control for, because novelty may lead to more spontaneous immediate construction of overall evaluations through more elaborate rehearsal. This possibility will be discussed later.

D. Novelty's effect on learning

Whereas each of the memory mechanisms described above suggests that novelty enhances memory, research on learning finds that lack of prior experience, a dimension of novelty, diminishes memory. These seemingly conflicting predictions can be reconciled upon closer inspection into the memory processes involved. Because novelty often leads to greater involvement, novelty will enhance memorability if the experience would not be sufficiently involving otherwise. Because novelty contributes to distinctive processing, novelty will enhance memorability if the memory task depends critically on accessing an experience in the face of possible interference with other experiences. However, because learning is superior with prior experience in a domain, novelty will diminish memorability if the memory task depends on accessing detailed attribute information.

Why might consumers be better able to remember attribute information for common experiences? Through repeated experiences, consumers are exposed to similar attribute information on each occasion. In order to make sense of this information, consumers develop a cognitive structure for the type of experience as well as domain-specific analytical and elaborative skills. Together, repetition, a cognitive structure, and domain-specific skills tend to enhance memory for attribute information, as revealed by differences in novice and expert consumers' memory (Alba and Hutchinson 1987).

Research on consumer learning observes many instances in which prior knowledge or familiarity aids in memory for attribute information. Lynch and Srull (1982) provide a review of earlier consumer research with this finding. Johnson and Russo (1984) also find that familiarity facilitates learning, conditional on sufficient involvement; consumers who are highly familiar with a product class may search less, exposing themselves to less new information. Kent and Allen (1994) revealed that memory for advertising was superior for familiar than unfamiliar brands. Shapiro and Spence (2002) found that simply providing consumers with evaluative criteria prior to a product trial aids in their memory for attributes. Given that consumers develop such criteria as they repeat a type of experience, novel experiences will be associated with poorer recall for their attributes.

Consumption experiences may be evaluated on either encountered attributes, experienced affect, or both depending on the choice context. Evaluations of attributes and affect may jointly determine many choices, but there may also be conditions in which only one type of evaluation governs choice. For example, a restaurant experience may be scored on various attributes: variety and quality of menu items, ambience, location, cost, etc. These judgments could feed into choices in which various attributes are weighted in a restricted context, such as when a consumer needs to visit a restaurant with a quiet ambience and higher perceived luxury to conduct a business dinner. Alternatively, consumers may evaluate experiences purely on their own affective response. For instance, a consumer may decide to go to the restaurant she had the best experience at, independent of its attributes.

Attribute and affective information vary on at least two dimensions. First, attribute information is externally presented, whereas experienced affect is internal to the consumer. Internal states are more prominent in consumers' subjective experience (Loewenstein 1996), which may make them more likely to influence choices. Second, attribute information is detailed and requires deliberation, but experienced affect is a more "global response" (Zajonc 1980 p. 5). Indeed, recent research finds that experiences with prior exposure are processed at a lower level of construal than novel experiences (Förster 2008). This construal level finding is consistent with research on consumer learning, which finds that prior experience aids in processing of detailed (i.e., lower level construal) product information. In sum, differences in the type of information may lead to asymmetric learning effects: Learning advantages are critical in memory for attribute information but less important in memory for affective response, which is relatively easy to evaluate retrospectively if the experience is accessible.

There are also boundary conditions to the attribute versus affect distinction in learning. Some past research on memory for emotions finds that prior experience in a behavioral domain can strengthen learning of experienced affect. Familiarity contributes to the development of an enduring affective representation of the experience, which aids in organizing experienced affect into memory (Breckler 1994; Breckler and Wiggins 1989, 1993). When an enduring affective representation is set, people are able to reconstruct their affective response based on their memory for attributes, because affect is implied by

these attributes. For instance, if one has had much prior experience eating sushi as well as stable preferences in this domain, then it would be possible to form an overall evaluation of enjoyment of a past sushi sequence by simply recalling the items consumed.

How might learning of affect influence overall evaluations of conventional and novel experiences? The relationship between prior experience in a domain and accessibility of affect may not be monotonic and may differ by experiential domain. While people can easily access affect derived from a unique experience, as they accumulate more experiences in the domain any one of these experiences becomes more difficult to access due to interference. On the other hand, as people become well-versed with a domain they set enduring affective representations which aids in learning of affect. However, only when experiences are complex in their affective reactions would affective learning advantages off-set memory interference disadvantages that arise from accumulated experience. As such, affect from novel experiences should be easier to access than affect from conventional experiences, assuming that experienced affect generally does not require much deliberation.

V. Novelty and related constructs

To further explicate novelty, I compare and contrast this construct with related constructs, incongruity and unfamiliarity.

A. Novelty and incongruity

Experiences that are novel in the long-term sense may also be incongruous (i.e., novel in the short-term sense), either by not fitting the immediately established context or by failing to conform to expectations. For instance, after watching a series of cars whiz by on the highway, seeing a hovercraft flying along the median will be surprising, because such a scene contradicts prior expectations and the immediate context. As well, seeing the hovercraft may be novel for those who have never seen such an unusual transportation device. However, novelty and incongruity do not always go hand in hand. There are many contexts in which a consumer expects novel experiences, such as when visiting an area with a starkly different culture. In this context, a conventional experience may in fact be incongruous. Novelty can be differentiated from incongruity experimentally by providing a sequence of experiences without specified expectations. In such cases, experiencing something novel would not be surprising.

Novelty and incongruity not only arise out of different conditions, but also they lead to a different portfolio of effects on memory. One shared effect is that both novel and incongruous aspects will be isolated in an experience with otherwise familiar or expected elements. As a result, both novel and incongruous aspects are more accessible than other aspects of experiences (Von Restorff 1933). Encoding effects that arise out of distinctive processing apply to both novel and incongruous aspects. However, novel and incongruous aspects have different effects on retrieval, which can be revealed by comparing recall immediately after an experience versus after a delay. Mechanisms that

enhance delayed accessibility for novel aspects, greater rehearsal and enhanced ability to discriminate from a wide range of past experiences, do not apply to incongruous aspects. In fact, incongruous aspects are often less accessible after a delay, because consumers rely on theory-driven memory when recalling experiences from the past (Nunes and Novemsky 2008). For instance, when recalling the enjoyment of a meal at a restaurant, one might fail to access an element that did not fit expectations, because these expectations determine how the experience is remembered. Moreover, whereas the amount of accumulated experience—a dimension of novelty—influences learning, incongruity has no predicted effect on learning.

B. Novelty and unfamiliarity

Novelty and unfamiliarity share some commonalities, but they are differentiated in this dissertation. The number of relevant episodes previously experienced inversely relates to both novelty and unfamiliarity. However, the amount of information collected from external sources, such as through exposure to advertising, inversely relates to unfamiliarity, but it is not a significant factor in novelty. Finally, the similarity of past experiences to the target experience inversely relates to novelty, but it is not a contributor to unfamiliarity.

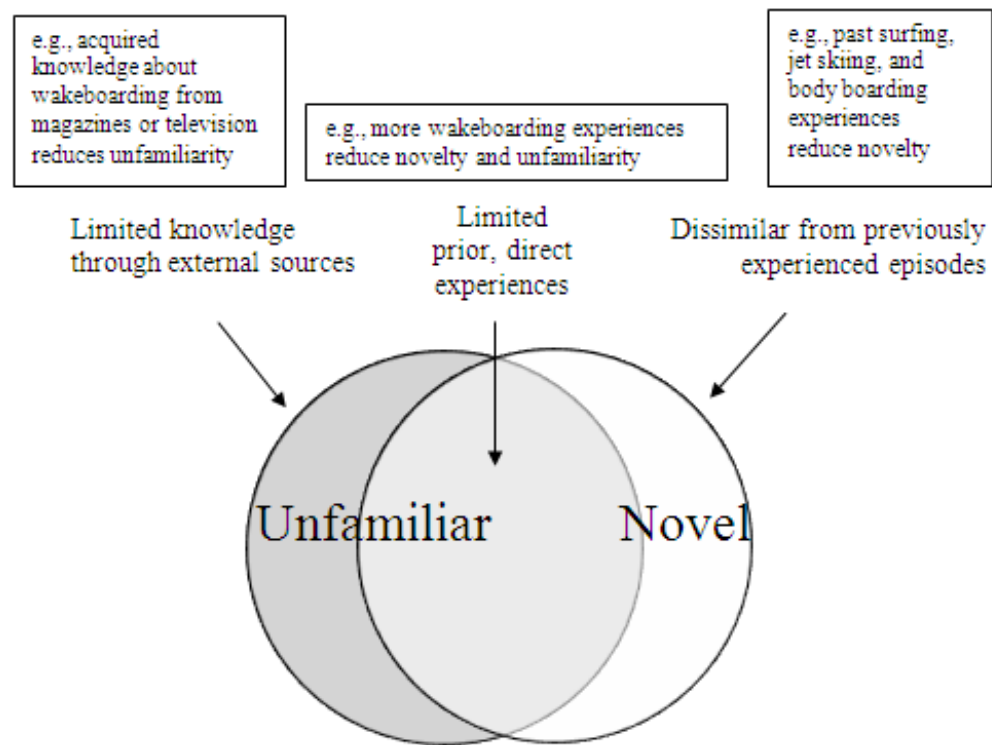
A consumption experience example will help to illustrate these distinctions. Consider a consumer planning her first ever wakeboarding excursion. Regardless of how much she reads about wakeboarding in magazines or observes wakeboarders on television, her first

wakeboarding trip could still be novel to her. When she recounts her wakeboarding experience her memory will be relatively untainted by interference with other episodes. Her exposure to wakeboarding information through external sources is unlikely to interfere with her memory for experienced affect, though such knowledge may contribute to her ability to recall information encountered during the wakeboarding trip. Now imagine if this first-time wakeboarder has engaged in experiences that are similar to wakeboarding, such as surfing, jet-skiing, and body boarding. These accumulated, highly similar experiences may diminish the novelty of wakeboarding, influencing remembered affect. These dimensions of novelty and unfamiliarity are illustrated in the Venn diagram, figure 1 below, for the wakeboarding example.

As described above, there are some factors in novelty and unfamiliarity which do not overlap. This conceptualization raises the question: Do the non-shared factors ever spill over? First, can knowledge gained through external sources, a factor in unfamiliarity, influence memory for affect? Robinson and Clore (2002) argue that people often develop a lay theory about an affective experience through knowledge gleaned from external sources. These lay theories can color memory for experienced emotions. Thus, even if a domain is experienced for the first time one's recall for affect may be more accurate if the experience is associated with no prior knowledge.

FIGURE 1

Figure 1: Comparison of unfamiliarity and novelty for the wakeboarding example



Although becoming familiar with an experience through external information can influence memory for affect for new experiences, this effect is restricted to increases in familiarity at the very lowest levels of the familiarity spectrum. One might develop an attitude with just a little exposure to the experience concept (see Hermans, de Houwer, and Eelen 1994 on automatic evaluation), and each additional exposure to such information will not result in greater interference in recalling affect. The attitude could become stronger or more nuanced through subsequent acquired knowledge, but the

accessibility of the attitude is unlikely to change. Research on attitude activation finds that even the weakest and least developed attitudes are activated automatically (Bargh et al. 1992), suggesting a ceiling effect on how accessible an attitude can become through additional knowledge. Whereas accumulation of knowledge does not increase memory interference for new experiences, accumulation of direct experience does, either by reducing the number of features that provide diagnostic information (Hunt and McDaniel 1993), or by increasing the category set, which makes the retrieval task more difficult (Bruce and Gaines 1976). Importantly, direct experiences are treated and likely categorized differently from exposure to information (see Hoch 2002), particularly for new experience goods (see Nelson 1970).

The second potential source of spillover is if a dimension attributed only to novelty can actually determine unfamiliarity as well. Specifically, can having accumulated experiences of a similar type make the focal experience familiar, leading to consumption knowledge, expertise, and improved task performance? Because defining the unfamiliarity-familiarity dimension is not the goal of this dissertation, I defer to the existing marketing literature in answering this question. In the Venn diagram depicted above, I take previous conceptualization of unfamiliarity as a given. The past research largely studied familiarity with products, where familiarity with the specific brand, product, or product category was the focal interest (e.g., Alba and Hutchinson 1987; Bettman and Park 1980; Park and Lessig 1981). As such, experience in other, similar product categories was not identified as a source of familiarity. Nonetheless, these

authors also documented the potential for complexity in defining the relevant product category, due to different categorization processes at play, including simple classification and concept formation (see Alba and Hutchinson 1987). Variation in how experiences are categorized implies that the degree of similarity to other experiences can determine familiarity, which in turn influences the development of expertise. Indeed, other work finds that knowledge from one class of product experiences can be transferred to another, similar class (Gregan-Paxton and John 1997). Although these possibilities are intriguing, I do not take charge of defining unfamiliarity and consequently do not explore this extension in the present investigation.

A final point on nomenclature will help to unify this dissertation with psychological research on novelty. In the psychological literature, novelty and familiarity are drawn as endpoints of a continuum, implying that novelty and unfamiliarity are the same constructs (e.g., in research on the Von Restorff effect). This word choice was in part a result of the stimuli employed. Because most of the research on the Von Restorff effect involved recall for words, direct versus indirect experience was not a relevant distinction in describing accumulated experiences. However, that distinction is potentially important in recall for affective experiences, as elaborated upon earlier.

VI. Hypotheses

Building off of the literature review, I predict how novelty will influence overall evaluations of extended experiences.

A. Basic effect of novelty

As described previously, encoding and retrieval mechanisms in the isolation effect result in enhanced accessibility for novel elements. Yet, novelty's effect has not been tested in overall evaluations of extended experiences. Drawing from the isolation effect research, one straightforward prediction is that novel aspects of experiences are more likely to be accessed and thus more likely to influence overall evaluations of experienced affect. This effect would be evident in experiences that include a mix of conventional and novel aspects, in which distinctive processing occurs. If all of the elements of an experience are novel, then no one aspect is relatively more accessible due to its novelty.

This prediction does not yet specify whether novel aspects of experiences are more accessible due to more elaborate encoding or enhanced retrieval. This basic result would also not reveal how novelty differs in its effect compared to other contributors to enhanced accessibility, such as affective intensity. However, I argue that novelty and intensity are separable factors, which suggests that even aspects of experiences that are mild in their intensity but which are merely novel will be weighted in overall evaluations. As well, novel aspects may influence overall evaluations when they are not at the end, whereas conventional aspects are less likely to impact overall evaluations when they are

not the peak or end. Thus, my first hypothesis concerning the basic effect of novelty on overall evaluations is as follows:

H1: When aspects within an experience differ in their novelty, novel aspects are more likely to influence overall evaluations than conventional aspects, even when these aspects are not the peak or end of the experience.

B. Novelty's effect on delayed overall evaluations

There are several instances in which conventional and novel aspects of experiences similarly influence overall evaluations. Importantly, these similarities occur only for *immediate* overall evaluations—those evaluations measured immediately after the experience has concluded. For instance, regardless of their novelty, the peak and end elements of an extended experience will be heavily weighted in such overall evaluations. Moreover, whether an entire experience is conventional or novel, immediate overall evaluations will be based on similar weighting rules, such as higher weighting of peak intensity, end intensity, and trend.

On the other hand, novelty can lead to further differences for delayed overall evaluations, which are driven by changes in memory interference as time elapses. Right after an episode has concluded interference occurs only between aspects of this focal episode, resulting in greater weighting of elements that are more accessible, such as peak and end intensity. Immediately after an episode there is little potential for interference between

the focal episode and other episodes. For instance, having just eaten a meal at a restaurant, a consumer would be capable of uniquely accessing the episode even if he has visited the restaurant previously. However, when the experience is accessed after a delay, not only may interference between aspects of the focal episode occur, but also other accumulated experiences interfere.

Because the pool of potential sources of interference expands over time to include similar experiences, conventional experiences or aspects of experiences are likely to exhibit diminished accessibility after a delay. As these conventional experiences become harder to retrieve, delayed overall evaluations will display more error. In contrast, as a byproduct of uniqueness, novel experiences or aspects of experiences will continue to be accessible over time. As such, aspects of experiences that influence immediate overall evaluations will be more enduring in their influence if these aspects are novel versus if these aspects are conventional. Additionally, overall evaluations are likely to be more accurate, reflecting experienced affect, if an experience is unique versus if the experience is common. These predictions are formally stated below:

H2a: Aspects of extended experiences that influence immediate overall evaluations—peak intensity and end intensity—will continue to influence delayed overall evaluations if these aspects are novel. If these aspects are conventional, they will diminish in their influence for delayed overall evaluations.

H2b: Delayed overall evaluations will be more accurate, reflecting on-line affect, if the experience is unique versus if the experience is common.

This set of predictions helps to distinguish novelty from related constructs, including affective intensity and incongruity. Neither intensity nor incongruity is expected to contribute to enhanced accessibility for delayed overall evaluations. Moreover, this set of predictions clarifies the mechanism involved, implicating retrieval differences and interference as contributing to novelty effects. In memory research finding a difference between immediate and delayed memory tasks identifies that retrieval and not encoding is responsible for the memory phenomenon.

C. Novelty's effect on informational versus hedonic evaluations

Novelty is also expected to have different effects on evaluations depending on whether experienced affect or attribute quality levels are evaluated retrospectively. Prior experience—a factor that inversely relates to novelty—leads to enhanced learning. As a result, detailed attribute information becomes more accessible for common than unique experiences: Retrospective judgments of attribute quality levels will reflect more error for unique compared to common experiences. However, such learning effects have little impact on how affective experience is accessed. Hypotheses 2A and 2B stated above predict that novelty will enhance accessibility for affective evaluations. Conversely, hypothesis 3 predicts that novelty will diminish memory for attribute quality levels:

H3: Recall for attribute quality levels will be more accurate if the experience is common versus if the experience is unique.

