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Experiments Testing the Effectiveness of Purposeful Anchoring on Reference Price in the Context of Public Leisure Services

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Abstract

Many leisure managers are under political pressure to raise more revenues from fees without arousing protests from users. Purposeful anchoring is a potential strategy for accomplishing this goal. Three experiments using student subjects in a laboratory context were designed to investigate four research questions that explored the anchoring effect on price of decoys, contextual relevant numbers and noncontextual numbers, and the range of reference prices. Results were mixed. Some treatments in experiments 1 and 2 indicated a decoy and a contextual relevant numeric effect, while others did not. Results from experiment 3 were unequivocal in showing no anchoring effect when noncontextual numbers were used. Contrary to expectations, among subjects reporting different levels of participation, no consistent differences in responses to the treatment anchors emerged and, unexpectedly, variation in the range of reference prices tended to be greater among these reporting frequent, rather than infrequent, participation.

Keywords: *Anchoring, price, decoys, numeric anchors, latitude of acceptance, contextual numbers, reference price range*

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On average, approximately one-third of the operating costs of local park and recreation agencies in the United States are recovered by self-generated revenues (Crompton & Kaczynski, 2003). The primary source of these revenues is user fees. Maximizing revenues from users by raising prices, frequently arouses controversy from two sources: Those who contend leisure services should be viewed as welfare programs and subsidized accordingly, and by users protesting against having to pay more. Nevertheless, informal conversations with managers and the pervasive number of sessions on financing at professional meetings suggest there is continuing political pressure to raise more revenue from fees.

Traditionally, the neoclassical economic concepts of supply, demand and utility provided the guiding conceptual framework for pricing decisions. This is a good general framework. If the price of a service goes up, usually fewer people will use the service. However, the framework assumes that when people evaluate a price, (a) their thinking is logical and rational, (b) they invariably seek to maximize utility, and (c) they act independently on the basis of full and relevant information.

Over the past three decades, there has been growing recognition that the traditional approach is incomplete. Observations of reactions to pricing decisions regularly contradict the assumption of rationality, suggesting exceptions to it are the norm rather than atypical. People often make decisions which are systematically and substantially different from those predicted by the traditional economic model.

Hence, there has been a movement to supplement and enrich the neoclassical model, by embracing a cognitive processing approach that considers the reactions and behavior of individuals to a given price or change in price (McCarville,1990). Cognitive processing is the manipulation, transformation or reorganization of information (Janiszewski & Wyer, 2014). The neoclassical economic principles provide the skeletal structure for making price decisions, but understanding likely cognitive responses to price changes is central to ensuring the changes are consistent with users' expectations, thus avoiding negative reactions.

The challenge for managers and elected officials is to establish the "perfect" price as defined by Arnold Meltsner over 40 years ago:

> The "perfect" price is not one where the payer gets the benefit, or where service levels are determined, or where there are no income distribution effects. For the local official, the perfect user charge may have these features, but of overriding importance to him or her is whether the public will resist paying for the service (Meltsner, 1971, p. 271).

The key to accomplishing this revolves around the concept of reference price. The experiments reported here were designed to test whether anchoring can be purposefully used to change people's reference price and, thus, ameliorate resistance to a price that would otherwise be outside their reference price.

Over 40 years ago, Monroe (1973) pointed out that users of services acquire, observe, or experience price information, store it in memory, and use it as an internal reference against which a judgment is made regarding the acceptability of a new price. Thus, "New price information is compared to the reference price and this determines an individual's assessment of whether the new price is too low, too high, or about right" (Monroe & Petroshius, 1981, p. 45).

Reference price is shaped by the interactions of three classes of stimuli: An individual's residual knowledge; a community's prevailing equity criterion; and the context in which a pricing decision is made (Crompton, 2011). Residual knowledge is the summation of an individual's past experiences. It may accrue from previous use of an agency's service, use of a similar service

from another supplier, or from external sources such as the social group or promotional channels. A community's equity norm refers to the dominant value system in a jurisdiction as to what constitutes a fair price or level of subsidy. Residual knowledge is a composite of the unique life experiences that an individual has accumulated, whereas the prevailing normative equity criterion reflects what a majority of a community's residents consider to be a fair price. Residual knowledge and prevailing normative equity are "givens" that serve as parameters that managers have to accept and work within.

The third shaper of price acceptance is context. In contrast to the residual knowledge and community equity stimuli, the contexts within which users perceive price acceptability are malleable, that is, they can be influenced and shifted by managerial action. Shifts in users' perceptions of a context can lead to concomitant changes in their perceptions of price acceptability. The primary tool available to managers to shift perceptions of a context is to reframe perceptions of value.

Evolution of Anchoring

The anchoring effect may be defined as the influence of an initial piece of information on subsequent judgments. Purposeful anchoring is a potential reframing strategy that is designed to enhance perceived value and, hence, raise users reference price and their acceptance of a new price. The origins of anchoring stem from range theory (Volkmann, 1951) which directs that the two extreme values of a stimulus (price) form the psychological anchor framework for judgements: "It is primarily the end-stimuli that control the oscillations of the absolute scale. The center of the stimulus range has no special functional significance whatsoever. It is merely a convenient numerical value: the mean of the two end-stimuli" (Volkmann, 1951, p. 283). This suggests that in a given set of prices, special attention will be given to the lowest and highest prices and these will have an anchoring effect.

Subsequently, adaptation-level theory (Helson, 1964) and assimilation-contrast theory (Sherif & Hovland, 1961) emerged. These two theories have been characterized as the "theoretical genesis" of internal reference price (Crompton, 2011). Both of them originated from the field of psychophysics and both reported that evaluations of weights were influenced by the end weight values and the order in which weights were judged.

