SURPRISE, ANTICIPATION, AND SEQUENCE EFFECTS IN
THE DESIGN OF EXPERIENTIAL SERVICES

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Abstract: The most salient or peak aspect of a service experience often defines customer perceptions of the service. Using a novel experimental procedure, we investigate the design of peak events in a service sequence by testing how customer perception is influenced when peaks are anticipated by customers before the service commences or when peaks are a surprise. We find that surprise and anticipation moderates the temporal peak placement (e.g., early peak versus late peak) on overall customer perceptions, with the surprise peak at the end of an experience yielding the strongest effect. Drawing on these findings, we discuss the role of surprise, anticipation, and sequence effects in experience design strategy.
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1. Introduction

We are interested in examining the intangible side of experiential service design, in particular, the use of design strategies whose objective is to garner an emotional response from customers. Using the service-as-theater metaphor, we believe that experience design is akin to directing a theatrical play, where designers choreograph the performance (Stuart and Tax 2004; Voss et al. 2008), so customers respond to parts of the performance in ways that achieve desired effects on customer perceptions, emotions, and ultimately loyalty behavior (Chase and Dasu, 2001; Dixon and Verma, 2013). We propose that a-priori knowledge (and associated feelings of anticipation), or lack thereof (feelings of surprise), of upcoming experiential elements can play an important role in the overall evaluation and emotional response customers have about the service experience. Therefore, the purpose of this paper is to explore the effects that customer surprise and anticipation have on customer evaluations of the experiential services under different sequence designs.

Research has shown that customers evaluate experiential services in a fluid manner; their perceptions fluctuate over time as the service evolves depending on sequence profiles, with certain aspects weighing more heavily than others (Ariely & Carmon, 2000; Redelmeier & Kahneman, 1996). As a decision-making heuristic, people use the highest (i.e., peak) point, the end state, and the general trend of the profile to judge the entire experience (Ariely, 1998; Baumgartner, Sujan, and Padgett, 1997; Redelmeier, Katz, and Kahneman, 2003). Knowing these insights from behavioral economics, service designers can engineer sequences to positively influence customer evaluations. Other design elements that have received little attention from operations management scholars but that have direct relevance to the design of experiences, involve pre-experience communication, specifically, whether a service firm withholds information about a future peak experience to elicit feelings of surprise or informs customers in advance to build anticipation. Both of these design strategies, surprise and anticipation, have the potential to positively influence emotions, and in turn, customer perceptions of the overall experience; however, this can only be achieved if operations managers who schedule the service process (i.e., sequence profiles), work closely with marketers to successfully implement these design strategies (Dixon et al. 2014; Kwontnik and Thompson 2009).

Surprising customers by delivering the unexpected can instigate delight when the associated emotional response is positive (Oliver, Rust, and Varki, 1997; Westbrook and Oliver, 1991). In other words, positive surprise can make an ordinary service extraordinary—and even delightful. For example, a standard service that offers a new feature can produce positive surprise, such as a taxi driver who gives a tour of the city while providing transportation. Or a service may surprise customers with an unexpected
gift or upgrade (Pine & Gilmore, 2000). Service scholars and managers agree that infusing the element of surprise into service design is one means to delivering a positive and memorable experience (Oliver et al., 1997). The challenge for service designers is to think of ways to go beyond simply exceeding expectations to instead deliver the unexpected to customers (Pine and Gilmore, 2000).

Anticipation, on the other hand, requires service designers to influence customer expectations prior to the experience through marketing and communication efforts. For example, a music-festival’s website might list the bands that will perform and heavily promote a big-name artist. Or a leisure cruise may follow up a reservation with information sent to customers about the highlights of the trip to build anticipation. When anticipation is positive, it evokes savoring (e.g., Bryant, Chadwick, and Kluwe, 2011; Elster and Loewenstein, 1992; Loewenstein, 1987), which involves imagining what is in store when looking forward to an event and the consequent enjoyment one feels (Bryant et al., 2011). Although savoring can raise expectations, research shows that positive anticipation creates an overall experience that customers view more positively (Chun, 2009).

In this paper, we compare these design strategies, surprise and anticipation, in the context of time-elapsing, multi-segment experiential services. Specifically, using an online storyboard experiment, we explore the impact peak positioning in a sequence has on the customer experience if that peak is designed to be a surprise or if it is anticipated by customers.

2. Research Approach

2.1 Study Context

To explore the hypotheses, we designed an online survey-based experiment that takes people through a hypothetical service experience. We asked participants to imagine that they were going to take a bus tour in a city they have never visited. We designed the tour with five stops; unknown to participants, four of these stops were designed to be neutral (i.e., a city park, a monument, a neighborhood where a movie was filmed, and an author’s childhood home), and one of the stops was designed to be a clear peak (i.e., a famous restaurant owned by a celebrity).

2.2 Experimental Design

We used a multi-phase design to ensure that manipulations were effective and that confounds were minimized. To reduce bias based on previous experience and sentiments toward an actual location, both the city and tour were hypothetical; i.e., never is a city name used and the storyboard illustrations are purposefully non-geographically specific.