D. Novelty's effect on accessing indirect versus direct prior experiences

The definition of novelty put forth in this dissertation centers on the amount of direct experience in the domain. This conceptualization implies that when people access novel experiences, past indirect experiences—such as verbal descriptions of experiences—will not interfere with overall evaluations of experienced affect. In contrast, for conventional experiences indirect past experiences may also interfere with overall evaluations, because enduring affective representations have already been set. For these conventional experiences, verbal descriptions can function as episodes. The following prediction distinguishes novelty from unfamiliarity:

H4: Past indirect experiences in a domain will interfere in recall of affect for conventional but not novel experiences. Overall evaluations of novel experiences will be less reflective of on-line affect only with the accumulation of direct experiences in the domain.

VII. Overview of studies

I test these hypotheses in five studies involving hedonic experiences. In all studies, I disentangle affective intensity from novelty. This approach separates novelty's effect on on-line affect from its effect on overall evaluations. I employ three methods to control for

affective intensity: measuring intensity during a repeat of an experience, manipulating intensity, and measuring intensity during an experience. Study 1 investigates hypothesis 1: Using an annoying sound sequence as the focal experience, I test whether the beginning of an experience will be more influential on overall evaluations if this aspect is novel. This study involves both mild and intense novel sounds, because I argue that overall evaluations will be pulled in the direction of novel aspects regardless of their intensity. Study 2— also an annoying sounds study—tests hypothesis 2a, examining whether the end of an experience will have a more enduring influence on overall evaluations if the end is novel. Study 3 tests hypothesis 2b using pleasant images as the experienced stimulus. Study 3 reveals whether delayed evaluations are more accurate, reflecting on-line affect, if the episode is unique. Study 4 is designed to capture differences between overall evaluations of affect and judgments of attribute quality levels, testing hypothesis 3 by employing a browsing sequence as the focal experience. Finally, Study 5 resolves hypothesis 4, investigating the role of novelty in accessing indirect versus direct experiences in a domain.

VIII. Study 1: Manipulating the beginning of annoying sounds

Study 1 is exploratory, testing the basic effect of novelty on overall evaluations, as described by hypothesis 1. Prior theory predicts that the beginning intensity of an experience is less likely to influence overall evaluations relative to the peak and end

intensity. In contrast, I predict that the intensity of a novel beginning will influence overall evaluations, but the intensity of a conventional beginning will not. In this study, on-line experience was manipulated by including a conventional or novel sound to begin a sequence of annoying sounds. Previous snapshot model research has also studied annoying sounds for a number of reasons (e.g., Ariely and Zauberman 2000; Schreiber and Kahneman 2000). Auditory stimuli can be edited through sound software, and the relationship between auditory features, such as pitch, volume, or distortion and affective response is established in sensory research. As well, sounds offer the possibility of continuously measuring on-line affect. When listened to intently, annoying sounds can provide negative affect at every moment of exposure to the stimulus.

Method

Participants and Design. Participants (n=111), undergraduate and graduate students at a large East Coast University, completed this study as part of an experimental lab session for which they were paid \$10. The study followed a 2 (conventional, novel beginning sound) X 2 (mild, intense beginning sound) between-subjects design.

Selection of Sounds. All sounds included in the focal study were pre-tested for their perceived intensity and novelty as separate factors. Sixty-one participants who did not take part in the focal study were asked to listen to 27 sounds, which were each approximately 16 seconds long. Sounds were presented in random order with short labels

describing their content. As participants listened to each sound, they were asked to rate their on-line affect on a scale including both valences, from “Very unpleasant” to “Very pleasant.” Participants reported on-line affect by continuously moving a probe along this scale as they listened to the sound. The average position of the probe over the 16-second duration provided a measure of the sound’s valence and intensity. Considering these measures, six sounds were selected to construct sequences in the focal study. Two sounds were universal to all participants in the focal study. These sounds were labeled “A mosquito buzzing close by” and “The busy signal for a telephone.” The mosquito sound was rated the worst of all sounds. The sounds chosen for the intense beginning conditions were “An electric razor being used to shave” (conventional) and “An electric surge caused by a voltage spike” (novel), which resembled an electric distortion noise. These sounds were rated to be significantly lower than the mid-point of the on-line affect scale, indicating that participants found these sounds annoying. The two mild sounds selected for the focal task, labeled “A helicopter hovering” (conventional) and “Beluga whales communicating through clicking chatter” (novel), were rated to be less unpleasant than the intense sounds and below but not significantly different from the mid-point of the scale. For the focal study, these mild sounds were edited through sound software to be slightly more unpleasant. I increased the volume of these two sounds so that they would be experienced as unpleasant and not neutral sounds.

In the pre-test, a measure of novelty was also collected after the on-line affect rating for each sound. Perceived novelty was operationalized in terms of a familiarity rating.

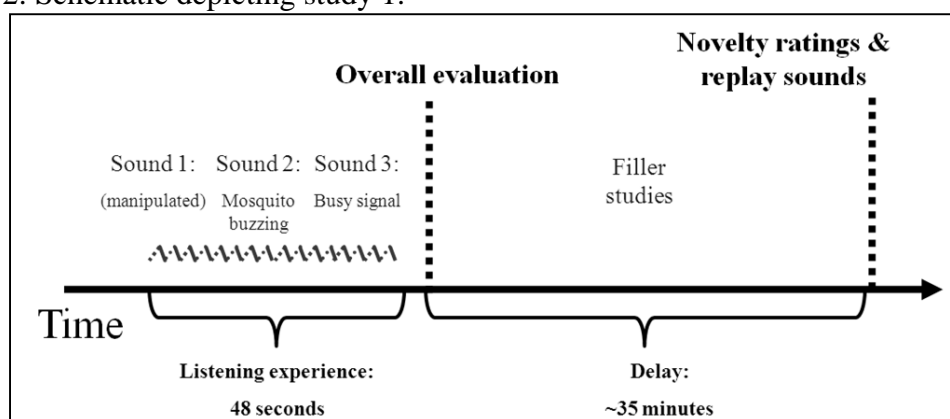
Participants responded to the question, “How familiar are you with this sound or sounds of this type?” using a scale from 1 (“Not at all familiar”) to 7 (“Very familiar”). The helicopter and razor sounds were rated as more familiar than the surge and beluga whales sounds, and the universal mosquito and busy signal sounds were also rated as more familiar than the surge and beluga whales sounds. Thus, this pre-test was conducted to identify sounds that differed in their intensity and novelty as separate factors. However, the sounds may have been experienced with different levels of intensity in the focal study, because the mild sounds were edited to be louder. As well, the focal study involved a smaller subset of sounds, and participants’ on-line affect could depend on the other sounds they had been exposed to. Consequently, I rely on on-line measures collected during the focal study to control for intensity differences by novelty condition.

Procedure and Stimulus. In the focal study, participants listened to a three-sound sequence at the beginning of a lab session. Although no cover story was provided, participants were exposed to the sounds prior to evaluating a set of audio speakers in a shopping task. As such, they may have inferred that their response to the sound would be relevant for the subsequent task. The sound sequence was 48 seconds long: Each sound was approximately 16 seconds long and there were no breaks between sounds. Participants were asked to listen to the sounds through their head phones, and the sounds played on a computer program. As they listened, a list of the sound labels was provided. Participants listened to one of four sounds to begin the sequence depending on their condition: conventional-intense (razor), novel-intense (surge), conventional-mild

(helicopter), or novel-mild (beluga whales). The second and third sounds in the sequence were mosquito and busy signal for all participants. Unlike the pre-test, in the focal study participants did not provide ratings of on-line affect during the sequence itself. See figure 2 for a schematic depicting study 1.

FIGURE 2

Figure 2: Schematic depicting study 1.



Measures. After listening to the sound sequence, participants were asked to provide an overall evaluation of the entire experience. Specifically, they were asked, “Looking back at the entire experience, how unpleasant was listening to the sound track?” They responded on an unmarked scale by moving a probe to a position on a line anchored by “Not at all unpleasant” to “Very unpleasant.” This overall evaluation was measured only on a negative valence because all sounds in the sequence had been pre-tested to be unpleasant, and even the mild sounds were unpleasant in the focal study. A scale focused only on aversiveness allowed participants to provide more precise

distinctions in overall evaluations. The probe's singular position on the scale was translated to a number from 0 to -100, with lower numbers indicating more overall unpleasantness.

At the end of the lab session ($M=35$ minutes later), after participants completed other unrelated studies they responded to a second set of measures. At this second stage, participants were asked to report how familiar the individual sounds were to them using the same familiarity scale that was employed in the pre-test. Participants then listened to the entire sound sequence again, during which they responded to the on-line affect measure. For the on-line measure, participants were asked to move a probe continuously at every moment on a scale from "Not at all unpleasant" to "Very unpleasant" as they listened to the sound. An on-line measure was not taken during the initial experience itself, because prior research finds that measuring on-line affect can disrupt subjective experience (see Ariely and Zauberman 2000). In particular, on-line measurement tends to segment the experience more, reducing the effect of trend on overall evaluations. As well, because participants may be engrossed in the experience they may not be able to provide accurate concurrent ratings. In this study, a combination of an uninterrupted first play of the sequence and a delayed, repeat of the experience with an on-line measure helps to eliminate such disruption. The delay between the focal experience and its repeat was included to minimize fatigue. This methodology has prior precedent for other temporally-extended affective experiences, and measuring on-line affect during a delayed, repeated

presentation of an experience has been shown to be a useful and reliable proxy for experienced affect (see Gottman and Levenson 1985).

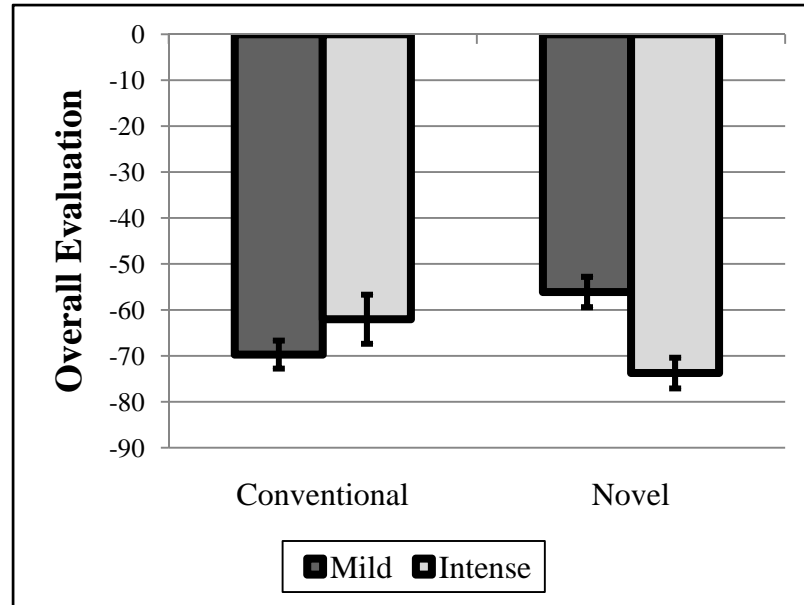
Results

Manipulation Check. The novel set of sounds, surge and beluga whales, were rated to be less familiar than the conventional set of sounds, razor and helicopter ($F(1,110)=52.19, p<.001$). As well, the novel set of sounds were each less familiar than the universal sounds, mosquito and busy signal (each planned contrast $p<.0001$).

Overall Evaluations. The overall evaluations of the sound sequence exhibited a significant 2 (intensity of first sound) X 2 (novelty of first sound) interaction ($F(1,107)=10.55, p=.001$). The overall evaluation for the sequence with the novel, intense first sound ($M= -73.76$) was significantly worse than the overall evaluation for the sequence with the novel, mild first sound ($M= -56.12; t(55)=3.65, p<.001$). On the other hand, the overall evaluation for the conventional sound sequences were not different from each other ($t(52)=3.74, p > . 2$). In fact, the direction of the influence was reversed: the sequence with the conventional, mild first sound was rated as more unpleasant ($M= -69.73$) than the sequence with the conventional, intense first sound ($M= -62.03$); see figure 3.

FIGURE 3

Figure 3: Mean overall evaluation of annoying sounds experience in study 1 as a function of intensity and novelty of the first sound. Error bars represent standard errors of the mean.



On-line Measures. The intense set of first sounds were rated to be worse on-line than the mild set of first sounds, as reflected in their average of moment-to-moment ratings ($F(1,110)=110.35, p<.001$). The planned contrasts were significant in both the novel and conventional set of sounds (Conventional: $M_{Intense} = -55.96$, $M_{Mild} = -33.75$; Novel: $M_{Intense} = -71.49$, $M_{Mild} = -32.11$; both $p<.001$). However, this effect was larger in the novel set of sounds than in the conventional set of sounds ($F(1,110)=8.57, p<.005$). This result lends some support to a positive relationship between affective intensity and novelty, at least for the more intense set of sounds in this study (i.e., the novel surge sound was more aversive than the conventional razor sound). The second and third sounds were subject to hedonic contrast effects. The second sound (mosquito) was rated to be worse on-line when it followed a mild first sound than when it followed an intense

first sound ($F(1,110)=11.85, p<.001$). Similarly, the third sound (busy signal) was rated as more unpleasant in the mild first sound conditions ($F(1,110)=9.93, p<.005$). These hedonic contrast results may explain the reversal of overall evaluations in the conventional sounds conditions. If only the peak intensity and end intensity are reflected in overall evaluations, then overall evaluations would be more negative in the mild first sound condition than in the intense first sound condition, because the mild beginning led to more intense peaks and ends. On the other hand, if the intensity of the peak, end, and first sound are all reflected in overall evaluations, then the mild first sound may mitigate overall evaluations, as occurred in the novel condition.

Regression Analysis. To explain overall evaluations while controlling for intensity differences by novelty condition, I regressed overall evaluations on participants' on-line affect measures. In each model, predictors of overall evaluations were peak intensity, end intensity, novelty condition, a parameter based on on-line ratings collected during the first sound, and an interaction term for that parameter by novelty condition. These models account for two predictors established by prior theory: peak intensity and end intensity. For peak intensity I extracted participants' maximum rating of on-line affect for the entire three-sound sequence. For end intensity I identified the mean of the last one second of on-line affect from the third sound. I varied the parameter for the first sound to be either the mean, median, or mode of on-line ratings collected during the first sound. The first sound can also be thought of as a separable experience for which its own peak intensity and end intensity may explain its remembered affect. As such, I extracted the peak

intensity and end intensity of only the first sound on-line ratings and used the combined peak-end to represent the affective response to the first sound. Thus, four models were analyzed with varying parameters to represent on-line affect from the first sound. The regression analyses revealed that peak intensity and end intensity (of the entire sequence) are significant predictors of overall evaluations ($p < .01$ for both predictors in each regression model). None of the four parameters based on the first sound on-line ratings is a significant predictor of overall evaluations ($p > .35$ in each model). This result is qualified by a significant interaction of the first sound parameter by novelty condition in each model (see table 1). Overall evaluations are better predicted by on-line ratings collected during the first sound in the novel than in the conventional condition. For example, the mean on-line rating of the first sound predicted overall evaluations better when the sound was novel than when it was conventional ($t(105) = 2.44, p = .016$). Because the novel-intense first sound (surge) was rated as worse on-line than the conventional-intense first sound (razor), it was possible that the novel sound was more likely to include the peak of the sequence, which might contribute to these results due to peak intensity rather than novelty. However, in a restricted set of regression analyses, I considered only situations in which the peak of the sequence was not experienced during the first sound. Most participants experienced their peak only during the second sound, mosquito. The restricted analyses exclude 8 participants in the conventional and 20 participants in the novel condition who also experienced their peak during the first sound. The same interaction of first sound parameter by novelty condition held with these restrictions (see table 1).

TABLE 1:

Study 1 regression analysis results

Table 1: Study 1 overall evaluations of unpleasantness were regressed on to peak intensity, end intensity, a dummy variable for novelty condition, a parameter representing the on-line evaluation of the first sound, and an interaction between this parameter and novelty condition. T-test values, listed below, test the significance of the interaction between the parameter and novelty condition. If the interaction is positive, the parameter had a larger influence on overall evaluations when the first sound was novel than when it was conventional.

	Parameter based on first sound on-line ratings	t	p value
All participants (n= 111)	Mean	2.44	.0162
	Median	2.68	.0086
	Mode	2.67	.0088
	Peak+End	2.23	.0279
Participants who did not experience their peak during the first sound (n= 83)	Mean	2.19	.0317
	Median	2.58	.0118
	Mode	2.47	.0155
	Peak+End	3.00	.0037

R² Change Analysis. The effect size of the interaction can be illustrated by analyzing overall evaluations separately by novelty condition. I compared pairs of regression models in each condition in order to determine whether the affective response to the first sound accounted for significant unique variance in overall evaluations. In each condition a baseline model with just the peak and end intensity was compared to a model that includes one of the four parameters representing on-line affect derived from the first sound. The marginal influence of the first sound parameter on overall evaluations can be determined by the change in R^2 from the baseline model to the larger model.

Across all four parameters tested, affective response to the first sound accounted for significant unique variance in overall evaluations when the first sound was novel but not when it was conventional (see table 2). For example, when the first sound was conventional, the smaller peak-end model accounted for 48.92% of the variance in overall evaluations, whereas a larger model with peak and end intensity of the sequence and the mean on-line rating of the first sound accounted for 49.15% of the variance. For the conventional first sound conditions, the mean on-line rating of the first sound was not a significant predictor of overall evaluations ($b=.05$, $t(54)=.47$, $p>.6$), and adding this parameter did not improve the fit of the model ($F(3,48)=0.07$, $p>.95$). On the other hand, when the first sound was novel, the smaller model accounted for only 24.78% of the variance in overall evaluations, whereas the larger model accounted for 54.95% of the variance. In this case, the mean on-line rating of the first sound significantly predicted overall evaluations ($b=0.45$, $t(57)=5.96$, $p<.001$), and adding this parameter significantly improved the fit of the model ($F(3,51)=11.38$, $p<.001$). These changes in R^2 were replicated across the other three parameters representing affective response to the first sound (median, mode, and peak-end of on-line ratings during the first sound). The results also held when the analysis was restricted to participants who did not experience their peak during the first sound.