Adaptation is derived from the field of biology and means adjusting to the conditions under which species must live to survive. When the concept was subsequently embraced by the field of psychology, its general meaning was more restrictive. It referred to adjusting to existing conditions, so the perceived magnitude and effect of a stimulus depended on its relationship to preceding stimuli. The following example provides a concrete illustration of the theory in a sensory context:

> If a person has lived in the silence of a desert, the birds and crickets of a farm will seem noisy. But if one has lived in the hubbub of Manhattan, the same farm sounds will seem blissfully quiet. However, after living on the farm for a while, the previous city dweller will then find Manhattan noisy. The reason is that new stimuli are incorporated into prior information so the reference point is shifted (Maxwell, 2008, p. 52).

In the context of this paper, adaptation-level theory suggests people judge a new price by comparing it with the existing benchmark price to which they have become accustomed.

Similarly, assimilation-contrast theory was developed from experiments with weights. Its authors reported: "End points defining the extremes of a scale exert greater influence than oth-

ers... [They] may be referred to as anchorages or anchors"(Sherif & Hovland, 1961, p. 29). The essence of assimilation-contrast theory was derived from the authors' observation:

> That the relative distance between the anchor and the stimulus series is a crucial determinant of displacement. An anchor placed at *either end* of a series, or even *slightly above or slightly below* the series, will produce an *assimilation effect*. Thus, judgements are displaced in the direction *toward* the anchor. However, if the anchor is removed progressively further from the series so that it lies *considerably above* or *considerably below* the end stimuli, a *contrast effect* ensures. Judgments are displaced *away* from the anchor [italics in the original] (p.181).

The emphasis on the strong influence of end values has consistently been reported in the psychology literature. Typically, studies have reported there is poorer retention of interior numbers in a sequence relative to end numbers (Hinrichs & Novick, 1982). It has been suggested these reactions are consistent with a principle of Gestalt psychology called "outstandingness" which states that some phenomena have special qualities that make perceptions of them easier and more lasting (Monroe, 2003).

In the original conceptualization in psychophysics, the existing reference benchmark was recognized as a range or scale, rather than a single point (Helson, 1964; Monroe, 1971; Sherif & Hovland, 1961). This has been confirmed in the marketing field: "Because consumers have observed and experienced variations in prices across brands, across stores, and at different times, it is unlikely that they would have clearly defined point estimates of price for a product" (Rao & Siegen, 1992, p. 257). Similarly, in a leisure services context McCarville (1996) reported, "Respondents offered estimates of prices they believed they last paid, but most (67%) were uncertain of the accuracy of their estimates" (p. 59). The parameters of the reference price range (i.e., the "latitude of acceptance") (Sherif & Hovland, 1961), are likely to be the resistance price at the high end and the bargain price at the low end (below which there may be resistance because of concerns about quality) (Janiszewski & Lichtenstein, 1999).

It seems likely there will be more uncertainty about what constitutes a fair price among those who participate less frequently: "In the parks and recreation field the range of a distribution of internal reference prices is likely to be widest for services that are purchased infrequently, since in these cases the last price paid may become vague with the passage of time" (Crompton, 2011, p. 5). The lack of a firmly established reference price suggests infrequent participants would be more prone to being influenced by end-prices (i.e., the anchor effect will increase with uncertainty) (Ariely, Loewenstein & Prelec, 2003; Jacowitz & Kahneman, 1995; Mussweiler & Strack, 2000). Thus, in the parks and recreation field, the latitude of acceptance among regular users may be small and well defined, because participants are likely to be ego involved, prices typically remain stable for relatively long time periods, and the lack of alternative suppliers for many services means users are not exposed to alternative prices (Crompton, 2011).

The anchoring effect came to prominence in the fields of psychology and economics as a result of a series of experiments reported in 1974 (Tversky & Kahneman, 1974). The authors of those experiments observed that in many situations, "People make estimates by starting from an initial value that is adjusted to yield the final answer," and that "Different starting points yield different estimates, which are biased toward the initial values" (p. 1129). A review of the anchoring literature concluded that in the years since the concept came to prominence, a substantial body of research has shown it "to be a very robust psychological phenomenon ubiquitous across many domains of human judgment and decision-making" (McElroy & Dowd, 2007, p. 48).

Decoy and Numeric Anchors

Dual Process Theories

The literature suggests there are two different types of anchors: decoy and numeric. They reflect recognition that people process information in alternate ways. There are several dual-process theories of reasoning. They differ somewhat in their details, but all agree on the general features of the two systems. The most widely adopted dual process theories in the context of pricing are the Elaboration Likelihood Model (ELM) (Petty & Cacioppo, 1981) and the Fast, Slow Thinking model (FST) (Kahneman, 2011).

The ELM postulates there are two distinct routes to persuasion. The "deliberative" or "central route" involves effortful cognitive activity, whereby the person draws upon prior experience and knowledge to thoughtfully reflect upon and evaluate the merits of arguments incorporated in a message. During this elaboration process, the message recipient reflects on the arguments in the message, develops counterarguments, forms new beliefs, or alters old beliefs. The central route is an active process during which new thoughts are generated and belief structures are changed, which is why it is called the elaboration element of cognitive processing (McCarville, Driver, & Crompton, 1992).

The alternative is the "peripheral route" in which the response is variously described as passive, subconscious, or nondeliberative, and is absent of any active cognitive processing. The peripheral route is taken when people have low motivation to process the information. In this case, in lieu of active cognitive engagement, simple heuristics and cues that reflect prior experience and existing biases serve as decision rules for interpreting information. An existing reference price is the most influential of these simple cues, but they may also include the credibility of a message's source, and comparisons and associations. This route recognizes that much human behavior is instinctive and passive, and does not involve the systematic information processing of the central route.

The FST model embraces the same principles as the ELM, but whereas the ELM seeks to explain how information is absorbed or inputted to memory, emphasis of the FST model is on describing how information is retrieved and outputted. The FST model's two styles of processing are characterized as fast thinking (or automatic System 1) which relies on intuition, and slow thinking (or reflective System 2), distinguished by a focus on reasoning.