The storyboard experiment was a 3 (peak placement: early, middle, end) x 2 (design strategy: surprise, anticipation) between-subjects design. Peak placement was manipulated by changing the order of the stops: participants saw the peak either first (early peak), third (middle peak), or last (end peak) out of the five stops. Other stops were assigned randomly. The surprise and anticipation conditions were manipulated based on what participants were told about the peak prior to starting the simulated tour. Similar to promotional materials, respondents saw a list of the tour’s stops; in the anticipation condition, they read about the peak before starting the tour. The description included the following information, “The stop at the city building clearly stands out above the other stops as the highlight of the tour. The building is now a restaurant and
a meal is provided as a part of the tour. The restaurant is owned by a famous celebrity who is often there to greet customers. Live music is performed and the restaurant serves innovative, award winning food all while providing a great experience.” In the surprise condition, the stop was simply listed as a city building, hiding the fact that the building was a restaurant owned by a celebrity. Table 1 depicts the six experimental conditions to which participants were randomly assigned.

- INSERT TABLE 1 HERE -

The experiment was then programmed online as a Qualtrics Survey. Participants were asked to imagine going on a bus tour of a city they had never visited. They next saw a list of the five stops in random order. Participants in the surprise versus anticipation conditions saw the varying descriptions of this stop as previously noted. Next, participants were asked for perceptions of the five stops to establish their expectations. Then the tour commenced; they saw the four neutral stops in a random order and the peak stop according to their assigned peak placement condition; each stop was on its own page. After each stop, respondents were asked a series of questions about their perceptions of that stop. The experiment concluded with overall subjective assessments for the entire tour, as well as questions asking for demographic information, previous tour experience, and preferences for surprise and anticipation.

2.3 Data Collection & Sample

Participants were sampled using Amazon Mechanical Turk (MTurk: www.MTurk.com) and recruited only from North America. We removed 275 participants who either failed an attention test question or who took less than 10 minutes to complete the survey, leaving a sample of 996 for analysis.

2.4 Dependent Measures

To test the interaction of sequence effects and surprise/anticipation strategy, we examined participants’ emotional responses using measures derived from prior research on human emotions (e.g., Plutchik, 2001; Richins, 1997; Russell, Ward, and Pratt, 1981; Russell and Pratt, 1980). Adapting a previously tested scale, we measured pleasure using the following items: satisfied, happy, pleased, joyful, delighted, and bored (reverse-coded) (Bigne, Andreu, and Gnoth, 2005; Russell and Pratt, 1980). Three of these items, happy, pleased, and joyful are also included within the Consumption Emotions Set (CES) developed by Richins (1997) to measure the emotion of joy. In addition, we measured feelings of surprise with the following items: surprised, astonished, and amazed (Richins, 1997, p. 145). “Surprised” is also an item used to measure arousal (Bigné, Andreu, & Gnoth, 2005; Russell et al., 1981). Lastly, we included excited as an additional arousal item (Russell et al. 1981). In sum, the following 10 items were used to measure customer emotions: satisfied, happy, pleased, joyful, delighted, and bored (reverse-coded), surprised, astonished, amazed, and excited.

Next, we ran a principal components analysis (PCA) for the 10 items. All items loaded upon the same factor (with factor loadings that were greater than 0.70), which we labeled as “overall utility.” The reliability of the items (α = .963) was above the traditional cut-off value (Nunnally, 1967). The 10-item overall utility measure was used as the dependent variable.

2.5 Independent Variables
The two independent variables: (1) peak placement (three levels: beginning, middle, or end) and the (2) design strategy (two levels: surprise or anticipated peak) were checked to assure that the peak event was perceived as being significantly better than the neutral stops. We measured utility using the 10-item overall-utility scale after the respondent experienced each of the stops. The average utility of the peak event (M = 5.94) compared to the average utility of the other four neutral stops (M = 3.43) was significantly different t(990) = 59.80, p < .01, indicating that respondents perceived the peak event as intended, compared to the other stops. The peak event was also significantly different (p < .01) than each of the neutral stops, individually.

To test the manipulation of the surprise condition we asked participants after they experienced the entire city tour (i.e., all five stops) whether they were “...surprised by the experience at the city building (restaurant).” Participants in the surprise condition were more surprised (M = 6.24) than those in the anticipation condition (M = 4.65), t(944) = 17.621, p < .01. Similarly, to test the manipulation of the anticipation condition we asked participants at the end of the tour the question: “At the start of the tour, I was looking forward to the city building (restaurant).” Those in the anticipation condition felt greater anticipation on average (M = 5.90) than those in the surprise condition (M = 3.11), t(994) = 30.54, p < .01.

3. Analysis & Results
To test our hypotheses, we performed a 3 (peak placement: early, middle, and late peak) x 2 (design strategy: surprise and anticipation) between-subjects analysis of variance (ANOVA). Table 2 gives summary statistics for the six conditions. The main effect for peak placement was significant F(2, 990) = 15.664, p < .01, indicating that a difference was found for overall utility across the three peak placement groups. However, the main effect for design strategy was not significant F(1, 990) = 1.625, p > .05, indicating that the design strategies of surprise and anticipation did not independently affect overall utility.