TABLE 2

Study 1 R^2 change analysis results

Table 2: Study 1 overall evaluations were regressed on to on-line measures of affect. The baseline model includes peak and end intensity as predictors of overall evaluations. The larger, three-parameter models add one parameter representing on-line affect derived

from the first sound. R^2 values for these models are listed below by novelty condition. P-values are based on an R^2 change analysis, comparing the larger model to the baseline model.

	REGRESSION MODEL:	R^2 of model	
		Conventional	Novel
All participants (n= 111)	BASELINE: Peak and end intensity of sequence	48.92%	24.78%
	Peak and end intensity of sequence +		
	sound Mean rating of first	49.15%	54.95% ***
	sound Median rating of first	49.00%	55.06% ***
	sound Modal rating of first	49.09%	55.89% ***
	sound Peak+End rating of first	48.95%	57.11% ***
Participants who did not experience their peak during the first sound (n= 83)	BASELINE: Peak and end intensity of sequence	27.35%	17.79%
	Peak and end intensity of sequence +		
	sound Mean rating of first	27.36%	39.43% *
	sound Median rating of first	27.49%	42.62% **
	sound Modal rating of first	27.36%	43.96% **
	sound Peak+End rating of first	28.16%	48.85% ***

* $p < .05$

** $p < .01$

*** $p < .001$

Discussion

Study 1 found support for hypothesis 1, demonstrating that novel aspects of experiences are more likely to influence overall evaluations than conventional aspects when these aspects are not the peak or end of the experience. In this study, overall evaluations were pulled in the direction of the affective response to a novel but not a conventional beginning. This study also found that novelty is a separate factor from intensity. As

reviewed earlier, novel aspects can be more or less intense than conventional aspects. In this study, novelty was positively related to affective intensity. This relationship was evident in the on-line affect ratings, but it does not explain the difference in how influential the beginning sound's intensity was on overall evaluations. The regression analysis accounts for any differences in experienced affect. As well, the novel beginning influenced overall evaluations at both intensity levels: The experience was considered more unpleasant when the novel beginning was intense and less unpleasant when the novel beginning was mild. This finding suggests that novelty is not an added measure that only enhances or only diminishes overall evaluations. Instead, novelty increases the influence of aspects of experiences on overall evaluations.

One potential limitation of this study is in the measurement of on-line affect. The approach used here, measuring affect during a repeated presentation of the experience, helps to mitigate disruption arising from on-line measurement (see Ariely and Zauberman 2000). This approach was motivated in part to reduce false negatives for testing on-line intensity differences. During a repeated presentation participants were better able to use the scale because they had been exposed to the entire range of stimuli and were not distracted by uncertain incoming information. However, it is possible that this approach introduces another set of concerns. Participants may have had expectations coming into the second experience, and on-line intensity ratings may be assimilated to these expectations. This possibility may be aggravated in the novel conditions, working against the hypothesis: Participants in the novel conditions would have formed more extreme

expectations because they had already provided more divergent overall evaluations.

Alternatively, if the replay is rated without drawing on expectations, this repeated presentation may reveal reduced intensity differences if participants have adapted to the stimuli, which would provide an alternative explanation to the results. These measurement concerns can be explored in further studies that manipulate the timing of on-line affect measures—either during the experience or during a repeat of the experience.

The results from study 1 are peculiar to extended experiences that comprise sequences of activity, in which novel aspects can become isolated when surrounded by conventional aspects. The basic effect of novelty found in study 1 places novelty alongside intensity and serial positioning as factors that influence the accessibility of aspects of experiences. In the next study I test how novelty differs from other factors in determining overall evaluations. Specifically, I examine the effect of novelty on immediate versus delayed overall evaluations.

IX. Study 2: Manipulating the ending of annoying sounds

Study 2 tests hypothesis 2a, the prediction that novel aspects will have a more enduring influence on overall evaluations than conventional aspects. I predict that the end intensity of an experience will influence immediate overall evaluations, replicating prior research. However, the end intensity of an experience will influence delayed overall evaluations

only if it is novel. This study uses a methodology similar to that of study 1: On-line experience was manipulated by including a conventional or novel sound to end a sequence of annoying sounds.

Method

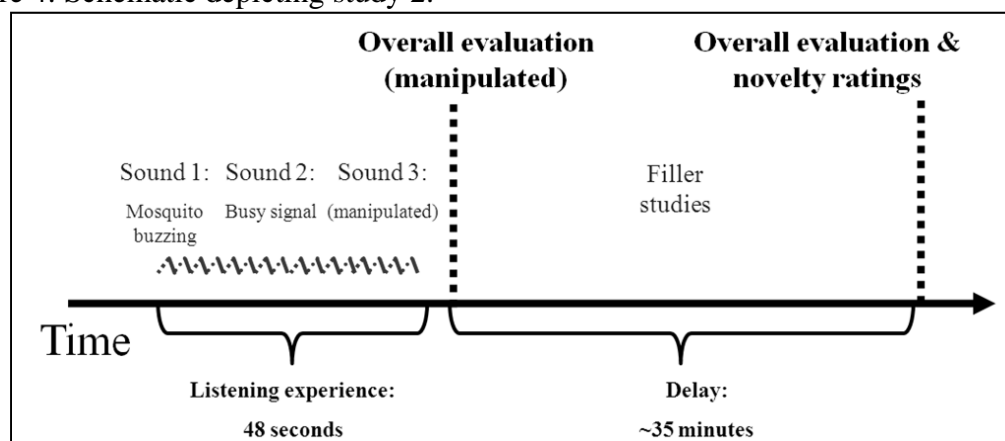
Participants and Design. Participants ($n=207$), undergraduate and graduate students at a large East Coast University, completed this study as part of an experimental lab session for which they were paid \$10. The study followed a 2 (conventional, novel end sound) X 2 (intense, mild end sound) X 2 (immediate-and-delayed evaluation, delayed-only evaluation) between-subjects design.

Procedure. This study also involved an annoying sounds sequence. The sounds used in this study were the same as those in study 1, with the critical difference being that the focal sound was moved to the end of the sequence. The first two sounds in the sequence were “A mosquito buzzing close by” and “The busy signal for a telephone.” The third sound in the sequence varied as 2 (conventional, novel) X 2 (mild, intense) between-subjects design. The conventional sound was either “An electric razor being used to shave” (intense) or “A helicopter hovering” (mild). The novel sound was either “An electric surge caused by a voltage spike” (intense) or “Beluga whales communicating through clicking chatter” (mild). Participants listened to the sounds in the same way as in study 1, with the sequence coming at the beginning of the lab session.

Measures. Participants provided the same overall evaluation as in study 1. However, the timing of this measure varied. Some participants provided an overall evaluation immediately after the sequence concluded. These participants also provided a repeated measure at a second point in time, the end of the lab session. Other participants only provided an overall evaluation after this delay. The delayed set of measures ($M=36$ minutes later) included the overall evaluation as well as the manipulation check of novelty, the same one used in study 1 and the pre-test. In this study, participants were not asked to provide an on-line measure of affect because such a measure was not necessary for testing the hypothesis or controlling for intensity differences, as will be discussed later. See figure 4 for a schematic depicting study 2.

FIGURE 4

Figure 4: Schematic depicting study 2.



Results

Manipulation Check. The novel set of sounds, surge and beluga whales, were rated to be less familiar than the conventional set of sounds, razor and helicopter

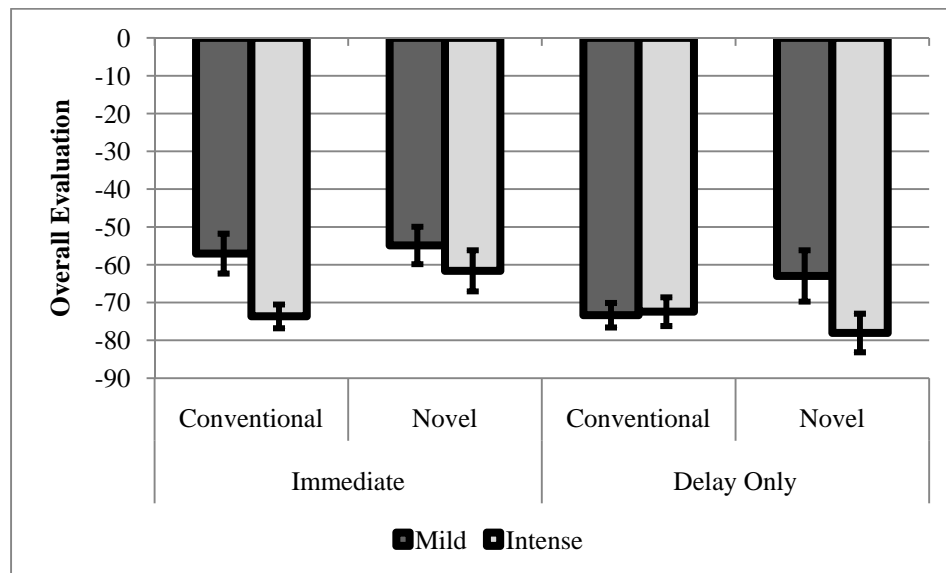
($F(1,187)=57.82, p<.001$). As well, the novel set of sounds were each less familiar than the universal sounds, mosquito and busy signal (each planned contrast $p<.0001$).

Overall Evaluations. Combining the overall evaluations formed immediately after the conclusion of the sequence with those formed only after a delay, there was a three-way interaction between the final sound's intensity, its novelty, and the timing of the overall evaluation ($F(1, 192)=4.23, p=.04$); see figure 5. The final sound's intensity was reflected in immediate overall evaluations regardless of novelty condition, but only in delayed overall evaluations if the final sound was novel. There was also a main effect of timing of evaluations: Overall evaluations were lower in the delayed measure ($F(1, 192)=9.06, p<.01$). In the following sections, these results are explained separately by the timing of the measure.

FIGURE 5

Study 2: Between-subject, Immediate versus Delay-Only Comparison

Figure 5: Mean overall evaluation of annoying sounds experience in study 2 as a function of intensity and novelty of the final sound and timing of the overall evaluation. The left hand panel depicts overall evaluations measured immediately after the end of the experience, and the right hand panel depicts overall evaluations measured only after a delay. Error bars represent standard errors of the mean.



Immediate Overall Evaluations. For overall evaluations that were formed immediately after the conclusion of the sequence ($n=111$), there was a main effect of the final sound's intensity such that ending the experience with an intense sound pulled down overall evaluations ($F(1, 107)=5.12, p<.01$). There was no main effect of novelty ($F(1, 107)=2.21, p>.14$) and no interaction between the final sound's intensity and its novelty ($F(1, 107)=1.07, p>.3$). Planned contrasts revealed that the sequence with the conventional, intense end sound was rated as significantly worse than the sequence with the conventional, mild end sound ($M_{Intense} = -73.65, M_{Mild} = -57.05; t(51)=2.86, p<.001$). The sequence with the novel, intense end sound was also rated as worse than the sequence with the novel, mild end sound ($M_{Intense} = -61.6, M_{Mild} = -54.89$), but this difference was not significant ($t(56)=0.91, p>.3$).

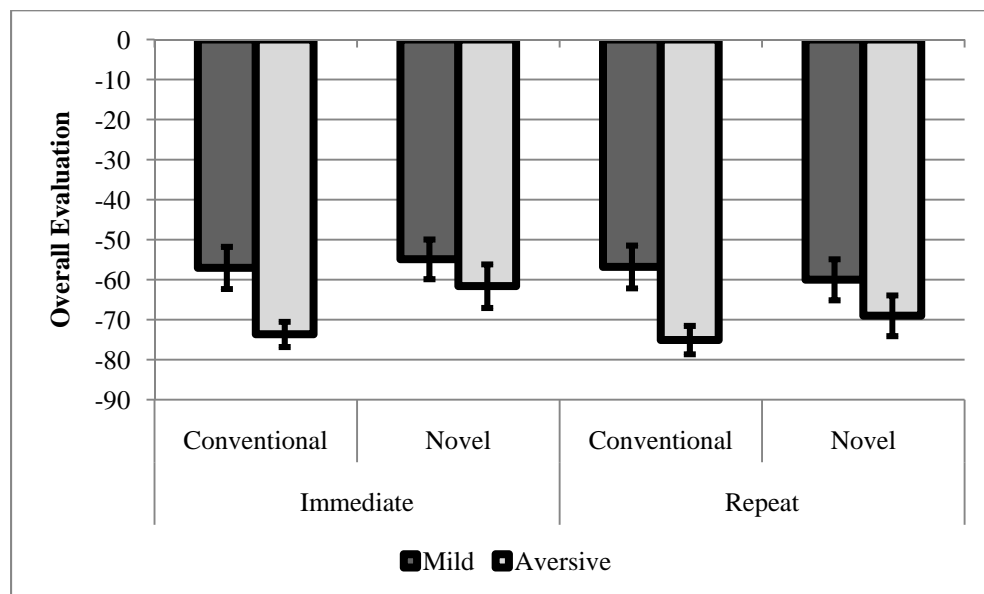
Delay-Only Overall Evaluations. Some participants ($n=90$) only provided an overall evaluation after the delay. For these delayed overall evaluations the main effect of the final sound's intensity was muted ($F(1, 86)=2.16, p>.14$). There was no main effect of novelty ($F(1, 86)=0.24, p>.6$), but there was a marginally significant interaction between the final sound's intensity and its novelty ($F(1, 86)=2.78, p=.09$). The sequence with the conventional, intense end sound was rated as nearly equally bad as the sequence with the conventional, mild end sound ($M_{Intense} = -72.4, M_{Mild} = -73.35; t(48)=0.18, p>.8$). On the other hand, the sequence with the novel, intense end sound was rated as worse than the sequence with the novel, mild end sound ($M_{Intense} = -78.05, M_{Mild} = -62.95, t(38)=1.80, p=.08$).

Delay-Repeated Overall Evaluations. The same participants who provided an overall evaluation immediately after the sequence concluded also provided a second delayed overall evaluation measure. Fewer participants ($n=101$) responded to the repeated measure because 10 participants were not able to stay in the lab for the entire duration of the study. Repeated overall evaluations exhibited results consistent with immediate overall evaluations (see figure 6). There was a main effect of the final sound's intensity ($F(1, 97)=8.07, p<.01$). There was a marginal main effect of novelty ($F(1, 97)=0.77, p=.08$) and no interaction between the final sound's intensity and its novelty ($F(1, 97)=0.91, p>.3$). Planned contrasts revealed that the sequence with the conventional, intense end sound was rated as significantly worse than the sequence with the conventional, mild end sound ($M_{Intense} = -75.07, M_{Mild} = -56.8; t(46)=2.96, p<.005$).

The sequence with the novel, intense end sound was also rated as worse than the sequence with the novel, mild end sound ($M_{Intense} = -69.07$, $M_{Mild} = -60$), but this difference was not significant ($t(51) = 1.25$, $p > .2$). A repeated measures model that includes within-subjects effects for the timing of the overall evaluation measure shows that the main effect of the final sound's intensity, the main effect of novelty, and the interaction of these stimulus characteristics on overall evaluation did not differ across the timing of the measure (all $p > .25$). However, there was a marginal main effect of the timing of evaluation: Overall evaluations were lower in the second measure ($F(1, 97) = 3.52$, $p = .06$).

FIGURE 6

Study 2: Within-subject, Immediate versus Delay-Repeated Comparison
 Figure 6: Mean overall evaluation of annoying sounds experience in study 2 as a function of intensity and novelty of the final sound and timing of the overall evaluation. The left hand panel depicts overall evaluations measured immediately after the end of the experience, and the right hand panel depicts repeated overall evaluations measured after a delay. Error bars represent standard errors of the mean.



Discussion

Study 2 provides evidence for hypothesis 2a, demonstrating that the end intensity of an experience influences immediate evaluations, but the end intensity only influences delayed evaluations if it is novel. Unlike study 1, on-line affect was not measured in this study, because the pattern of means supports the temporal interaction interpretation. If there were differences in intensity between the novel and conventional sounds, this should be captured by the immediate overall evaluations when the experience was fresh in memory. Instead, novelty only influenced overall evaluations after a delay. The proposed explanation for this result is differences in memory interference and retrieval. When the sequence of sounds had just been experienced, participants had little difficulty in accessing the most recent sound they encountered, resulting in both conventional and novel ends influencing overall evaluations. After a delay, conventional sounds were less accessible because recency effects diminish for delayed memory tasks (Bjork and Whitten 1974), and these sounds were similar to other sounds encountered outside of the lab. In contrast, because the novel sounds were unique to the specific episode, they were still accessible after a delay and continued to influence overall evaluations.

It is also noteworthy that delay-only overall evaluations differed from delay-repeated overall evaluations, which were not influenced by novelty. When people form an overall evaluation for the first time, their on-the-spot construction of the overall evaluation will depend on which aspects are accessible at that time. However, once an overall evaluation is formed, people might not completely re-interpret the experience on subsequent

judgment occasions. Instead, they may rely to some extent on their earlier judgment (Ariely and Zauberman 2003; Feldman and Lynch 1988). The differences between delay-only and delay-repeated overall evaluations found in this study suggest that people do not always form spontaneous overall evaluations of affective experiences, lending support to previous research with similar findings in other affective judgments (e.g., Novemsky and Ratner 2003; Nunes and Novemsky 2008).

Whereas novelty influenced delay-only overall evaluations differently than delay-repeated overall evaluations, both measures exhibited some bias compared to immediate evaluations. Specifically, overall evaluations were worse in the delay-repeated evaluation compared to the immediate evaluation, replicating the main effect of timing of evaluation found in the between-subjects comparison (i.e., immediate vs. delay-only overall evaluations). Employing an unmarked sliding scale to measure overall evaluations prevented participants from retrieving a specific number they had provided earlier. As such, participants forming a delay-repeated overall evaluation were not retrieving their earlier judgment directly, but instead were affected to some extent by bias in their memory for the experience. The present investigation is silent on the source of such bias. However, based on prior research, one could argue that participants relied on a more extreme theory-driven memory for the annoying sounds experience when forming delayed overall evaluations (Robinson and Clore 2002). Alternatively, evaluations may have worsened over time due to the particular context of the later evaluation (e.g., incidental mood was translated into more unpleasant memories of the annoying sounds).