System 1 operates automatically, instinctively, and quickly with little or no effort: "Knowledge is stored in memory and accessed without intention and without effort" (Kahneman, 2011, p. 22). It emanates from a network of learned associative patterns and operates in "normal" situations where a routine response is needed. Reactions to new price increases when System 1 is used are intuitive and not controllable. Gilbert (2002) observed, "One of psychology's fundamental insights is that judgments are generally the products of nonconscious systems that operate quickly, on the basis of scant evidence, and in a routine manner" (p.167).

In contrast, System 2 is a much slower and more self-conscious process requiring effortful mental activity and conscious reasoning to make deliberative choices among options. System 2 is activated when a "surprise," nonroutine stimulus is detected which violates the "normal" situations to which System 1 responds. Whereas in System 1 processing people are conscious only of the outcome decision, when System 2 operates they are also conscious of the process in which they engaged to arrive at the outcome. The differences between the two routes are manifested in the distinction between remembering and knowing, since this contrasts the capacity for conscious recollection of a past price with nonconscious retrieval of it.

The literature suggests, "Two different mechanisms produce anchoring effects...There is a form of anchoring that occurs in a deliberate process of adjustment, an operation of System 2. And there is anchoring that occurs by a priming effect, an automatic manifestation of System 1." (Kahneman, 2011, p. 120). Decoy and numeric anchors engage both information processing pathways. However, the "deliberative, central" or "System 2" processing route which requires effortful cognitive engagement is more prominent in decoy anchors; whereas numeric anchors rely more on the alternative "peripheral" or "System 1" route which is passive, nondeliberative, automatic and absent of cognitive processing.

Decoy Anchors

A substantial literature shows that decoys are effective in changing perceptions of a context (Pettibone, 2012). Decoys are manifested when a service is deliberately priced to offer inferior value to other services in the range. Their purpose is to increase the sales of those other services. Effectively, the new offering is not intended to be perceived as a desirable option, but rather its purpose is to enhance the acceptability and preference of other services in the range. Restaurants, for example, invariably include high-priced wines on a menu, since this raises the price acceptability level of their other wines. The decoy strategy leads to the counterintuitive recognition that there are times when revenues from programs can be increased by creating an additional high-priced program that very few have any interest in purchasing.

Decoy effects have been explained by two processes: Asymmetric dominance and "extremeness aversion" or compromise effect. Asymmetric dominance occurs when an inferior option is added for the purpose of making an existing service appear more attractive. This explanation is supplemented by the compromise effect which suggests that adding the inferior option leads to an existing service being preferred because it is seen as a compromise choice between the added inferior decoy and another service under consideration.

The asymmetric dominance effect was first identified in a series of experiments using brands of beer:

> Subjects had the option of purchasing a six pack of premium beer for $2.60 or an alternate brand at $1.80. Only 33% selected the alternate brand while 67% chose the premium option. When a third (decoy) option was offered at $1.60, the proportion selecting the alternate brand increased to 47%. When the experiment was repeated using a super-premium brand priced at $3.40 as the decoy instead of the low-priced option, the proportion selecting the premium option increased from 67 to 90% (Huber, Payne, & Puto, 1982).

By adding the deliberately attractive or unattractive options that few wanted to the high and low ends of the range, preferences of many were changed.

Subsequently, the asymmetric dominance explanation was supplemented by the compromise effect of "extremeness aversion" (Simonson, 1989; Simonson & Tversky, 1992). If two different priced services are available, then when compared to each other their advantages and disadvantages may be perceived to be relatively large. If a middle price option is available, then it will have relatively small advantages and disadvantages relative to each extreme. Thus, it becomes the compromise choice and the risk-averse action. This effect is "common and robust, representing the rule rather than the exception in choice behavior" (Simonson & Tversky, 1992, p. 293).

In the beer experiment described above, in both cases the middle priced beer benefitted because it was perceived to be the safe compromise choice. The low priced brand might taste terrible, while the high priced choice might be a rip-off. The one in the middle offered least risk.

The compromise effect is illustrated by another anecdote which is typical of findings reported in retailing: "A store owner had two camel hair jackets priced at $100 and $150 and found that the more expensive jacket was not selling. A new camel hair jacket was added and displayed for $250; the new jacket did not sell, but sales of the $150 jacket increased" (Huber et al., 1982, p. 95). Introducing a more expensive option reduced the risk associated with the $150 jacket to customers.

Another potential strategic implication derived from decoy anchoring is the ordering effect. Consistent with adaptation-level theory (Helson, 1964), users are likely to form a higher internal reference price when prices in a service line (e.g., aquatics or recreation activities) are presented to them in descending order (from high to low), than when they see them in ascending order (from low to high) (Dhar & Simonson, 1992; Diehl & Zauberman, 2005; Suk, Lee, & Lichtenstein, 2012). This bias is explained by anchoring on initial exposure (Helson, 1964) but also by loss aversion (Kahneman & Tversky, 1979), since each price drop in a descending order set is perceived to be a gain, while in an ascending order presentation each price increase is likely to be viewed as a loss.

Numeric Anchors

It is the authors' contention that there are two types of numeric anchors: Contextual non-relevant and contextual relevant. These terms refer to the extent to which the numbers are related to a given recreation program, rather than being arbitrary and unrelated to it. Their relationship can usefully be conceptualized as a continuum along which anchors are arranged according to degree of contextual relevancy. To this point, empirical research in the marketing literature has focused almost exclusively on noncontextual anchors. That is, the anchor numbers have no obvious association with the programs or facilities for which a price is being charged. Such anchors are invariably implausible and often nonsensical. Nevertheless, "A key finding of anchoring research is anchors that are obviously random can be just as effective as potentially informative anchors" (Kahneman, 2011 p. 125). Their influence was demonstrated by Tversky and Kahneman (1974) in their original seminal paper:

> A roulette wheel with numbers that ranged from 0 to 100 was rigged to stop only at 10 or 65. Subjects spun the wheel and wrote down the number on which the wheel stopped. They were then asked two questions: (a) Is the percentage of African nations in the United Nations larger or smaller than the number you just wrote? (a) What is your best guess of the percentage of African nations in the UN? The average estimates of those who were exposed to the 10 and 65 numbers were 25% and 45%, respectively. There was no relationship between a roulette wheel number and the question of interest. Nevertheless, the numbers primed the responses.