Looking more closely at the main effect for peak placement, we first compared the descriptive statistics among the three conditions. The late peak resulted in the highest overall utility, the middle peak had a lower rating, and an early peak had the lowest rating. Independent t-tests revealed that a late peak had a significantly different overall utility (p < .01). However, the difference between the utility ratings for an early and middle peak was not significant. These findings corroborate behavioral research which shows a preference for a strong finish (Chase & Dasu, 2001; Dixon & Verma, 2013; Redelmeier et al., 2003).

Next, we examined the interaction between peak placement and design strategy. The interaction effect was marginally significant F(2, 990) = 2.89, p < .10). Figure 1 displays the means for the surprise and anticipation conditions across the three peak placement levels. We performed two 1 (surprise or anticipation) x 3 (peak placement: early, middle, or late peak) between-group ANOVA tests. The data was split by design-strategy conditions (i.e. surprise or anticipation). We first analyzed the surprise condition. Although significant, F(2, 494) =14.592, p < .05) participants in the surprise condition did not prefer the early peak but, instead, we found the lowest average overall utility attributed to an early peak, a middle peak received a higher average overall utility
compared to an early peak, and a late peak yielded the highest overall utility. Examining pairwise comparisons between these groups, we find that the late peak was significantly different from both the middle peak and the early peak \((p < .01)\). Only a marginally significant difference \((p < .10)\) was found for an early versus a middle peak.

For an anticipated peak, a late peak was perceived as having the highest overall utility compared to a middle peak and an early peak, \(F(2, 496) = 3.076, p < .05\). Pairwise comparisons show that an anticipated late peak is significantly different than ratings of a beginning or a middle peak \((p < .05)\). However, the difference in utility ratings for the early and middle peak conditions was not significant.

We did a follow-up analysis to better understand the influence that a surprise strategy has compared to an anticipated one with regard to peak placement. We ran independent t-tests for respondents assigned to the early, middle, or late peak conditions and compared the use of surprise to anticipation. No significant difference was found between the conditions of surprise and anticipation for both the early peak and middle peak \((p > .05)\). However, a significant difference, \(t(334) = 2.532, p < .05\), was found between surprise and anticipation in the late peak condition, with surprise yielding the higher overall utility compared to anticipation. Therefore, a surprise peak appears to amplify the strong end effect (i.e., late peak), as participants perceived it more positively relative to an anticipated peak ending.

4. Conclusions & Implications

Our study confirmed the power of a strong ending. Both of the tested design strategies, surprise and anticipation, resulted in a predominant end effect; i.e., an end-peak event led to higher overall utility for both the surprise and anticipation conditions. In general, customers perceived an early peak to have the lowest utility and a late peak to have the highest utility.

Analysis of the surprise and anticipation design strategies, revealed differences within the surprise condition that countered our theoretically-derived prediction: customers preferred a surprise ending to a surprise beginning. The strength of a strong ending surpassed any influence a surprise beginning may have on amplifying customer views of the rest of the experience. Within the anticipation condition, we found differences that were in line with our prediction: customers preferred an anticipated ending to an anticipated beginning, consistent with research on savoring.

When comparing surprise to anticipation across the peak-placement conditions, independently, we found that a surprise peak ending yielded higher overall utility compared to an anticipated peak ending. None of the other placement conditions (i.e., early or middle) resulted in a significant difference between the design strategies.

From a managerial perspective, our results show that the end effect alone is a stronger influence on customer perceptions of service experiences than either surprise or anticipation. Service designers should therefore prioritize peak placement and sequencing over pre-experience design efforts to elicit surprise or build anticipation. This finding underscores extant research on the importance of the sequencing of events. Service research has touted the importance of delighting customers, but our research shows that when a customer is delighted may be more important than how. Only when a peak is placed late in a service sequence did we see a difference in utility across how the peak was designed (i.e., surprise or anticipation).
If an end peak can be a surprise, our research shows that surprise led to an intensified perception of the peak and a stronger end effect on overall utility. This finding suggests that peak effects are not only influenced by the scheduling of the event (i.e., placement) but also on the expectations that are set (i.e., surprise offers no information to form expectations for the peak, while anticipation offers information in an attempt to form expectations). In other words, to optimize the customer experience of a surprise end-peak, marketing has to work with operations. This supports the call from academics for better coordination of marketing and operations efforts in service innovation, design, and delivery (Dixon et al., 2014; Kwortnik and Thompson, 2009).

References


Table 1: 3 x 2 Between-groups experimental design

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<thead>
<tr>
<th>Experimental Scenarios</th>
<th>Peak Placement</th>
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<td>Scenario #4</td>
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<td>Scenario #6</td>
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Table 2: Descriptive statistics

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<th>M</th>
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<td>------------------</td>
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<tr>
<td>Early Peak</td>
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**Figure 1: Overall utility mean plot**

![Overall utility mean plot](image-url)