If delay-repeated judgments were also biased why were these judgments not influenced by novelty? One plausible explanation is that rendering an immediate overall evaluation helped participants encode the experience. Even if delay-repeated judgments were biased, they were not completely baseless as participants were still able to incorporate differences in end intensity. This result may be specific to the experimental context, and it is possible that other judgment domains may show delay-repeated evaluations converging to delay-only evaluations. In many experiences that are not directly monitored, people's overall evaluations may not be so explicitly stated, resulting in poorer encoding of immediate attitudes and lesser correspondence between immediate and delay-repeated overall evaluations. Consequently, in those situations novelty may also have an impact on delay-repeated overall evaluations. Further studies can test different forms of measuring overall evaluations to examine if immediate overall evaluations would still concur with delay-repeated overall evaluations with these other measurements.

One alternative explanation for the set of findings in this study is that encountering novel aspects encourages spontaneous evaluations, resulting in better correspondence between immediate and delay-only overall evaluations in the novel conditions. However, although encountering a novel aspect may lead participants to spontaneously encode their on-line affect, it is less likely that they would spontaneously summarize the overall experience investigated here. The experience was designed without a script, the three sounds were

loosely tied, and the study did not have a cover story. I argue that in this context people would only form an overall evaluation when they were asked to consider all three sounds together. Otherwise, participants had no purpose for evaluating the entire experience in terms of one summarized assessment. On the other hand, one could speculate in more naturalistic experiences that encountering a novel aspect may enhance consumers' monitoring of the overall experience, which would contribute to the results due to more spontaneous immediate construction of an overall evaluation.

Further, the amount of time used for the delay in this study should be generalized with caution. This study involved a short affective experience lasting only 48 seconds with little sensory information. Participants did not have a personal stake in the outcome of the experience as they would with goal-directed experiences. In this study, approximately 35 minutes was sufficient for evaluations to differ systematically, driven by novelty and a general worsening of evaluations. One might imagine that for a more involving experience, such as a week-long vacation, a longer delay would be necessary to reveal such discrepancies between immediate and delayed overall evaluations.

As with study 1, this study investigates how novelty influences the accessibility and weighting of aspects in overall evaluations of affect. Study 2 demonstrates that one aspect of an experience, its end, has an immediate influence on overall evaluations that does not depend on novelty, but it has a delayed influence that is strengthened by novelty. In the

next study I examine delayed overall evaluations of experiences in which the novelty of the entire experience is varied.

X. Study 3: Fractals study

Study 3 tests hypothesis 2b, the prediction that overall evaluations will be more accurate, reflecting on-line affect, if an experience is unique versus if an experience is common. This study used a different methodology compared to study 1 and 2. On-line affect was measured for an experience in which participants viewed pleasant artistic shapes. Novelty was reduced through prior exposure. In this study, a relatively novel set of images was presented, which was not unique for some participants due to prior exposure to similar images. As such, this study tests a dimension of novelty—amount of accumulated experience—and focuses on the interference mechanism predicted by the isolation effect research.

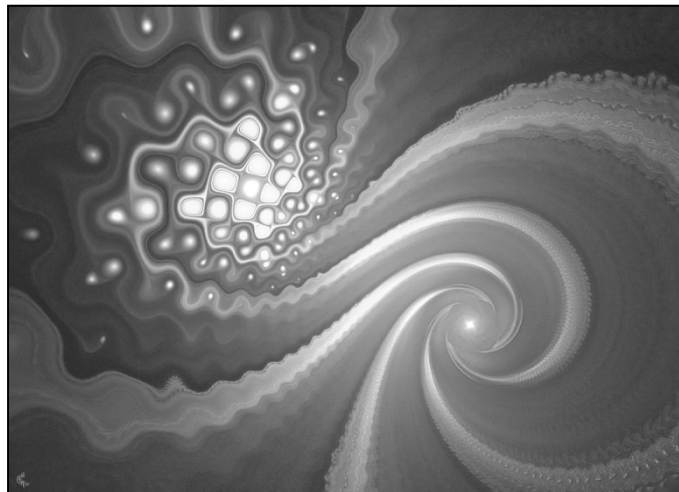
Method

Participants and Design. Participants (n=64), undergraduate and graduate students at a large East Coast University, completed this study as part of an experimental lab session for which they were paid \$10. The study followed a one factor between-subjects design in which the entire experience was or was not unique: Participants were either exposed to (n=34) or not exposed (n=30) to similar images in the recent past as a manipulation of experience frequency.

Procedure. The focal experience in this study was viewing a series of artistic shapes on a computer program. The shapes selected for this task were all fractal images culled from a website that included a gallery of fractals. A fractal is a shape that can be split into parts, each of which is approximately a microcosm of the whole shape. Mathematicians study fractals because they have properties similar to shapes from the natural world, such as coastlines and snowflakes. Consumers also enjoy looking at fractals, which are sometimes depicted in posters and screensavers. Due to the well-defined mathematical properties of fractals, new fractal images can be created by computer programs, leading to a proliferation of distinct images with similar appearance. See figure 7 for a sample of a fractal displayed in the focal experience.

FIGURE 7

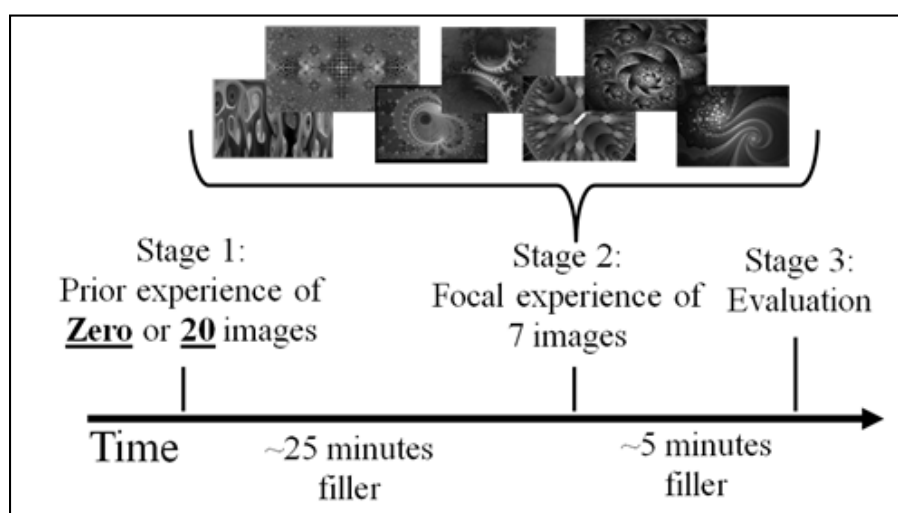
Figure 7: Example of a fractal image displayed in the focal experience for study 3.



The study proceeded in three stages within the lab session. See figure 8 for a schematic depicting the stages of the study. At the beginning of the session, participants were either exposed to 20 images of fractals or no images as a between-subjects manipulation of prior exposure. The images were displayed on a computer screen. The computer program advanced each image after an exposure period of 2.2 seconds. Participants who viewed these images were not asked to report their on-line affect, and no cover story was provided for the image viewing task. Participants in the unique experience condition instead engaged in other lab studies, which were not related to fractals or viewing images. After this first stage of the study, all participants moved on to other unrelated experiments in the lab session.

FIGURE 8

Figure 8: Schematic depicting the three stages of study 3.



In the second stage, $M=25$ minutes later all participants saw a set of seven focal images. These seven images were different from the 20 that participants in the prior exposure condition viewed earlier. Participants controlled the pace at which they viewed the seven images, and they responded to an on-line measure of affect. The first of the seven images was viewed the longest ($M=5.42$ seconds), but all other images were viewed very briefly (range from $M=2.33$ seconds to $M=3.21$ seconds). This second stage of the study, which comprised the entire viewing task, was brief ($M=21.53$ seconds).

After viewing the images, participants moved on to stage three, which included the delay and the overall evaluation measure. Immediately after the fractal viewing experience, all participants experienced a delay lasting approximately five minutes. During this delay, participants listened to the theme song from *Chariots of Fire* and read three short poems: 'Stopping by Woods on a Snowy Evening' by Robert Frost, 'There is another sky' by Emily Dickinson, and 'Composed Upon Westminster Bridge' by William Wordsworth. These traditional artistic experiences were selected to occupy participants' time so that they would not be aggravated by an empty wait. After these other tasks concluded, participants responded to the overall evaluation measure.

Measures. As they viewed the focal set of fractal images, participants were asked to rate each image for its on-line enjoyment. Specifically, participants were asked "How much do you enjoy looking at this image?" They responded on a 15-point scale from 1

(“Not at all”) to 15 (“Very much”). After they clicked on a response, the computer program advanced and displayed the next image with the same rating scale.

The key delayed measure was the overall evaluation of the experience. In an instructions section provided prior to this measure, participants in the unique experience condition were asked to consider the images they saw, whereas participants in the prior exposure condition were asked to focus only on the most recent set of images they saw. This instruction was necessary to ensure that prior exposure condition participants would focus on the same set of images as those considered by participants in the unique experience condition. For participants in the prior exposure condition the approximately half-hour delay between the prior exposure task and the focal experience, the stark differences in the number of images (20 vs. 7), and the procedural differences in viewing experience (images that automatically advanced as a slideshow versus images that were controlled through on-line affect ratings) helped to alleviate any confusion as to which set of images the overall evaluation was referring to. All participants were asked, “Overall, how much did you enjoy looking at these images?” Their responses were collected on an unmarked sliding scale that resembled the overall evaluation scale used in studies 1 and 2: Participants moved a probe to a position on a line anchored by “Did not enjoy at all” to “Enjoyed a lot.” The probe’s singular position on the scale was translated to a number from 0 to 100, with higher numbers indicating more overall enjoyment.

Results

On-line Measures. Ratings of enjoyment during the image viewing experience revealed some differences by frequency condition. The average of on-line ratings across all seven images differed marginally: Participants who viewed fractal images previously enjoyed the focal experience less than participants for whom the focal experience was unique ($M_{Prior\ Exposure}=7.55$, $M_{Unique}=8.91$; $t(62)=1.80$, $p=.08$). An image-by-image analysis suggests that this result was driven by the low of the experience, defined as the least enjoyed image. The low for participants in the prior exposure condition was less enjoyed than the low for participants in the unique experience condition ($M_{Prior\ Exposure}=3.97$, $M_{Unique}=5.66$; $t(62)=2.03$, $p=.04$). No specific image was the low for all participants, but two images exhibited significantly less enjoyment in the prior exposure condition: the first image ($t(62)=2.38$, $p=.02$) and the fourth image ($t(62)=2.26$, $p=.03$). As such, this study finds a negative relationship between experience frequency and intensity of enjoyment, at least for two images and the low of the experience. However, the peak of the experience, defined as the most enjoyed image, did not differ in enjoyment by frequency condition ($M_{Prior\ Exposure}=11.53$, $M_{Unique}=12.3$; $t(62)=1.20$, $p=.23$). Because only ten participants (3 in the prior exposure and 7 in the unique experience condition) maxed out on the scale for rating their most enjoyed image, this lack of difference is unlikely to be due to a ceiling effect. The end of the experience (i.e., the final image in the sequence) also did not differ in enjoyment by frequency condition ($M_{Prior\ Exposure}=7.58$, $M_{Unique}=8.36$; $t(62)=0.77$, $p=.44$).

Overall Evaluations. The delayed overall evaluation for the viewing experience did not differ by frequency condition. Participants who had viewed fractal images previously evaluated the focal experience as being just as enjoyable in retrospect as participants who had not viewed fractal images previously ($M_{Prior\ Exposure}=59.24$, $M_{Unique}=62.94$; $t(62)=0.69$, $p=.49$).

Regression Analysis. The main outcome of interest in this study was and the extent to which delayed overall evaluations reflected on-line affect. There were seven measures of on-line affect in this study, each based on one of the seven images displayed. Regressing the delayed overall evaluation on all seven of these measures resulted in different coefficients of determination for the regression model by frequency condition. The seven on-line ratings accounted for only 39% of the variation in overall evaluations for the prior exposure condition but 70% of the variation in overall evaluations for the unique experience condition. However, in either condition this regression model was inefficient: None of the on-line measures significantly predicted overall evaluations when all seven measures were included in the model. In addition, the overall trend of the experience, defined as the linear trend of all seven on-line measures for each participant, was not a significant predictor of overall evaluations when considered alone in a regression analysis ($p>.5$ for both conditions). On the other hand, the mean of on-line measures and each individual on-line measure was a significant predictor of overall evaluations when considered in separate regression analyses (with the exception of the third on-line measure in the prior exposure condition). As well, each predictor explained more of the

variation in overall evaluations for the unique experience condition than for the prior exposure condition (see table 3).

TABLE 3

Study 3 regression analysis results, beta coefficients

Table 3: Predictors of overall enjoyment of the fractal viewing experience in study 3. Overall evaluations were regressed on to each predictor in separate regression models. Beta coefficients for each predictor are provided for the combined analysis as well as the separate analyses for each frequency condition.

	Combined analysis N=64	Prior exposure condition N=34	Unique experience condition N=30
Mean	0.72***	0.59***	0.82***
Trend	-0.01	0.11	-0.09
Peak	0.55***	0.33*	0.71***
Low	0.59***	0.56***	0.62***
Image 1	0.65***	0.5**	0.77***
Image 2	0.56***	0.38*	0.72***
Image 3	0.44***	0.24	0.65***
Image 4	0.55***	0.43**	0.67***
Image 5	0.55***	0.47**	0.64***
Image 6	0.66***	0.57***	0.74***
Image 7(end)	0.62***	0.51**	0.69***

* $p < .05$

** $p < .01$

*** $p < .001$

The peak of on-line ratings is a theoretically informed predictor of overall evaluations.

Peak intensity accounted for 11% of the variation in overall evaluations for the prior exposure condition and 51% of the variation in overall evaluations for the unique

experience condition. In order to test whether peak intensity determined overall evaluations differently by frequency condition, I combined both conditions in a regression analysis. Specifically, I regressed overall evaluations on the on-line peak intensity, a dummy variable for frequency condition, and the interaction of peak intensity by frequency condition. This model resulted in a significant peak by frequency condition interaction ($t(60)=2.27, p=.03$), suggesting that the peak intensity had a larger influence on overall evaluations when the experience was unique.

One potential explanation for this interaction may be that the peak was more intense in the unique experience condition, resulting in the peak being more accessible in the unique experience than in the prior exposure condition. Although participants' rating of their peak did not differ by condition ($t(62)=1.20, p=.23$), the subjective intensity of their peak might also depend on the intensity of the other aspects they had experienced in the focal episode. In further analyses I normalized peak intensity by including relevant control variables in separate regression analyses. The peak by frequency condition interaction was significant even when including each of the following predictors as control variables to normalize peak intensity: the mean of other on-line ratings ($t(59)=1.98, p=.05$), the range of on-line ratings—by extension, the low of on-line ratings ($t(59)=2.35, p=.02$), and the kurtosis of distribution of on-line ratings, which captured the peakedness of on-line ratings ($t(59)=2.27, p=.02$). As well, 23 participants rated more than one image at their peak level, but including the number of peaks as a control

variable still resulted in a significant peak by frequency condition interaction in the regression analysis ($t(59)=2.09, p=.04$).

The peak by frequency condition interaction is particularly relevant to existing theory. Moreover, this interaction was also replicated for other aspects of the experience. This suggests that delayed overall evaluations reflect general loss of on-line affect for previously exposed but not unique experiences, and this loss of on-line affect is not just contained to peak intensity. I performed additional regression analyses separately for all seven on-line measures. In each analysis, overall evaluations were regressed on to one on-line measure, a dummy variable for frequency condition, and the interaction of the on-line measure by frequency condition (see table 4). These analyses revealed that the interaction was directionally consistent across all seven on-line measures: Each on-line measure had a larger influence on overall evaluations when the experience was unique. Three of these interactions were significant (for the second, third, and fourth on-line measures), one interaction was marginally significant (for the first on-line measure), and three interactions were not significant (the fifth, sixth, and seventh on-line measures). Moreover, regressing overall evaluations on the mean of on-line measures, frequency condition, and the interaction of the mean by condition resulted in a marginally significant interaction ($t(60)=1.70, p=.09$). Although the mean is based on seven on-line measures, as an individual parameter it models overall evaluations most parsimoniously, accounting for the greatest variance in overall evaluations in each condition. As well, no other predictor accounts for significant unique variance in overall evaluations beyond the

mean of on-line measures. Due to high correlation between on-line measures, overall evaluations can also be predicted well by fewer on-line measures, but no model predicts overall evaluations better in the prior exposure condition than in the unique experience condition.

TABLE 4

Study 3 regression analysis results, interaction terms

Table 4: Study 3 T-test values for the interaction between each predictor of overall enjoyment and frequency condition. Overall evaluations were regressed on to each predictor in separate regression models. Each model also included a dummy variable for frequency condition and the interaction of the predictor by frequency condition.

	t	p value
Mean	1.7	.09
Mean excluding peak	1.79	.08
Trend	-0.77	.44
Peak	2.27	.03
Peak controlling for:		
Mean of non-peak on-line measures	1.98	.05
Range of on-line measures	2.35	.02
Kurtosis of distribution for on-line measures	2.27	.03
Number of peaks	2.09	.04
Image 1	1.83	.07
Image 2	2.45	.01
Image 3	2.77	.01
Image 4	1.96	.05
Image 5	1.62	.11
Image 6	1.61	.11
Image 7 (end)	1.14	.26

Discussion

This study provides evidence for hypothesis 2b, demonstrating that delayed overall evaluations are more reflective of on-line affect if the experience is unique. From the standpoint of existing theory it is particularly noteworthy that the peak intensity had a larger influence on overall evaluations when the experience was unique. This provides a moderator of the peak's influence on overall evaluations. As well, the greater influence of peak intensity on overall evaluation in the unique experience condition was not offset by other aspects having a larger influence on overall evaluations in the prior exposure condition. Instead, each on-line measure explained overall evaluations better in the unique experience condition than in the prior exposure condition.