Numerous studies have used this two-step process of first creating an anchor stimulus and then demonstrating its influence on a subsequent judgment.

Typical of such studies in the context of price was an experiment that used six ordinary consumer products. The retail price of each was approximately $70. After introducing the products, subjects were asked whether they would buy each good for a dollar figure equal to the last two digits of their social security number. After this, accept/reject response, they stated their dollar maximum willingness-to-pay for the product. Subjects with above-median social security numbers stated values from 57% to 107% greater than subjects with below-median numbers. The subjects' evaluations of a product's value were clearly biased by their social security number, even though it was random (Ariely, Loewenstein, & Prelec, 2003).

Contextual relevant anchor numbers are associated with dimensions or attributes of a program or facility, but they have no obvious influence on price. Nevertheless, in the passive processing of numeric anchors, association with the context appears likely to endow them with more plausibility than non-context anchors.

Contributions of the Study and Research Questions

The study makes three main contributions to the literature. First, we are unaware of any previous conceptualization of price anchors as being contextual and noncontextual, or of any empirical results that suggest whether such a conceptualization is useful. Second, after Tversky and Kahneman (1974) demonstrated the anchor effect with their famous roulette wheel experiment, their two-stage protocol was widely embraced by others who confirmed the strong anchoring effect in a host of different contexts. The following example is typical of these studies:

> Two groups were asked: Did Mahatma Gandhi die before or after the age of nine [age of 140]? And then: what is your best guess of when he died? The groups' estimates were 50 and 67, respectively (Strack & Mussweiler, 1997).

The first stage of this protocol primes subjects by requiring them to cognitively process a stimulus that influences the subsequent value judgment. However, this cognitive anchor is created by an experimenter or external source and is contrived for laboratory experiments. The protocol cannot be replicated or operationalized by leisure managers in a field situation. For this reason, the experiements reported here have replaced the first stage of the protocol with a more feasible field prompt. Third, while the anchoring effect has been shown to be "extremely robust" in other fields (Furnham & Boo, 2011, p. 41), its potential applications in leisure management have not previously been explored.

The study posed four research questions:

1. (i) Do decoy prices change the level of price acceptance?
   (ii) Does the order in which decoys are presented influence price acceptance?
   (iii) Does frequency of participation in an exercise program influence response to decoys?
2. (i) Do contextual relevant high [and low] numeric anchors incrementally raise [lower] perceptions of value for money?
   (ii) Do contextual relevant numeric anchors have a different level of influence among those reporting high, mid and low frequency of participation at a swimming pool?
3. Does an arbitrary noncontextual numeric anchor influence perceptions of fair price?
4. Do frequent participants in an exercise program or at a swimming pool show less variation in perceptions of fair price than infrequent participants or nonusers?

Methods

Three experiments were designed to address the four research questions. All the samples were comprised of undergraduate students from multiple intact classes. Different classes were used for each experiment to avoid any contamination among the experiments. The use of convenient student samples in anchoring studies is widespread. For example, a number of the price anchoring studies cited in this paper have appeared in the *Journal of Consumer Research* and the *Journal of Marketing Research*, and it has been reported that 75% of research subjects in those two journals were college students (Simonson, Carmon, Dhar, Drolet, & Nowlis, 2001).

The obvious advantages of student samples are low cost and easy accessibility. However, the results cannot be generalized to other groups, because they are not representative of a broader population (Sears, 1986; Wintre, North, & Sugar, 2001). Further, studies like those reported here which possess the characteristics of a laboratory test, lack the reality conditions that may be experienced in the field.

Nevertheless, where the aim is to gain insights into the effectiveness of the theory rather than to draw conclusions relating to a population, it has been argued that the make-up of a sample does not matter (Bello, Leung, Radebaugh, Tung, & van Witteloostuijn, 2009; Mook, 1983; Pernice, van der Veer, Ommundsen, & Larsen, 2008). Indeed, it has been suggested that "college student subjects might enhance research validity because of their apparent homogeneity. They tend to be homogeneous on dimensions such as age and education (which tend to influence attitudes); as well as possess weak self-definitions, high egocentricism, and a strong sense for peer approval" (Peterson & Merunka, 2014, p. 1036).

The experiments used a posttest design. The scenarios used in each of them are shown in Tables 1 through 4. Although the multiple classes that comprised the sample were conveniently selected, the scenarios given to subjects in each of the classes were randomized. This was done by sequencing. For example, if there were four scenarios, then they were arranged 1,2,3,4,1,2,... before being handed out. Each of the experiments included a manipulation check that was designed to perform three functions. First, the questions included in the check encouraged subjects who were unsure of their responses to return to the treatment message and clarify the information in their own minds. Second, the check served as an indicator of the initial "success" of the manipulation. Correct responses indicated subjects had been attentive to the treatment message. Third, the responses provided some indication of subjects' understanding of the treatment message. Those who failed to answer the manipulation check questions correctly were dropped from further analyses.

Research question 1 was addressed in the first experiment. The design is shown in Table 1. Subjects responded to two qualifying questions to ensure they had read and understood the scenario. They were: "The information in the above scenario states that the existing Spinning [Pilates] class is priced higher [lower] than the Pilates [Aerobics] class? Yes _____ No_____". The samples reported in Table 1 reflect the number of subjects who responded to both of these questions correctly.

The descending order and ascending order control groups (DC in Table 1 and AC in Table 2) were given prices of $85, $70, and $45 and received no potential anchoring information. All of the four treatment groups received this same core set of prices, but they were also given anchor prices. Treatment groups, DT1 and AT1, were presented with a low anchor price of $15. The other three treatment groups (T2, T3, and T4) were exposed to high anchor prices of $110, $130, and $250, respectively, when subjects were presented with the data in descending order (i.e., they were exposed to the highest number first). A different sample of subjects was presented with the same data in ascending order (Table 2).

To address the third part of research question 1 and the second part of research question 2, subjects were asked, "How often in the past six months have you typically participated in an exercise class?" They responded along a six-point scale ranging from "less than once a month" to "five or more times a week." Their responses were collapsed into three categories in Tables 1 and 2, labelled high (more than two times a week), average (less than once a week), and low frequency (once a month or less). The analysis was designed to explore whether high frequency users were less affected by anchors because of their ego involvement with fitness programs and consequent greater exposure to actual prices, and whether low frequency users were most influenced by anchors.

Table 1

The Influence of Decoy Prices Presented in Descending Order on Perceptions of a Fair Price

A community recreation center offers a variety of exercise classes. All its classes have similar features and the costs associated with offering them are similar. They are one hour long, use qualified instructors, and meet three times a week for four weeks. The center is starting a new yoga class. The center's managers are soliciting input on the fair price to charge participants in the new yoga class.

The prices of the existing fitness programs offered at the recreation center are*:

	Item	DT_1	DC	DT_2	DT_3	DT_4	S.D.
Exercise class information	Boot camp	-	-	$110	$130	$250	
	Pilates	$85	$85	$85	$85	$85	
	Aerobics	$70	$70	$70	$70	$70	
	Spinning	$45	$45	$45	$45	$45	
	Zumba	$15	-	-	-	-	
Average fair price	**All users****	***$58.52 (n=86)***	***$65.41 (n=100)***	***$75.95 (n=91)***	***$70.65 (n=81)***	***$75.66 (n=83)***	***28.39***
	Low frequency users	$63.05 (*n*=22)	$61.59 (*n*=32)	$71.60 (*n*=25)	$70.59 (*n*=22)	$73.95 (*n*=19)	27.15
	Average frequency users	$52.78 (*n*=27)	$65.48 (*n*=31)	$76.81 (*n*=30)	$67.11 (*n*=19)	$80.81 (*n*=31)	29.29
	High frequency users	$60.01 (*n*=37)	$68.66 (*n*=37)	$78.25 (*n*=36)	$72.38 (*n*=40)	$71.82 (*n*=33)	28.60

*Subjects were asked: What is the fair price to charge for a yoga class that is one hour long, uses a qualified instructor and meets three times for four weeks? $_____

** Total sample sizes were 90, 123, 102, 86 and 98, respectively

Table 2

The Influence of Decoy Prices Presented in Ascending Order on Perceptions of a Fair Price

A community recreation center offers a variety of exercise classes. All its classes have similar features and the costs associated with offering them are similar. They are one hour long, use qualified instructors, and meet three times a week for four weeks. The center is starting a new yoga class. The center's managers are soliciting input on the fair price to charge participants in the new yoga class.

The prices of the existing fitness programs offered at the recreation center are*:

	Item	AT_1	AC	AT_2	AT_3	AT_4	S.D.
Exercise class information	Zumba	$15	-	-	-	-	
	Spinning	$45	$45	$45	$45	$45	
	Aerobics	$70	$70	$70	$70	$70	
	Pilates	$85	$85	$85	$85	$85	
	Boot camp	-	-	$110	$130	$250	
Average fair price	**All users****	***$61.53 (n=41)***	***$69.57 (n=58)***	***$67.39 (n=46)***	***$67.45 (n=42)***	***$68.93 (n=42)***	***27.39***
	Low frequency users	$61.25 (*n*=12)	$57.14 (*n*=7)	$68.33 (*n*=15)	$63.57 (*n*=14)	$60.00 (n=11)	17.50
	Average frequency users	$64.28 (*n*=10)	$68.91 (n=24)	$68.53 (*n*=17)	$65.00 (*n*=8)	$66.16 (*n*=13)	26.74
	High frequency users	$60.26 (*n*=19)	$72.59 (*n*=27)	$65.00 (*n*=14)	$71.14 (*n*=20)	$76.39 (*n*=18)	32.25

*Subjects were asked: What is the fair price to charge for a yoga class that is one hour long, uses a qualified instructor and meets three times for four weeks? $_____

** Total sample sizes were 49, 61, 48, 46 and 45, respectively

Table 3
The Influence of Numeric Anchors on Perceptions of Value for Money at a Swimming Pool

The public outdoor pool is a standard 25 meter, 8 lane facility. The admission prices posted at the entrance are below:

	Item	T_1	T_2	C	T_3	T_4	S.D.
Decoys	Today's air temperature			-	-	30°C	
	Number of staff on duty	3		-	14	14	
	Number of lifeguards on duty	7	7	-	-	-	
Admission Information	Weekend admission	$10	$10	$10	$10	$10	
	Under 16 weekend admission	$5	$5	$5	$5	$5	
	Weekday admission	$8	$8	$8	$8	$8	
	Under 16 weekday admission	$4	$4	$4	$4	$4	
	After 4pm admission	$5	$5	$5	$5	$5	
	Children under 3	free	free	free	free	free	
Perception of value	**All users**	***3.11 (n=64)***	***3.41 (n=66)***	***3.28 (n=80)***	***3.11 (n=62)***	***3.39 (n=66)***	***0.86***
	Low frequency users	3.21 (*n*=29)	3.50 (*n*=16)	3.31 (*n*=32)	3.10 (*n*=30)	3.56 (*n*=27)	0.86
	Average frequency users	2.77 (*n*=13)	3.55 (*n*=11)	3.29 (*n*=21)	3.42 (*n*=12)	3.40 (*n*=20)	0.79
	High frequency users	3.18 (*n*=22)	3.33 (*n* 39)	3.22 (*n*=27)	2.95 (*n*=20)	3.16 (*n*=19)	0.89