If delayed overall evaluations in the prior exposure condition were less likely to capture on-line affect, what else might these overall evaluations reflect? Consistent with the isolation effect research, I argue that participants in the prior exposure condition were unable to access their on-line affect from the focal episode because their previous experiences interfered when they were forming delayed overall evaluations. As such, one predictor of overall evaluations could be the affect participants experienced in previous, related episodes. Participants' on-line affect for the previously viewed images was not measured in this study. In a future study it would be useful to measure on-line affect for initial experiences and to examine whether these on-line measures predict overall evaluations for a later, focal experience.

Whereas in studies 1 and 2 novelty was pre-tested for different stimuli, in this study novelty was manipulated through prior exposure. This alternative approach for manipulating novelty disentangles novelty from other domain-specific stimulus characteristics, because all participants in study 3 rated the same set of focal images. Thus, this study establishes that a dimension of novelty—amount of accumulated experience—affects the accessibility of the experience in overall evaluations of affect. By examining degree of prior experience at one range of a continuum (i.e., from unique to less novel) instead of a broader spectrum (i.e., from novel to conventional), this study isolates the role of memory interference. Yet, there could be other mechanisms in retrospective evaluations that occur over wider ranges of prior experience. In fact, as people accumulate a great deal of experience in a domain, they may form enduring affective representations of these experiences, which might tie on-line and remembered affect together (Breckler 1994; Breckler and Wiggins 1989, 1993). This possibility will be discussed later in the dissertation.

XI. Study 4: Browsing study

Study 4 tests hypothesis 3, the prediction that more accumulated experience in a domain will improve recall of attribute quality levels, but diminish recall for on-line affect, as revealed by retrospective evaluations. This study also generalizes the study of novelty to a different domain: a consumer browsing experience. Consumers visiting web-based and retail stores are regularly exposed to sequences of options when they browse through

items in a product category. Evaluating these search experiences retrospectively, consumers may recall the quality levels of available options or their subjective shopping experience. Such evaluations also exhibit effects identified in the snapshot model literature. Diehl and Zauberan (2005) found that when product sets were extensively searched overall evaluations were more positive for sequences with improving orderings of options compared to those with declining orderings—an effect predicted by the preference for improving trends.

In this study, on-line affect and encountered information were jointly manipulated in the focal browsing experience. Overall evaluations were either based on encountered information (quality levels of options) or experienced affect (satisfaction with the browsing experience). Degree of novelty was manipulated by subsequent exposure to similar browsing experiences. Thus, this study reveals how amount of accumulated experience—a dimension of novelty—influences both learning and memory interference in overall evaluations of experiences.

Method

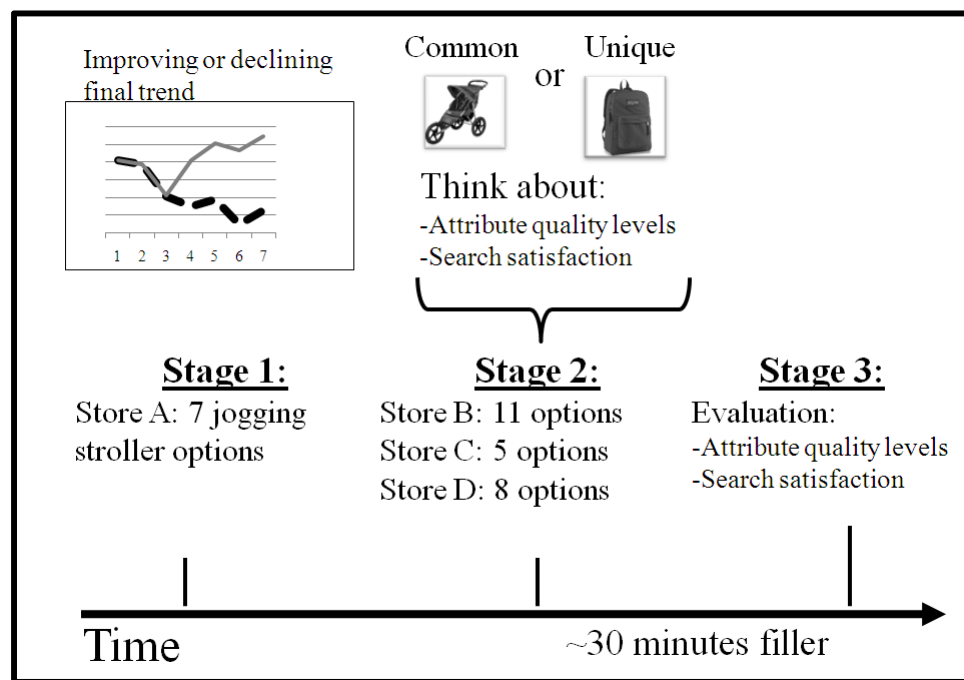
Participants and Design. Participants (n=189), undergraduate and graduate students at a large East Coast University, completed this study as part of an experimental lab session for which they were paid \$10. The study followed a 2 (common, unique focal

browsing experience) X 2 (improving, declining final trend of focal browsing experience) X 2 (informational, hedonic overall evaluation) between-subjects design.

Procedure. This study proceeded in three stages: (1) a focal browsing experience, (2) decoy browsing experiences, and (3) delayed evaluations. Each stage is described separately. See figure 9 for a schematic depicting the three stages of the study.

FIGURE 9

Figure 9: Schematic depicting the three stages of study 4.



Stage 1: Focal browsing experience

In the focal experience, participants engaged in a browsing task in which they examined jogging stroller options in a simulated web-based store called 'Store A.' Since


participants were overwhelmingly child-less undergraduate students, few participants were expected to have prior experience in this product category. As such, the product category was explained to participants in an instructions section (see figure 10).

FIGURE 10

Figure 10: Instructions section for study 4.

In this study we would like you to simulate the experience of searching for products in online stores. Actual online stores' names will not be listed, but the stores are similar in some respects to real online stores.


In this first part of the task you will browse through an online store (Store A) that sells jogging strollers--baby strollers adults can use while running, as depicted below.



Because you do not have the opportunity to inspect these jogging strollers directly, you will rely on information provided to you. Each stroller is described on two characteristics:

- 1) **Maneuverability:** Based on the stroller's weight, the quality of its wheels, and other materials.
- 2) **Comfort for baby:** Some strollers have more advanced shock absorbers than others. Strollers also vary in their seat cushioning and covers, resulting in different levels of comfort for the baby.

Each jogging stroller's profile will include two scales depicting the stroller's performance on each characteristic. For each characteristic, higher values on the scale are better. The more filled the bar is with the color red, the higher the value is; the maximum possible value on the scale looks like the following:



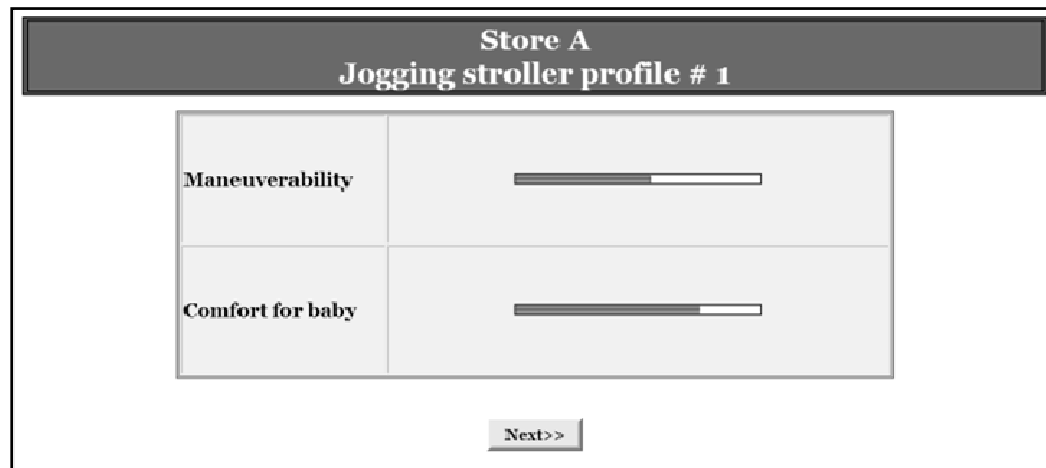
Your goal is to find a high quality jogging stroller for another person, a parent interested in purchasing a jogging stroller. This person thinks the baby's comfort is twice as important as how maneuverable the stroller is. As such, when you consider each stroller's overall quality you should weight comfort twice as much as maneuverability. Click Next>> to view the strollers available at online Store A. You may view these strollers at your own pace.

Consistent with the agent-search procedure followed by Diehl and Zauberan (2005), study 4 participants were asked to consider jogging stroller profiles according to another

consumer's preferences. Specifically, they were instructed to browse through the options as if they were searching for a stroller for a parent interested in making a purchase. Strollers were to be described on two characteristics: "maneuverability" and "comfort for baby." Participants were told to weight comfort twice as much as maneuverability when assessing each option. The Store A sequence involved seven product profiles, numbered 1 through 7. Each product was described on the two attributes using horizontal bars filled at different levels to reflect performance on each attribute (see figure 11). Participants controlled the pace at which they viewed the product profiles, and each profile was generally viewed briefly ($M=3.04$ seconds).

FIGURE 11

Figure 11: Example of jogging stroller profile for study 4.



Participants could infer the utility of each jogging stroller option based on the levels of fill for its horizontal bars. Although numerical attribute values were not provided, these values could be assessed visually. Each bar was filled at a percentage level in the range of

5% to 95% in increments of 10% (i.e., 5%, 15%, 25%, etc.). The first three product profiles were the same for all participants. However, attribute quality levels for profiles 4 – 7 were manipulated by final trend condition: Participants in the declining final trend condition were exposed to product profiles with declining performance on both attributes, whereas participants in the improving final trend condition were exposed to improving product profiles (see table 5). Participants were not informed about the trend of the sequence directly, but instead were to discover it independently. An improving final trend would lead to higher average quality ratings and was expected to lead to more satisfaction with the search process.

TABLE 5

Study 4 attribute quality levels for focal browsing experience

Table 5: Performance on each attribute for the seven product profiles in the focal browsing sequence of study 4. Attribute values represent the percentage of the bar filled in the graphical depiction of attribute performance. Profiles 1 through 3 are the same, but profiles 4 – 7 differ by final trend condition.

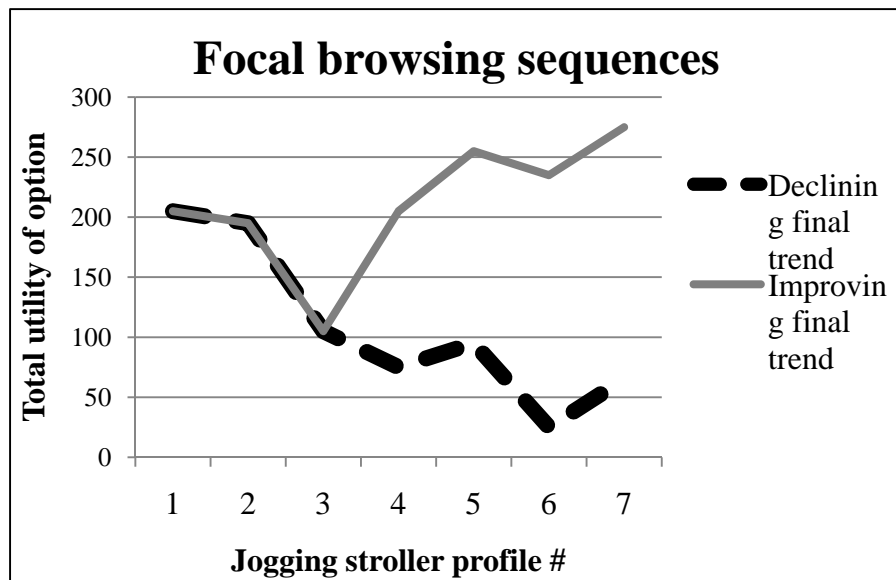
Condition:	Profile #	1	2	3	4	5	6	7
Declining final trend	Maneuverability (%)	55	65	55	45	25	15	15
	Comfort for baby (%)	75	65	25	15	35	5	25
Improving final trend	Maneuverability (%)	55	65	55	75	85	65	85
	Comfort for baby (%)	75	65	25	65	85	85	95

Total utility of each option could be calculated as performance on maneuverability plus performance on comfort for baby, weighted twice. Thus, converting percentage values to points, the maximum utility of each option was 300 points (both attributes at 100%).

Product profiles ranged in total utility from 25 points to 275 points (see figure 12). The average total utility was $M=109.29$ points for the declining final trend sequence and $M=210.71$ points for the improving final trend sequence.

FIGURE 12

Figure 12: Total utility of each option in the focal browsing sequences of study 4.



Stage 2: Decoy browsing experiences

After browsing through focal Store A, participants visited the other simulated web-based stores, B, C, and D, which offered the decoy browsing experiences. In an instructions section provided to participants immediately after the focal browsing sequence, some participants were told that they would browse through three more web-based stores that would feature jogging strollers. Other participants were told that they would browse through three web-based stores that would offer backpacks. As such,

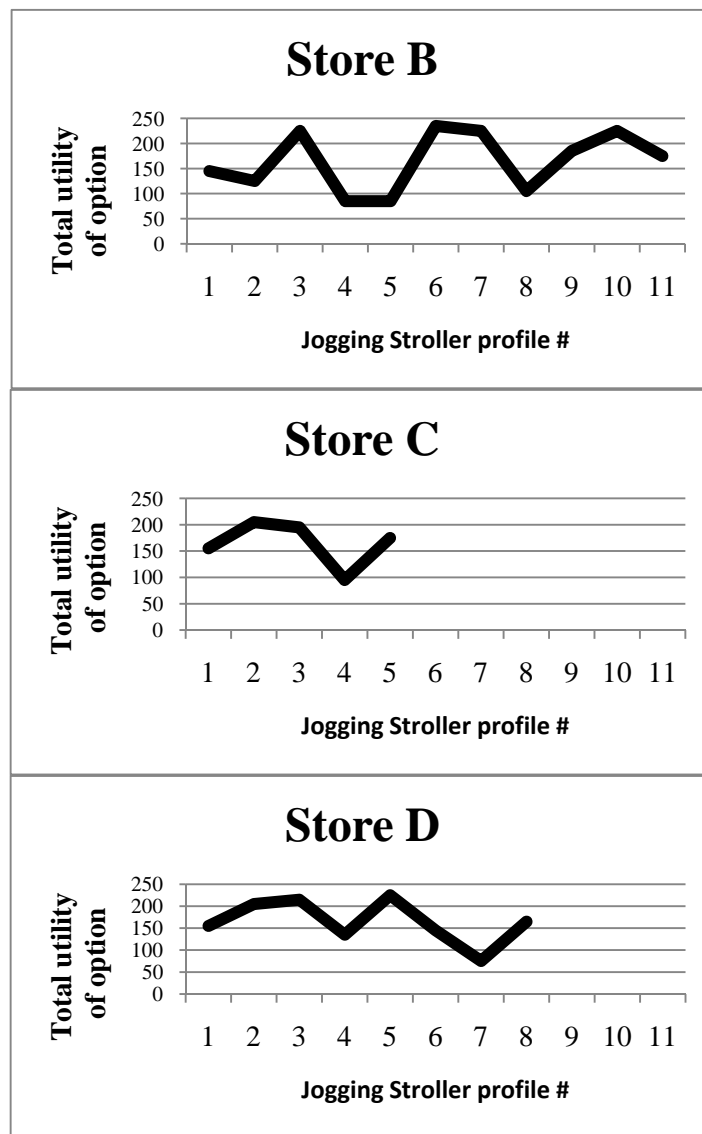
through subsequent exposure to sequences, the focal experience's product domain would either be common or unique. In addition, participants were instructed to either focus on the quality of options they would see (informational evaluation condition) or their search satisfaction with the browsing process (hedonic evaluation condition) as they browsed through the decoy stores. Specifically, they were told to either "think about the quality of (jogging strollers, backpacks) available at each store" (informational) or to "think about how you feel about the search process" (hedonic). This instruction to focus on informational or hedonic aspects of the experience was provided before and after the presentation of each sequence. Importantly, this instruction was also provided immediately after the focal sequence.

The subsequent sequences of jogging strollers that participants saw in the common-experience condition offered the same type of product profiles as in Store A. However, these decoy stores differed in their pattern of quality, number of options, and presentation format. Each decoy store had an average total utility of 165 points across its jogging stroller profiles. As such, the average quality of these three decoy stores' offerings was roughly halfway between the two manipulated levels of focal Store A (i.e., between 109.29 and 210.71). None of the subsequent stores had a discernable trend of quality (see figure 13). Store B featured 11 options, whereas Store C had five and Store D had eight jogging stroller profiles respectively. Store D's jogging stroller profiles were presented at a pre-determined pace, 3.2 seconds per profile. In contrast, participants were able to control the pace at which they viewed profiles in stores B and C. Finally, each store was

also associated with a particular background color (blue for Store B, yellow for Store C, and orange for Store D) which differed from the background color of Store A (green). These differences aided participants' ability to discriminate between stores and ensured that participants would experience different levels of search satisfaction by store. Additionally, the varying patterns of total utility could help participants learn about the range of average quality across stores.

FIGURE 13

Figure 13: Total utility of each option in the subsequent (decoy) browsing sequences of study 4.