Subjects were asked: Do you consider these prices to be (check one)

[ ] Excellent value for money [ ] Good value for money [ ] Mediocre value for money [ ] Poor value for money [ ] Very poor value for money

Table 3 shows the experimental design used to test research question 2. All five groups were given the six prices below the serrated line. Two of the treatment groups (T3 and T4) were exposed to high numeric anchors, while the other two treatments (T1 and T2) framed the control prices with low numbers. The day's air temperature and number of staff or lifeguards on duty are contextually relevant to the operation of a swimming pool, but logically they should not influence perceptions of a pricing structure. Subjects reported their perceptions of value for money on a five-point scale. The six-point scale used to measure frequency of participation in swimming ranged from "hardly ever" to "more than once a week." Again, the responses were collapsed for analyses into three categories.

Experiment 3 was designed to measure the effect of non-contextual numeric anchors on price. The scenario is shown in Table 4. The treatments consisted of either the number 19 or 91 being placed in normal sized print at the top of the written scenario given to subjects. They were instructed to rewrite that number beneath the scenario shown in Table 4 at a height of one inch. This was the noncontextual anchor. Subjects then were asked to give a price for the eight swim classes described in the scenario. To ensure they had carefully reviewed the information, a qualifying question was included: "The swim classes are limited to 8 children and meet for 10 days: True_____ False _____." Those responding "True" were excluded from the analysis.

Table 4
The Influence of Non-Contextual Numeric Anchors (19 and 91) on Perceptions of Fair Price

A park and recreation department offers swim classes for children in the summer vacation period. Each class is taught by a qualified instructor and is limited to no more than six children. The classes meet for 45 minutes, Monday through Thursday, for two weeks (i.e., 8 sessions)

What is the fair price to charge for these classes?

$_____

	T_1 (n=45)	C (n=87)	T_2 (n=79)
Mean of fair price	***$106.80***	***$124.20***	***$104.37***
Median of fair price	$80.00	$100.00	$88.00
S.D.	63.93	100.90	62.81

Results

Research Question 1

In response to research question 1 (i), the results suggested both the high-end and low-end decoys had an effect on raising perceptions of a fair price, when prices were presented in descending order (Table 1). When compared to the descending order control group (DC), the inclusion of Zumba priced at $15 at the bottom of the list as a decoy (DT1) led to a 12% reduction in perceptions of fair price, while the addition of the $110 boot camp decoy raised it by 16% (DT2). The raising of the boot camp decoy to $130 (DT3) and $250 (DT4) had no additional impact on the fair price.

Table 5
Results of Duncan's Tests for Differences Among the Groups

Type	*n*	Mean	Duncan's Grouping*
DT_2	91	75.950	A
DT_4	83	75.663	A
DT_3	81	70.654	B A
DC	100	65.415	B C
DT_1	86	58.517	C

* Means with the same letter are not significantly different

An ANOVA test indicated there were differences among the groups at the .01 level. Subsequent Duncan's tests reported in Table 5 showed the differences between the control group (DC) and both the high decoy DT2 and DT4 groups were significant. There was also a significant difference between the control group (DC) and the low decoy DT1 group.

These results are consistent with both assimilation-contrast and prospect theories. The $110 decoy was sufficiently proximate to the $85 upper range of the existing prices that it could be assimilated, but the higher boot camp decoy prices induced a contrast response since they showed no additional influence to the $110 decoy price. This result is consistent with one of the tenets of prospect theory (Kahneman & Tversky, 1979) in that the value function is convex indicating there is diminishing sensitivity to increases in price. That is, each incremental increase in price has a smaller impact than the equal increment preceding it, thus reducing the impact of the higher anchors.

When the data were presented in ascending order, the $15 low price Zumba decoy again appeared to be effective, since the average fair price of the ascending order treatment group (AT1) was 13% lower than the ascending order control group's (AC) average (Table 2). However, this difference was not statistically significant. The most striking result, pertaining to research question 1 (ii) was that, in contrast to when they were presented in descending order, all three ascending order high decoy treatment groups reported averages lower than that of the control group. When these anchors were placed at the bottom of the list, they appear to lack saliency and to have been ignored. The lower prices to which subjects in these groups were first exposed, appear to have nullified impact of the high price decoys.

It was anticipated that higher values would be reported by those who were exposed to the comparable prices in descending, rather than in ascending, order (Dhar & Simonson, 1992; Diehl & Zauberman, 2005; Suk, Lee, & Lichtenstein, 2012). This occured among the high-end decoy groups (i.e., DT2 > AT2, DT3 > AT3, DT4 > AT4,). However, it did not occur among the control or low-end decoy groups (i.e., DT1 < AT1, DC < AC).

Similarly, it was expected that both the impact of anchors and of ordering would be most pronounced among those who engaged in fitness programs least frequently. Again, neither of these effects was supported. There were no meaningful patterns in perceptions of a fair price among subjects with different levels of intensity of participation in fitness programs (research question 1 (iii)).

In summary, the results suggest (i) a decoy intended to raise price should be proximate enough to the upper range of a latitude of acceptance to be assimilated; (ii) it should be presented at the top of a descending list of prices; and (iii) low-priced services may inadvertently act as decoys, so if a program is priced low relative to other similar services it may reduce the reference price of those other services.

Research Question 2

Table 3 shows when subjects reported their perceptions of value for money on a five-point scale, those given the scenario headed by the numbers 30 and 14 (T4) reported ratings that were 9% higher than those exposed to the scenario framed by the numbers 3 and 7 (T1). Placing these numbers at the top of the price list appears to have some priming effect indicating that first perceptions of the list may linger in the mind. The asymmetric dominance effect suggests the admission prices may appear smaller or larger, respectively, when framed by contextual relevant numbers. However, these differences were not significant ($p = 0.11$).