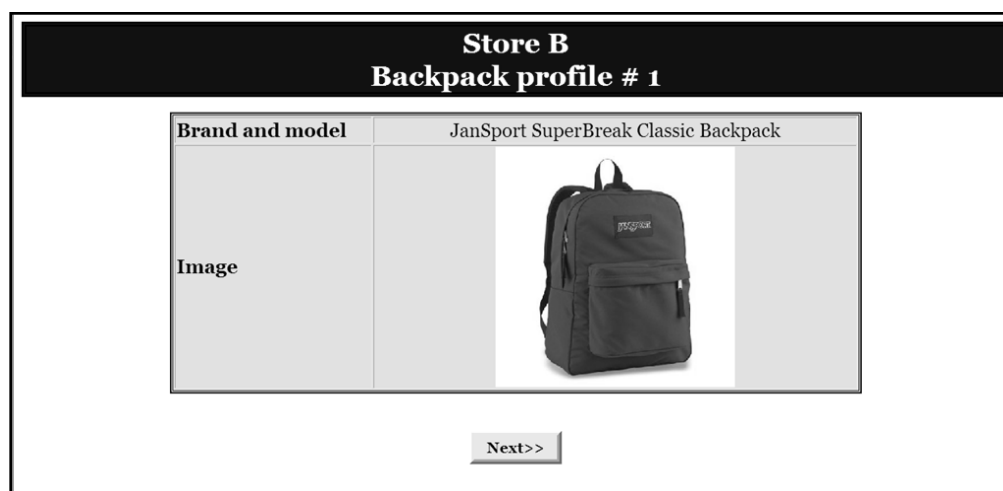


Participants who browsed through backpack sequences engaged in a similar task but in a different domain. These participants examined 11 backpacks in Store B, five in Store C, and 8 in Store D. The color and presentation time used in these backpack stores were also equivalent to the jogging stroller stores. However, rather than assessing products by reading graphical bars, participants viewed pictures of different backpacks and were

presented the corresponding names of backpack models (see figure 14). Actual brand names and backpack pictures were provided, extracted from Amazon.com listings. Participants were instructed to browse through the backpacks, assessing quality according to their own preferences. Thus, the quality patterns for these stores were not controlled experimentally.

FIGURE 14

Figure 14: Example of backpack profile for study 4.



Stage 3: Delayed evaluations

After completing the browsing sequences in stores B, C, and D, participants moved on to other, unrelated tasks in the lab. After this delay ($M=27.78$ minutes) participants were prompted to recall the focal browsing sequence in Store A: They were asked to form a retrospective evaluation of either the average quality levels of jogging strollers or their overall satisfaction with the search process. Zauberman et al.'s (2006) studies similarly manipulated type of evaluation through different prompts. In this study,

participants in the informational evaluation condition first were asked to reproduce the average performance of each attribute using unmarked sliding scales. They then were asked, “What was the average quality level of Store A's jogging strollers?” They responded using a 100-point scale to provide this direct estimate. Participants in the hedonic evaluation condition only formed a direct overall evaluation of their search satisfaction. They were asked: “Recall your experience searching for a high quality jogging stroller in online Store A. Overall, how satisfied did you feel with the search at this store?” For both the informational and hedonic direct estimates, participants responded by inputting a number between 0 and 100 in a textbox, where higher numbers indicated higher average quality levels or overall satisfaction.

Participants were also asked about the perceived novelty of browsing in each product category. First, participants were asked how familiar they were with the jogging stroller product category, which they responded to on a scale from 1 (“Not at all familiar”) to 7 (“Very familiar”). Second, they were asked how often they use a jogging stroller, which they responded to on a scale from 1 (“Never”) to 7 (“Very often”). Third, they were asked how knowledgeable they were about jogging strollers, which they responded to on a scale from 1 (“Not at all knowledgeable”) to 7 (“Very knowledgeable”). Participants then answered the same three questions for the backpack product category.

Results

Manipulation Checks

Participants rated the backpack browsing experience as much less novel than the jogging stroller browsing experience, as revealed by paired differences in the three novelty manipulation check questions (all $t(189) > 22$, all $p < .0001$).

Retrospective evaluations with no statistical controls

While hedonic evaluations were only measured directly, informational evaluations were measured in two ways: by directly recalling average total utility and by reproducing average attribute quality levels. Thus, total utility could be calculated by using participants' recalled performance for maneuverability and comfort for baby, adding the two values and doubling the weight for comfort. This calculated estimate correlated highly with directly provided judgments ($r(93) = 0.67$, $p < .0001$). I report analyses based on directly provided judgments; analyses based on calculated estimates are equivalent.

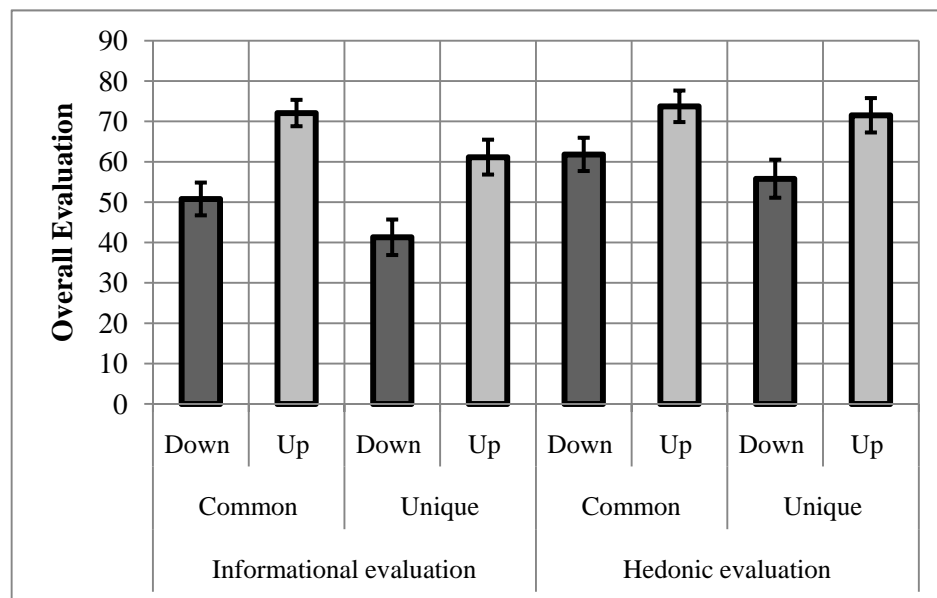
A basic model including all between-subjects factors and their interactions revealed that neither the three-way interaction nor any of the two-way interactions were significant ($F(1, 181) < 1$ in all cases), but significant main effects were obtained (see figure 15). As expected, evaluations were higher for the improving final trend sequences compared to the declining final trend sequences ($F(1, 181) = 32.55$, $p < .0001$). Evaluations were more positive when the browsing experience was common compared to when it was unique ($F(1, 181) = 5.65$, $p = .02$), and evaluations were also higher for hedonic compared to informational evaluations ($F(1, 181) = 9.72$, $p < .01$). These latter two results were peripheral to the main phenomenon of interest and were not anticipated by the

hypotheses. I remain agnostic as to their underlying causes, but stimulus calibration may be responsible. The main effect of experience frequency could occur simply as a byproduct of the stimuli employed (e.g, Store A was seen in a more positive light when compared to stores B, C, and D). The main effect of evaluation type could be a result of differences in scale usage, or it could indicate that participants were largely satisfied with the search experience, even if the average quality of options was more modest.

FIGURE 15

Study 4: Overall analysis of retrospective evaluations

Figure 15: Mean overall evaluation of focal browsing experience in study 4 as a function of type of retrospective evaluation, experience frequency, and experienced final trend. The left hand panel depicts retrospective judgments of average quality, and the right hand panel depicts overall evaluations of search satisfaction. “Down” refers to the declining final trend condition, and “Up” refers to the improving final trend condition. Error bars represent standard errors of the mean.



Retrospective evaluations, controlling for immediate evaluation time

The results reported above were not consistent with the predictions set prior to the study. Specifically, a three-way interaction was predicted: It was expected that retrospective evaluations would track final trend differences for informational evaluations only when the experience was common and for hedonic evaluations only when the experience was unique. Instead, final trend differences were large regardless of the frequency of the experience or the form of retrospective evaluation.

These results suggest that participants were highly accurate in their recall for both attribute levels and experienced satisfaction. The tendency for participants to form immediate assessments may explain this ceiling effect on accuracy of recall. As such, in further analyses I examined the role of time spent on the decoy experiences, when participants were likely to form on-line impressions of each subsequent sequence and the focal browsing experience. Presumably, participants who spent more time on this second stage were likely to more carefully form immediate impressions, mitigating any effect of the other manipulated factors. It should be noted that this control was not manipulated as part of the experimental design *a priori*, but instead was selected due to the finding that participants were highly accurate in their recall.

A larger model that included all manipulated factors and their interactions as well as time spent on stage two of the study and its interaction with the other variables obtains the effect predicted. This analysis finds no main effect of final trend ($F(1, 173)=0.01, p>.9$),

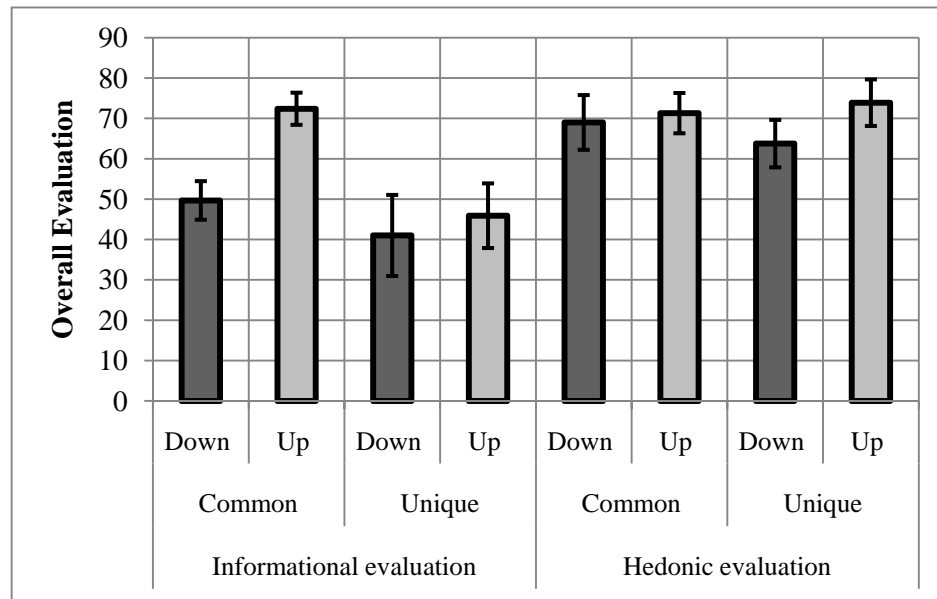
no main effect of experience frequency ($F(1, 173)=1.41, p>.2$), and only a marginally significant effect of type of evaluation ($F(1, 173)=3.51, p=.06$). However, there was a significant three-way interaction between final trend, experience frequency, and type of evaluation ($F(1, 173)=6.37, p=.01$) as well as a significant four-way interaction where this effect was moderated by amount of time spent on the second stage of the study ($F(1, 173)=4.83, p=.03$).

The median time spent on the second stage of the study was 32 seconds. Using the median split of this variable as an additional factor in an analysis would result in insufficient power (see Irwin and McClelland 2003). Nonetheless, I describe the pattern of means along a median split for expositional purposes. This pattern is consistent with the predictions for participants who spent less than the median time on the second stage of the study. When these participants were judging the average quality level of the focal browsing sequence, uniqueness led to less accurate recalled quality ratings. Final trend effects were large when the sequence was common ($M_{Down} = 49.67, M_{Up} = 72.38$) but very small when the sequence was unique ($M_{Down} = 41, M_{Up} = 45.88$). On the other hand, when participants evaluated their overall satisfaction with the search process final trend effects were non-existent when the sequence was common ($M_{Down} = 69, M_{Up} = 71.29$) but larger when the sequence was unique ($M_{Down} = 63.75, M_{Up} = 73.89$). See figure 16.

FIGURE 16

Study 4: Analysis of retrospective evaluations, less time on second stage
Figure 16: Mean overall evaluation of focal browsing experience in study 4 as a function of type of retrospective evaluation, experience frequency, and experienced final trend.

The left hand panel depicts retrospective judgments of average quality, and the right hand panel depicts overall evaluations of search satisfaction. “Down” refers to the declining final trend condition, and “Up” refers to the improving final trend condition. Error bars represent standard errors of the mean. These values only include participants who spent less than the median time on the second stage of the study.

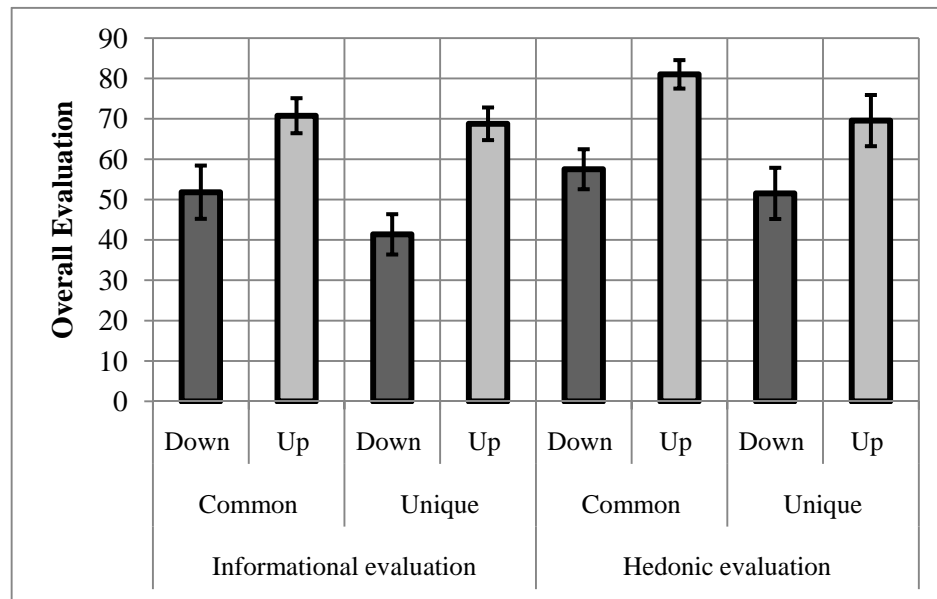


When participants spent more time on the second stage of the study final trend differences were not moderated by evaluation type or experience frequency. Instead, final trend differences were large across conditions (see figure 17). Other ways of splitting the data reveal similar patterns.

FIGURE 17

Study 4: Analysis of retrospective evaluations, more time on second stage
 Figure 17: Mean overall evaluation of focal browsing experience in study 4 as a function of type of retrospective evaluation, experience frequency, and experienced final trend. The left hand panel depicts retrospective judgments of average quality, and the right hand panel depicts overall evaluations of search satisfaction. “Down” refers to the declining

final trend condition, and “Up” refers to the improving final trend condition. Error bars represent standard errors of the mean. These values only include participants who spent more than the median time on the second stage of the study.



Discussion

Study 4 demonstrates prior experience’s differing effects on informational versus hedonic evaluations of experiences. I argue that this interaction stems from different memory mechanisms involved in each case. For informational evaluations, additional experience helps consumers learn attribute values and rehearse the focal sequence, resulting in consumers recalling more about the information presented during common experiences. In this study, participants who viewed subsequent jogging stroller sequences had more exposure to the range of attribute values, which would provide a more informed frame by which to evaluate the focal episode’s attributes. On the other hand, for affective evaluations, additional experience resulted in memory interference, which prevented

participants from uniquely accessing their on-line affect from the focal sequence. Though interference likely figured even in recall for informational attributes, this effect was offset by the enhanced learning of these attributes. Notably, additional experience did not aid in learning of on-line affect, consistent with the argument that affect is a global response that can be recalled without a domain-specific cognitive structure.

In this study the interaction between experience frequency and type of evaluation on overall evaluations was further moderated by the amount of time participants spent in the second stage of the study. Although not anticipated *a priori*, I argue that this measure of time spent serves as a proxy for how carefully participants formed immediate evaluations of the focal and subsequent sequences. For participants who were asked to pay attention to average quality levels, effortful processing would result in greater rehearsal of the focal sequence's average quality levels as well as greater encoding of the subsequent sequences. As such, recall for average quality of the focal sequence would likely be very accurate, reflecting experienced trends. For participants who were asked to pay attention to their experienced affect, effortful processing would result in participants forming spontaneous impressions of search satisfaction. Thus, these participants' memories were neither enhanced nor diminished by novelty, because there was a ceiling effect on how accurate their memories could be. It is difficult to explain the pattern of results by variables confounded with time spent on the second stage, such as enjoyment in the study, need for cognition, etc. While manipulating degree of effort would be a useful

extension, results based on measured effort captures people's own tendencies to form immediate impressions.

This study also generalizes the investigation to a different domain, manipulation of experienced affect, and manipulation of novelty. This study replicates past findings in the marketing literature, revealing that snapshot model effects are also relevant for consumers' browsing experiences (e.g., Diehl and Zauberma 2005). Experienced affect was manipulated through the final trend of the focal sequence, whereas studies 1 and 2 manipulated one moment of the focal episode (i.e., start and end), and in study 3 experienced affect was measured. Finally, this study manipulates novelty through subsequent exposure to similar experiences. As such, the initial sequence was similarly involving and intense for all participants, but at the time of a delayed overall evaluation the experience had become more common for some participants. This methodology addresses the limitations of previous manipulations of novelty (i.e., measuring novelty or manipulating prior experience).

Like study 3, this study focuses on frequency of experience as a dimension of novelty. The domain of experience—browsing for jogging strollers—was perceived as novel for participants in this study. Thus, the range of accumulated experience examined in this study was from unique to common, and not from novel to conventional. Nonetheless, it is informative that within this range of accumulated experience participants were able to quickly develop a cognitive structure that aided their later recall of average quality levels.

Even if participants formed an enduring affective representation of their search satisfaction through additional experience in the domain, it would contribute very little to enhancing memory for affect. Participants who lacked such a representation would still be able to recall their experienced affect, conditional on accessing the focal browsing sequence.