While the numeric anchors in treatments T1 and T4 showed the expected directional anchor effect, those in T2 and T3 were contrary to that which was expected. This suggests that anchoring with a single number may be insufficient to create saliency, and two (or perhaps more) anchors are required to be effective. At the same time, the failure of treatment groups T3 and T2 to conform to the expected directionality and the lack of statistical significance creates doubts as to the validity of the results reported by the T1 and T4 groups, and suggests they should be

regarded as tenuous. There was no meaningful pattern of differential ratings among the groups of low, average and high levels of swimming participation.

In summary, while the experiment's results showed the expected directionality for high and low numeric anchors, the effect was not incremental since the single number anchor was not effective. This suggests that two (or more) numbers may have to be used as anchors before anchoring has any effect. However, the inconsistency and lack of significance of the treatments suggests the experiment's results do not support the contention that contextual relevant numeric anchors influence perceptions of value for money.

Research Question 3

The results in Table 4 show those in treatment group 1 exposed to the number 19 (T1) reported substantially lower prices than the control group (C). However, the validity of that anchor effect is not convincing. The differences were not statistically significant, and those receiving the 91 number reported an even lower mean price than the 19 group. These results contrast with those cited earlier in the paper for non-contextual anchors by Tversky and Kahneman (1974), by Ariely et al. (2003), and others. Two explanations may contribute to the lack of anchor effect in this experiment.

First, since the control group's mean and median average prices were higher than both the 19 and 91 numbers, the anchoring effect of both numbers may have been to lower the price. Second, the experiments in the literature which have reported positive impacts of nonsense numeric anchors invariably used a two-step process. The earlier cited roulette wheel experiment illustrated the protocol. In the first stage, subjects were required to explicitly and deliberately consider a novel value, and then this value provided the anchor for making a comparative judgment in the second stage. In contrast, the first stage in this experiment required subjects merely to rewrite a number which was a mechanical action devoid of cognitive effort. This lack of cognitive processing appears to have removed the potential for an anchoring effect.

Research Question 4

Research question 4 explored whether there was less variation in perceptions of fair price among frequent participants than among infrequent participants or nonusers. There was no pattern in the variations among different frequency of participation groups in experiment 2 (Table 3). There was a distinctive gradation among subjects responding to the information in ascending order in experiment 1, but it was antithetical to the direction that was anticipated (Table 2). Variation was greatest among high frequency users and smallest among those who participated infrequently. Among the groups responding to the descending order prices there were minimal variations but, again, low frequency users reported least variation (Table 1). Variations among subjects exposed to the non-contextual anchors in experiment 3 (Table 4) were substantially greater than those reported in experiment 1. This is likely attributable to the absence of meaningful definitive anchor points in experiment 3 that were available in experiment 1.

Discussion

Results from the experiments are summarized in Table 6. They suggest that anchors can be impactful, but that their effect is selective. There were multiple treatments which did not influence perceptions of price. Certainly, the effects were not as pronounced as a review of the retailing and psychology literatures had suggested was likely. Four reasons may account for this.

First, "If subjects do not pay much attention to the task the effect is unlikely to occur" (Simonson, 2014, p. 515). Screening questions were included in experiments 1 and 2 to eliminate subjects who had not read and comprehended the scenarios. Nevertheless, this did not guarantee deliberative, thoughtful responses. A majority in the samples were infrequent users (less than once a week among the fitness program samples, and less than once a month among the swimming admission price samples). Hence, they may have been disinterested in the scenarios and unwilling to invest cognitive effort in their responses.

Second, some of those defined as frequent participants in experiment 2 may have had season passes, rendering the admission prices moot, while others may have regarded the prices to be "pocket change" and too low and insignificant to be worth investing cognitive effort in evaluating them.

A third potential explanation suggested by a reviewer of this paper was that many students may have limited interactions with, or experience of, paying for admission to public pools because they have free admission to pool facilities on campus. These three potential explanations should be addressed by including additional screening questions in future replications of these experiments.

Table 6

Research Results

The study explored four research questions:

Research Questions	Conclusions
1. (i) Do decoy prices change the level of price acceptance?	Yes
(ii) Does the order in which decoys are presented influence price acceptance?	Yes
(iii) Does frequency of participation in an exercise program influence response to decoys?	No
2. (i) Do contextual relevant high [and low] numeric anchors incrementally raise [lower] perceptions of value for money?	No
(ii) Do contextual relevant numeric anchors have a different level of influence among those reporting high, mid and low frequency of participation at a swimming pool?	No
3. Does an arbitrary noncontextual numeric anchor influence perceptions of fair price?	No
4 Do frequent participants in an exercise program or at a swimming pool show less variation in perceptions of fair price than infrequent participants or nonusers?	No

Finally, the effect of anchoring is only one ingredient in a decision process. There are multiple other factors that may explain choice decisions. These factors may magnify and reinforce the effect of anchors or, alternatively, counterbalance and reduce it.

While the effects were less pronounced than anticipated, the experiments yielded useful insights. The treatments for research question 1 suggested an anchor would be considered plausible and be optimally effective in raising price perceptions if it was set in the non-commitment zone (Crompton, 2011), and so extend the latitude of acceptance to embrace that zone. If the anchor is too extreme, it will have a contrast effect and be rejected as implausible.

Empirical studies of price anchors in the marketing literature have focused exclusively on high-end decoys, because interest invariably is on elevating reference price. However, in this study a low-end decoy was included, and it was as effective as the high-end decoys. It is myopic not to include low-end decoys for two reasons. First, if decoy anchors at both ends are effective, then it enhances face validity and reduces concerns that the high-end decoy's impact is merely an artifact of the data. Second, the latitude of price acceptance concept may extend beyond a single program to an array of similar services within the same division of an agency (e.g., fitness classes, athletics, aquatics, recreation classes, arts, and special events). These services may be regarded as an interrelated coherent set of offerings, rather than as a loose assembly of unrelated programs so if one of them is priced low then it may lower all other programs in the division (Crompton, 2011; Krishna, Wager, & Yoon, 2006; Lichtenstein & Bearden, 1989; Petroshius & Monroe, 1987).