XII. Study 5: Aesthetics study

Study 5 distinguishes novelty from unfamiliarity and tests hypothesis 4, the prediction that prior indirect experiences will reduce accuracy of retrospective evaluations of affect for conventional but not novel experiences. Consumers not only engage in direct experiences in a domain, but also they are exposed to these experiences through indirect sources. For instance, consumers may describe experiences verbally to each other, or advertisements may simulate experiences prior to their occurrence. How do these indirect experiences—which factor into familiarity—impact the accessibility of direct experiences in the domain? Research on web-based search behavior indicates that consumers develop false memories of product capabilities when they interact with on-line, virtual product demonstrations (Schlosser 2006). While such exposure to information can simulate real experiences in conventional domains, they may not lead to the same effects in novel domains, where it is less likely that people will invoke an experience through contemplation alone.

In this study, on-line affect from an aesthetic experience was measured, and participants formed an overall evaluation of affect after a delay. The focal experience was either of a conventional or novel type. This focal experience was preceded either by a direct or indirect experience in the same domain. I predict that for novel experiences direct experiences will diminish accessibility more than indirect experiences. In contrast, indirect as well as direct experiences will equally diminish accessibility for conventional experiences.

Method

Participants and Design. Participants ($n=119$), undergraduate and graduate students at a large East Coast University, completed this study as part of an experimental lab session for which they were paid \$10. The study followed a 2 (conventional, novel image domain) X 2 (description-based, image-based decoy experience) between-subjects design.

Selection of Images. All images included in the focal study were pre-tested for their perceived enjoyment and novelty as separate factors. Pre-test participants ($n=234$) did not take part in the focal study and were asked to rate thirty images or thirty descriptions of images in a 2 (conventional, novel set) X 2 (ratings of descriptions, ratings of images) between-subjects design. Conventional images were all nature photographs, including pictures of wild animals and landscapes. Novel images were all

surreal paintings or photography, including bizarre artwork in the surrealism style and photographs by Atta Kim, who specializes in long exposure photos (e.g., Kim captures Times Square in New York by opening a lens for several hours. The resulting photograph depicts movement that occurs through the day). From this pre-tested set, images and descriptions were selected for the focal study to ensure that perceived novelty differed by novelty condition and liking for viewed images would be similar by novelty condition. A target set of eight images with similar mean enjoyment ratings ($M_{Conventional} = 8.85$, $M_{Novel} = 8.14$) and a decoy set of seven images with similar mean enjoyment ratings ($M_{Conventional} = 9.29$, $M_{Novel} = 8.65$) were selected. However, because the pre-test included other images in the rating task, the average liking of these images may not equate with on-line enjoyment in the focal study, which involved a smaller set of images and a different procedure. Instead, on-line affect was measured in the focal study itself.

Focal study procedure. The focal study involved a 2 (conventional, novel image set) X 2 (description-based, image-based decoy experience) between-subjects design. The study took place within one lab session and proceeded in three stages: (1) a decoy aesthetic experience, (2) target image viewing experience, and (3) delayed evaluations. Each stage is described separately.



Stage 1: Decoy aesthetic experience

Participants were exposed to a decoy aesthetic experience at the beginning of the lab session, which varied by condition. The decoy experiences were always in the same

domain as the target images (i.e., nature images or surreal paintings and photographs), and thus varied as either conventional or novel. Additionally, the decoy experience either involved reading seven descriptions of images or involved viewing the seven images as a between-subjects manipulation of decoy experience format. See figure 18 for examples of images and descriptions of images viewed in the decoy experience.

FIGURE 18

Figure 18: Examples of images and description of images viewed in the decoy task of study 5.

	Conventional	Novel
Image		
Description	A grown horse, white with brown markings, is followed along the fields by a young horse (foal), brown with white markings. Both horses are trotting at a steady pace in the direction of sunlight, which is to the viewer's right. The background is a grassy field, but little of it is shown as the frame of the image is determined by the size of the adult horse.	This photo shows an unusual yellow melting substance with drops falling down and flying off the top. The substance spans the entire horizontal dimension of the photograph and is disc-shaped. The drops fly at different angles from the disk shape, and they are more prominent towards the right of the image. The photo is based off of an 24-hour exposure of ice melting. The photo lens is left open for 24 hours capturing the gradual melting of the ice.

Participants who only read descriptions of decoy images were exposed to each description for 30 seconds, after which they could move on to the next description at their own pace. These participants were instructed as follows: “Your task will be to visualize the image in your mind as much as possible and to focus on your enjoyment of the image. Each description will be displayed for 30 seconds, which will allow you sufficient time to visualize the image. After the 30 seconds have concluded, you will be asked to form a final image in your mind and to move on to the next description.” Participants who only viewed decoy images were exposed to each image for 5 seconds, after which they could move on to the next image at their own pace. These participants were instructed: “As you view each image, focus on your enjoyment of the image. Each image will be displayed for 5 seconds. After the 5 seconds have concluded, you will be asked to move on to the next image.” After reading all seven descriptions or viewing all seven images, participants were asked to think about their enjoyment of the experience. Thus, although participants thought about their enjoyment of the sequence during its course and after it concluded, they neither explicitly provided on-line evaluations nor provided a retrospective overall evaluation.

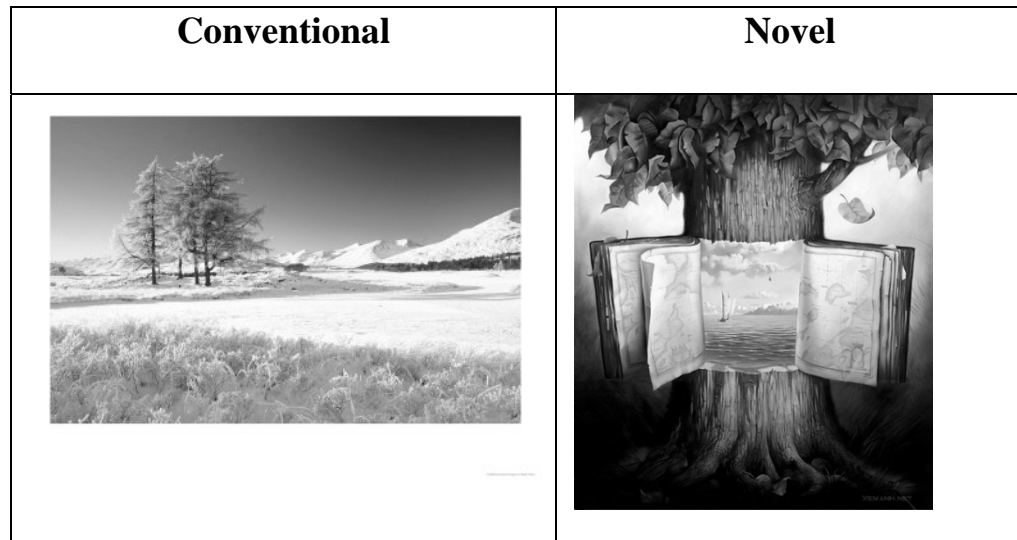
Stage 2: Target image viewing experience

All participants then saw a target set of eight images. These images were in the same domain as the decoy set, and thus varied as either conventional or novel. While viewing each image, participants were asked to provide their on-line enjoyment rating. Specifically, they were asked, “How much do you enjoy looking at this image?” which

they responded to on a scale from 1 (“Not at all”) to 15 (“Very much.”). Participants controlled the pace at which they viewed each image. Conventional images were viewed for a similar length of time as novel images ($M_{Conventional} = 3.89$ seconds, $M_{Novel} = 4.34$ seconds; $t(119)=1.40, p=.21$). Two examples of target images are provided in figure 19.

FIGURE 19

Figure 19: Examples of images viewed in the target image viewing task of study 5.



Stage 3: Delayed evaluations

After completing the target image viewing experience, participants moved on to other, unrelated tasks in the lab. After this delay ($M=26.45$ minutes) participants were prompted to recall the target image viewing experience. Participants who had only read descriptions of images in the decoy aesthetic experience were simply asked to recall the eight images they viewed. Participants who had viewed a decoy set of images prior to the

target image viewing experience were asked to recall the *second* set of images. To minimize confusion, these participants were reminded that only the images from the second set were rated on-line. All participants were then asked, “Considering these images, overall how much did you enjoy looking at these images?” They responded on an unmarked scale by moving a probe to a position on a line anchored by “Not at all” to “Very much.” The probe’s singular position on the scale was translated to a number from 0 to 100, with higher numbers indicating more overall enjoyment.

Participants were also asked to respond to further questions for manipulation checks and controls. There were three ratings for overall novelty of the target image set. First, participants were asked how often they had seen images like the ones they viewed, which they responded to on a scale from 1 (“Never”) to 7 (“Very often”). Second, they were asked how similar the images were to those they are exposed to in different media: They were asked, “You are regularly exposed to all kinds of images in many different media, such as television, film, magazine articles, advertisements, posters, art work, the Internet, etc. How similar were the images in this study to those you are exposed to regularly?” They responded to this second question on a scale from 1 (“Very Dissimilar”) to 7 (“Very Similar”). Third, they were asked how knowledgeable they were about the subject matter depicted in the images, which they responded to on a scale from 1 (“Not at all knowledgeable”) to 7 (“Very knowledgeable”). After these overall novelty questions, participants rated each image on how novel it was to them. They were presented each image one-by-one and responded to each image on a scale from 1 (“Not at all novel”) to

15 (“Very novel”). Finally, participants rated the extent to which the decoy descriptions or decoy images were similar to the target images in content and style; they responded to this question on a scale from 1 (“Not at all similar”) to 10 (“Very similar”).

Results

Manipulation Checks

Novelty ratings for the nature images were much lower than these ratings for the surreal paintings and photographs, as revealed by between-subjects differences in the three manipulation check questions on novelty of the entire set (all $t(119) > 4$, all $p < .0001$). Further, the sum of image-by-image novelty ratings were lower for the nature images than the surreal images ($t(119) = 7.51$, $p < .0001$).

On-line and Overall Evaluations

Analyzing the mean of on-line image ratings revealed no main effect of decoy experience format ($F(1, 117) < 1$), a main effect of novelty ($F(1, 117) = 7.08$, $p = .009$), and no interaction between decoy experience format and novelty ($F(1, 117) < 1$). Mean of on-line enjoyment ratings were higher for the conventional, nature images ($M = 9.28$) than for the novel, surreal images ($M = 8.37$). Similar results were obtained for the peak and end of on-line enjoyment ratings: In each case no main effect of decoy experience format and no interaction between prior experience and novelty were obtained on these gestalt characteristics (all $F(1, 117) < 3$, all $p > .10$), but there was a significant main effect of

novelty in each case (both $F(1, 117) > 6$, both $p < .01$). Peak of on-line enjoyment was higher for the conventional, nature images ($M = 13.51$) than for the novel, surreal images ($M = 12.39$). The final image was also enjoyed more on-line in the conventional condition ($M = 10.68$) than in the novel condition ($M = 9.31$). Consistent with these on-line differences, the same effects held for delayed overall evaluations. For overall evaluations, there was no main effect of decoy experience format ($F(1, 117) < 1$), and no interaction between decoy experience format and novelty ($F(1, 117) = 2.73$, $p = .10$), but a significant main effect of novelty ($F(1, 117) = 5.81$, $p = .02$). Overall evaluations were higher in the conventional condition ($M = 64.86$) than in the novel condition ($M = 55.52$). Together these results suggest that the novel experience was associated with less enjoyment.

Memory-Experience Gaps

The main outcome of this study was not how novelty impacted enjoyment of the experience but rather how novelty impacted the extent to which delayed overall evaluations reflected on-line affect. In study 3, I examined the influence of gestalt characteristics of the experience on overall evaluations, finding that peak intensity and other aspects were more influential on overall evaluations if the experience was unique versus if it was common. That approach, isolating gestalt characteristics in the analysis, could not be applied to study 5. In study 5 each characteristic was confounded with an individual image, which varied by novelty condition. For instance, if the end of the sequence was more influential on overall evaluations for the novel versus conventional sequence, it could not be resolved whether this result stems from greater accessibility of

novel images or greater accessibility of the specific image viewed at the end of each sequence. As such, in study 5 I compared average on-line ratings of enjoyment with delayed overall evaluations of enjoyment. On-line evaluations, which were on a 15-point scale, were translated into the same scale for overall evaluations, which were on a 100-point scale. The difference between overall evaluations and mean on-line evaluations served as the memory-experience gap (see also Miron-Shatz, Stone, and Kahneman 2009 for a similar approach). This measure captures participants' accuracy in recalling their on-line affect.

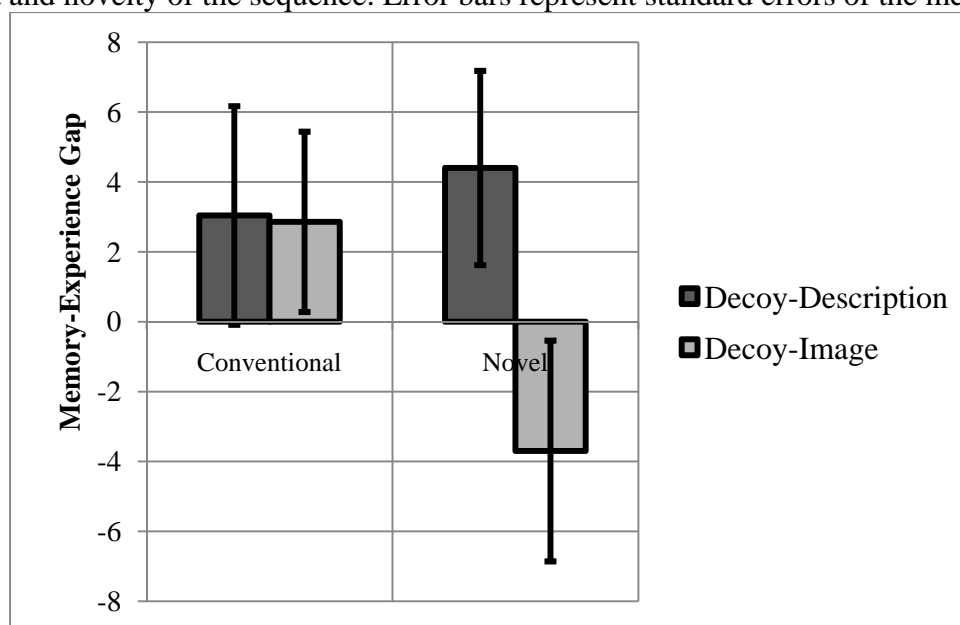
In one analysis of memory-experience gaps, I examined actual differences between on-line and overall evaluations of enjoyment, which measures directional bias in recall for experienced affect. However, this measure had a major limitation: Positive and negative differences canceled each other out, resulting in very small effect sizes. Indeed, the mean value of the memory experience gap ($M=1.18$) was not significantly different from zero ($t(121)=0.77, p=.43$). Further, analyzing this measure revealed no main effect of decoy experience format ($F(1, 117)=1.82, p=.18$), no main effect of novelty ($F(1, 117)=0.71, p=.40$), and no interaction between decoy experience format and novelty ($F(1, 117)=1.16, p=.20$), see figure 20. In the novel condition the pattern of means suggests that reading decoy descriptions earlier resulted in the target image viewing experience being perceived as more positive in retrospect, whereas viewing decoy images earlier pulled down retrospective evaluations. However, these directional biases are very small and may

stem from differences in general error in recall of affect rather than differences in directional bias.

FIGURE 20

Study 5: Mean Memory-Experience gap

Figure 20: Mean memory-experience gaps in study 5 as a function of decoy experience format and novelty of the sequence. Error bars represent standard errors of the mean.



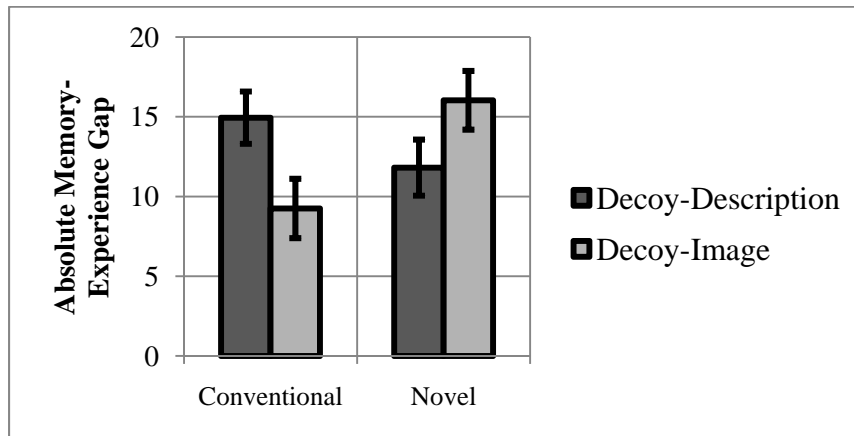
In an alternative analysis, I studied the absolute value of differences between overall evaluations and on-line ratings of enjoyment. This absolute difference captures the extent to which delayed overall evaluations departed from on-line evaluations—a measure of how well participants were able to access the target experience. This measure revealed no main effect of decoy experience format and no main effect of novelty (both $F(1, 117) < 1$), but a significant interaction between decoy experience format and novelty ($F(1, 117) = 7.37, p = .008$), see figure 21. In the conventional image condition, absolute memory experience gaps were higher when provided a sequence of image descriptions beforehand

($M=14.94$) and lower when provided a sequence of other conventional images prior to the target image set ($M=9.25$; $t(54)=2.30$, $p=.026$). On the other hand, in the novel image condition, absolute memory experience gaps were lower when provided a sequence of image descriptions beforehand ($M=11.81$) than when provided a sequence of other novel images prior to the target image set ($M=16.03$; $t(63)=1.6$, $p=.11$). The interaction held even when controlling for how similar the decoy images and descriptions were to the images in the target set ($F(1, 116)=7.22$, $p=.008$).

FIGURE 21

Study 5: Mean Absolute Memory-Experience gap

Figure 21: Mean absolute memory-experience gaps in study 5 as a function of decoy experience format and novelty of the sequence. Error bars represent standard errors of the mean.



Discussion

This study examined how direct and indirect experiences in a domain impact the accessibility of experiences in retrospective evaluations. The results revealed some effects that were expected and one that was unexpected. For novel experiences, direct

experiences were more influential than indirect experiences in diminishing accessibility, as revealed by higher absolute memory-experience gaps when participants were exposed to a decoy image viewing experience. However, for conventional experiences, having been exposed to a decoy description experience did interfere with memory for experienced affect, as demonstrated by a high absolute memory-experience gap in this condition. This finding helps to distinguish novelty from unfamiliarity: Whereas indirect experiences in a domain figure into familiarity, they are less influential in novelty. Indirect experiences increase interference only if an experience is conventional, and not if the experience is novel.

An unexpected result occurred in the conventional experience condition: Participants who viewed a decoy set of images prior to the target set were actually more accurate in their recall for affect than participants in any other condition. The absence of a neutral condition, in which no prior experience of any type would be provided, was a limitation in the study's design. The neutral condition would help to resolve whether the absolute-memory experience gap was reduced through direct experience in the conventional domain or widened through indirect experience in this domain. Since the experimental manipulations do not lend an explanation, I can only conjecture as to why the earlier experience enhanced recall for affect. One possibility is that the earlier direct experience in the domain increased involvement in the target experience. Another possibility is that participants had enduring affective representations towards nature images. Recent exposure to a set of nature images cued these knowledge structures, which aided their

learning of affect for the target experience. These possibilities are intriguing, but they would require a different design to tease apart. Aside from a neutral condition, the study could involve a manipulation of timing of evaluation (immediate versus after a delay) to examine if encoding versus retrieval contribute to the phenomenon.

Another limitation in this study was differences in affective intensity across conditions. In this study, participants enjoyed the conventional, nature image sequence more than the novel, surreal paintings and photographs. Prior research suggests that novelty could reduce enjoyment because novel experiences are experienced less fluently. Alternatively, this main effect could be a result of the particular stimuli selected. Although this main effect was not the focus of the analysis, it is still important to ensure more similar liking of the target images to equalize involvement in the experience. Moreover, decoy descriptions can be closely calibrated so that they cover the same content. These possibilities must be addressed in future studies.

XIII. Conclusion and General discussion

A. Summary of findings

Consumers are constantly faced with decisions of whether to engage in experiences, including leisure activities, shopping visits, and service encounters. These decisions are often based on consumers' overall evaluations of past experiences. As was noted at the outset of this dissertation, some of consumers' past experiences are conventional and

others are novel. In fact, as today's marketplace grows more abundant and varied, consumers have many available experiences that they would perceive as novel. As such, it is all the more important to understand the role of novelty in overall evaluations of experiences, as was pursued in this dissertation. Through five studies I demonstrated the following results:

Study 1: Supporting hypothesis 1, the beginning intensity of an experiences was more influential on overall evaluations if it was novel compared to if it was conventional. This study established the basic effect of novelty: Novelty led to enhanced accessibility and greater weighting in overall evaluations of affect.

Study 2: Supporting hypothesis 2a, the end intensity of an experience influenced immediate evaluations regardless of its novelty, but end intensity influenced delayed evaluations only if the end was novel. This study established that novel aspects have a more enduring influence on overall evaluations of affect.

Study 3: Supporting hypothesis 2b, delayed overall evaluations were more accurate, reflecting on-line affect, if the entire experience was unique versus if it was common. This study provided evidence for the interference mechanism.

Study 4: Supporting hypothesis 3, prior experience led to enhanced memory for presented information. Participants had more accurate recall for average quality levels when the experience was common compared to when the experience was unique. This study revealed differences in overall evaluations of affect versus retrospective judgments of presented attributes.

Study 5: Supporting hypothesis 4, indirect exposure to experiential information interfered with overall evaluations of conventional but not novel experiences. This study distinguished novelty from unfamiliarity.

These studies involved different stimulus domains: annoying sounds (studies 1 and 2), pleasant images (studies 3 and 5), and browsing sequences (study 4). Studies involved different forms of overall evaluations: overall evaluations of unpleasantness (studies 1 and 2), enjoyment (studies 3 and 5), satisfaction (study 4), and quality of options (study 4). They also varied in their manipulation of novelty, either by pre-testing stimuli for their perceived novelty and presenting different type of stimuli (studies 1, 2, and 5), or by providing different amounts of accumulated experience *prior* to a focal episode (study 3), or by providing different amounts of accumulated experience *after* a focal episode but prior to the delayed overall evaluation (study 4).

B. Theoretical contributions to the snapshot model

The present investigation provides a number of important theoretical contributions to research on overall evaluations of extended experiences. First, at a very basic level, this dissertation identifies novelty as a factor that enhances accessibility of experiences or aspects of experiences. Much of the past research on extended experiences has revealed how memorial factors influence overall evaluations. The present work augments this set of factors to include novelty—a property that depends not on the relative positioning and intensity within the episode, but instead on stimulus and conceptual differences. I show

that the effect of novelty on accessibility in overall evaluations is not always positive, and I examine moderators of novelty's influence. The specific set of moderators (e.g., timing of evaluation, form of evaluation, complexity of affective experience) is peculiar to novelty and may not apply to other accessibility factors, such as serial positioning and intensity. As such, the study of novelty reveals effects that were not anticipated by previous research on overall evaluations.

Second, identifying the role of novelty in overall evaluations is critical in understanding how evaluations of a given type of experience change with accumulated experience. Snapshot model heuristics often lead to biases, raising the question of whether bias is reduced through accumulated experience in a domain. For instance, people under-weight moderate intensity moments and duration of the episode, but they over-weight improving trends and other gestalt characteristics; these biases are at odds with rational models of decision-making. This dissertation demonstrates that bias is not eliminated through domain-relevant experience, but instead accumulated experience leads to additional bias in overall evaluations of affect. As an experience ceases to be novel, immediate overall evaluations are still based on the same heuristics, including heavy weighting of the peak and end intensity. Moreover, with the reduction of novelty, it is harder to access experiences for delayed overall evaluations, leading to greater error in these evaluations.

Third, in a related vein, I also demonstrate how evaluations can change with the passage of time. The role of delay has received little attention in past work: Timing of evaluation

has only been manipulated as a between-subjects factor in one investigation on extended experiences (i.e., Montgomery and Unnava 2009). This dissertation provides further support for the argument that that when evaluations are only formed after a delay they differ from immediate evaluations, but when evaluations are repeated after a delay they are based on similar aspects of the experience as immediate evaluations (see also Novemsky and Ratner 2003; Pocheptsova and Novemsky 2008). This result highlights the importance of studying factors that lead to more spontaneous immediate construction of evaluations. One such factor is identified in this research: The more time people spend deliberating on experiences post-episode, the more likely delayed evaluations will resemble immediate evaluations.

Fourth, this dissertation links the snapshot model research to other work on consumer learning. Excepting Zauberman et al. (2006), previous work on the snapshot model has only studied overall evaluations of affect, neglecting how attributes are learned in extended experiences. Whereas Zauberman et al. (2006) focused on how serial-positioning effects (i.e., primacy vs. recency) differ for informational versus hedonic evaluations, I focus on how the effect of novelty differs by type of evaluation. I find that novelty enhances the accessibility of experienced affect but diminishes attribute learning. This result also adds to the broad literature that distinguishes judgments based on affect from judgments based on cognition. I argue that because affect is a global response at a higher-level of construal, prior experience provides little memorial advantage in learning

on-line affect. In contrast, because thoughts about attributes are based on a lower-level construal, prior experience is more beneficial in learning such information.

C. Theoretical contributions to study of novelty

This dissertation improves our understanding of novelty, a construct that has been the subject of past work in psychology as well as marketing. I modified existing definitions of novelty in the psychology and new product literature for the purpose of studying extended experiences. As such, I specified that novelty depends on prior, direct experiences in a domain. Moreover, I provided evidence of how past indirect experiences differ from direct experiences in their effect on overall evaluations. This finding distinguishes novelty from unfamiliarity. Finally, by revealing how novelty influences overall evaluations, I identify a set of effects that may be pertinent to other areas of consumer behavior.

D. Managerial implications

Using the knowledge gleaned from this research marketers may configure experiences according to their desired ends. For instance, this research serves as a caveat to previous findings in the snapshot model that emphasized the importance of peak and end intensity. Although the peak-end rule suggests that marketers should adjust experiences so that they have very positive peaks and ends, the present work suggests that marketers can also devote resources to improving novel aspects of experiences. When combined with more conventional offerings in a sequence, novel aspects will be more accessible and thus

more influential on overall evaluations. Further, novel aspects are more likely to endure in their influence, impacting delayed overall evaluations.

Marketers may also alter the timing of overall evaluations. Knowing that their offered experiences are highly positive but conventional, marketers may wish to encourage immediate overall evaluations. For instance, marketers could ask consumers to deliberate on their experienced affect after the episode has concluded. If an experience is only evaluated after a delay, the focal episode may not be as accessible, resulting in evaluations regressing to the mean. When the experience is negative, such error may benefit marketers, suggesting that they should discourage immediate evaluations and ensure that negative aspects of the experience are not novel.

Marketers should also understand the basis by which consumers form retrospective evaluations. If consumers are largely recalling their on-line affect when deciding whether to repeat an experience, novelty will aid in their ability to access the episode. On the other hand, if consumers are basing their decisions on the experience's attributes, novel experiences will be more poorly remembered. Marketers may also configure experiences differently by segment of consumers. The results of this dissertation suggest that presenting highly positive attributes will be more useful when attempting to retain expert consumers, who have more established knowledge structures by which to recall this information. On the other hand, these experienced consumers would have difficulty accessing their on-line affect. The opposite strategy should apply to novice consumers:

These consumers would be less able to learn attributes but more able to uniquely access their affect derived from the focal episode.

Finally, marketers may also develop strategies to maintain the novelty of their experiences. By offering an experience infrequently, marketers can ensure that the stimulus and conceptual characteristics of an experience are not repeated too regularly. On the other hand, marketers have less to worry about indirect exposure to experiences. Presenting verbal information about aesthetic experiences will likely have little impact on how novel a new experience will be. Instead, such indirect exposure might drum up interest in the new experience prior to trial.

E. Future extensions

Prior investigations on overall evaluations have concluded with calls for further research on extended experiences, including work on different experiential domains and methodologies. I second their encouragement for future research in this area, and included some extensions to the snapshot model in the earlier literature review section on unresolved issues. Rather than re-iterating these directions, I offer a few ideas which would be useful for understanding the phenomena emphasized in the present investigation.

Methodology

One methodological consideration in research on overall evaluations is how to capture on-line affect. I employed three approaches: measuring on-line affect during a repeated presentation of the experience (study 1), manipulating on-line affect (studies 2, 4), and measuring on-line affect during the experience itself (studies 3, 5). The repeated presentation method from study 1 offers a new option for future studies. As I addressed in the discussion of study 1, there is a need for further work on how a repeated presentation of an affective experience differs from the actual experience. Such research will provide better guidelines on when this technique would be justified.

Measuring on-line affect during the experience may have influenced the results of study 3. Consistent with past work, study 3 demonstrated that the experience's trend had little impact on overall evaluations, and this may have occurred because on-line affect was measured (Ariely and Zauberman 2000). However, the decision to directly measure on-line affect was centered on the cohesiveness of the affective experience and how likely it would be to invoke momentary evaluations (see Ariely and Carmon 2000). Whereas studies 1 and 2 involved continuous experiences (annoying sounds), study 3 involved an experience with discrete elements (fractal images), which provided greater justification for on-line measurement. Nonetheless, further work is needed to help determine whether on-line measurement of affect is appropriate in a given context. In particular, there is limited literature on what evaluative thoughts are naturally evoked during extended experiences.

In this dissertation, I found that overall evaluations were not always spontaneously constructed. Spontaneous construction of evaluations is less relevant for a loose collection of stimuli, as were sequenced together in these studies. Future research may provide insight on when overall evaluations arise for different experiential contexts. Some factors that may influence whether people will spontaneously construct an overall evaluation include prevailing norms in the consumption domain, how coherent the affective experience is, and whether the overall evaluation is perceived to be a useful input for future decisions. Moreover, as I suggested in the discussion of study 2, future research could examine when delay-repeated evaluations would differ from immediate evaluations through different ways of measuring overall evaluations.

The effect of delay on overall evaluations found in this dissertation raises the issue of how long of a delay is necessary to demonstrate differences in overall evaluations over time, driven by novelty. In studies 2, 4, and 5 approximately 30 minutes was a sufficient delay, whereas in study 3 only 5 minutes was necessary. Although different delay intervals were not tested in any one study, I believe that the effective delay interval will depend on the nature of the extended experience as well as the delay. For instance, the annoying sounds task was both longer and more intrusive than the fractal image viewing task. The former experience may have had more sensory information than the latter. As such, study 2 required a longer delay to show impaired memory for the experience. On the other hand, the fractal image viewing task from study 3 was followed by experiences

that would more directly interfere with retrieval of previously experienced affect: After participants viewed the fractals they engaged in other artistic experiences, including listening to a classical music piece and reading poems. This richer delay interval may have accelerated memory interference in study 3. Further research assigning different delays—both in time and in kind—in the same study may provide a more precise understanding of the time course of novelty’s effect on overall evaluations.

Measuring novelty may be more nuanced in future research. I asked participants for general measures of novelty, but future researchers may be interested in the perceived novelty of specific features of affective experiences. For more complex experiences, including experiences of mixed valence or mixed sensory modality, novelty may have differential impact on overall evaluations depending on which characteristics are perceived to be novel. This greater complexity may require future research on novelty to have more comprehensive pre-tests of stimuli.

Diagnosticity

One facet of the snapshot model not examined in the studies was the role of diagnosticity in evaluations. The results are more parsimoniously explained by accessibility rather than diagnosticity. For instance, that evaluations change over time within a study session cannot be explained by novel aspects being more or less diagnostic for overall

evaluations. Nonetheless, I can offer some conjectures on why novel aspects may be perceived as more diagnostic for overall evaluations in other contexts.

One way in which novel aspects may be more diagnostic for overall evaluations is when experiences are pursued for their novelty. If the motivation for engaging in an experience is to try something new, consumers may focus on novel aspects, which are connected to their goals. Alternatively, novel aspects may be more diagnostic due to conversational norms. According to Gricean maxims, the pragmatics of natural language require people to be informative and relevant (Grice 1957). When asked to evaluate an experience in retrospect, considering novel aspects may be particularly informative to others, who may be inquiring about experiences for vicarious learning or curiosity. As such, if overall evaluations will be used to communicate value to others, as occurs with word-of-mouth recommendations, conversational norms may aggravate the extent to which overall evaluations depend on novel aspects. Future research can examine how overall evaluations differ when they are communicated to others versus when they are used for one's own purposes.

A different way of approaching diagnosticity is by examining how diagnostic overall evaluations are to decisions, and whether the impact of overall evaluations on decisions depends on the novelty of the experience. For instance, when deciding whether to repeat a conventional experience, consumers may rely on their perception of the entire category of experiences rather than their evaluation for a particular episode. In contrast, in novel

domains, which have fewer past episodes and more unstable category perceptions, consumers may rely on their overall evaluation for a recent past episode. Novelty may also be regarded as an orthogonal evaluative dimension for decisions. In research on aesthetic judgments, novelty is a valued trait which concerns the amount of perceived innovativeness (Cho and Schwarz 2006; Hart and Jacoby 1973; Hekkert, Sneiders, and van Wieringen 2003). Consumers may balance their goal of maximizing utility (i.e., by engaging in experiences with superior overall evaluations) with their goal of experiencing novelty. Thus, the novelty of an experience can mitigate the impact of overall evaluations on decisions.

Informational and hedonic evaluations

Further differences between informational and hedonic evaluations of experiences can also be tested in future research. In study 4, evaluation type was manipulated through different prompts. In an alternative test, participants' goals can be manipulated so that decisions are based either on presented attributes or on-line affect. For instance, when making decisions in specified contexts, consumers may be more likely to form evaluations based on presented attributes. In cases where consumers seek to maximize enjoyment, retrospective evaluations may be based purely on past on-line affect. Future research could also examine if consumers weight affect or presented attributes differently in decisions depending on the novelty of the experience.

Another promising line of research would examine when prior experience aids in learning of experienced affect. In this dissertation, I found that a small accumulation of experience in a domain did not aid in learning of experienced affect (i.e., for the browsing experiences in study 4), but substantial differences in accumulated experiences may have resulted in differential learning of experienced affect (i.e., for the image viewing experience in study 5). This result may stem from changes in the role of prior experience across the continuum of accumulated experience. As such, future studies may investigate the extent of affective learning at different points in the continuum. Alternatively, the result could arise from differences in experiential domains. For instance, though search satisfaction is a relatively simple characteristic to recall, enjoyment of a sequence of aesthetic images is more complex and may require more deliberation. In the latter case, an enduring affective representation may have real benefits on how affective experience is accessed.

Evaluations of singular experiences

This dissertation examines experiences that extend over time or comprise sequences of outcomes. Will the same effects hold for evaluations of singular experiences, such as a taste of a jelly bean (e.g., Novemsky and Ratner 2003) or assessments of an object, such as a really new product (e.g., Alexander et al. 2008; Hoeffler 2003; Moreau et al. 2001)? One phenomenon of interest in this dissertation is the role of novelty in how aspects are weighted in overall evaluations. For the experiences studied in this work, aspects are

parts of an extended interval or one outcome in a sequence of outcomes. For singular experiences or objects, an aspect could be one feature of the experience (e.g., texture for a jelly bean) or object (e.g., attribute of a new product). Novelty may similarly impact the accessibility of these features. While evidence from this dissertation indicates that people also find novel aspects diagnostic to overall evaluations of extended experiences, more work will be needed to study if novel features are perceived as diagnostic for evaluations of singular experiences or objects. Another phenomenon studied in the present investigation is the role of novelty in accuracy of recalling past experiences. These findings are promising in their generalization to singular experiences and objects. The supported theories do not require experiences to extend over time in order find interference with other experiences or learning of attributes and affect. Thus, these effects may be generalizable to singular cases.

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