Whereas, it was anticipated that experiment 1 might require more deliberative thinking, experiment 2 was designed to assess if passive exposure to numerical stimuli that related to the program's context, but which were objectively irrelevant to perceptions of price, would result in an anchor effect. The saliency of the contextual information was systematically varied. Ostensibly, the results provided tentative support for empirical findings in the retailing pricing literature: "The standards that people use when evaluating products can be formed unintentionally and may be influenced by exposure to stimuli of which they are not consciously aware" (Adaval & Monroe, 2002, p. 584). While a single numeric anchor was insufficient, when two decoy numbers were used there was some adjustment to the expected direction but it was not statistically significant. An obvious question for future study is: Do three or more decoys have a significant effect?

Experiment 3 addressed the more extreme contention that numeric stimuli which clearly have no relationship to a program or its context could influence price perceptions. It was noted earlier that after Tversky and Kahneman (1974) demonstrated this anchor effect with their famous roulette wheel experiment, their two-stage protocol was widely embraced by others who confirmed the strong anchoring effect in a host of different contexts. The following example is typical of these studies:

> Visitors to the San Francisco Exploratorium were asked the following two questions: (i) Is the height of the tallest redwood tree more or less than 1200 feet [or 180 feet]? (ii) What is your best guess about the height of the tallest redwood? The average estimates were 844 and 282 feet, respectively (Kahneman, 2011).

In experiment 3, the first stage of this protocol was removed, recognizing that is was not a practical option for leisure managers. Any processing of numeric anchors in the field is likely to be passive, minimal and superficial. Accordingly, it was replaced by asking subjects to simply rewrite an arbitrary number. The results suggested that a mere mechanical action devoid of cognitive effort will not stimulate an anchor effect.

We are unaware of any previous conceptualization or empirical studies that have differentiated between contextual relevant and non-contextual numeric anchors. The results of this study

suggest such a distinction may be useful since some context relevant anchors were effective in experiment 1 and to a lesser degree in experiment 2, while the noncontext anchors used in experiment 3 were clearly ineffective.

There was an expectation that those who used a program most often would be most aware of a realistic price and remain relatively resistant to anchor effect, compared to infrequent and non-users. For example, Ariely et al. (2003) claimed, "In situations in which valuations are not constrained by prior precedents, choice will be highly sensitive to normatively irrelevant influences and considerations such as anchoring" (p. 78). In this study, no differences emerged among different participation-level groups in experiments 1 or 2, so the results failed to support the contention that any asymmetrical effect of high and low anchors "may arise from an asymmetry of uncertainty" (Jacowitz & Kahneman, 1995, p. 1164).

Similarly, in relation to research question 4, the literature suggested the latitude of acceptance (reference price range) would be smaller among frequent than infrequent users (Ariely et al., 2003; Jacowitz & Kahneman, 1995; Mussweiler & Strack, 2000). For example, it has been observed: "The more a judge knows about judgment-relevant aspects of the target, the narrower his or her range of plausible values" (Mussweiler & Strack, 2000, p. 497). The results did not support this. Indeed, they tentatively suggested variation was smaller among infrequent users.

Two explanations for this unexpected finding are offered. First, frequent users may be less influenced by prices presented to them, and more dependent on the price information they have acquired from their experiences with several different programs which may have been diversely priced. In contrast, infrequent users may have been more prone to accept prices to which they were exposed in the experiment, because they had no other price information stored in memory so their variation was relatively small.

A second explanation is that high frequency users may have been conflicted, resulting in a high standard deviation. Some may have reported a low price because it would result in a gain to them, while the concept of psychological attachment suggests frequent users will be willing to accept a higher price as the fair price.

The potential utility of anchors in the leisure field is illustrated by the following vignettes:

- A city opened a new concession stand at its outdoor aquatic facility, which can hold approximately 700 people. It was highly successful, making sufficient profits to recover the cost of the equipment in two years. It sold traditional snack foods: hot dogs, hamburgers, sodas, and shaved ice; but it also served the health conscious by offering chicken, Caesar salads, and grilled fish. The grilled fish was an unusual item. How many mouths watered for a fish sandwich on a hot summer day? The answer was, not many, and fewer than 50 such sandwiches were sold all summer. However, sales were not the objective. Fish offered a healthy choice, but also an expensive choice. They charged $6.95 for the fish sandwich, which was a lofty price for a concession-stand item, but that was the point. The fish made paying $3.95 for a hamburger look like a bargain. The manager reported, "We didn't sell much fish, but it made the hamburger look cheap."
- Broadway theaters charge extreme prices for prime seats to popular shows. Five hundred dollars may seem outrageous to most theatergoers who wouldn't dream of paying that much for a ticket, but it makes whatever they do pay (say $200) seem like a deal (Blinder, Caunetti, Labow, & Rudd, 1998).
- Movie theater and arena/stadium operators price the super-sized popcorn just slightly higher than the large size, so they can nudge patrons to buy the super-sized option. Its price appears reasonable when compared against the (greatly overpriced) large size, whereas without the decoy anchor, it would be considered unreasonable by many (Simonson, 2014).

Traditionally, in the leisure field, price discussions have focused on the neoclassical economic concepts of price, demand, and utility. In the past three decades, in both the marketing and leisure literatures, there has been a movement to supplement and enrich the neoclassical model by incorporating a cognitive processing approach. Anchoring is one of several heuristics and strategic pricing tools that have emerged from research on how individuals process changes in price. To the best of the authors' knowledge, this is the first empirical study to address the potential role of purposeful anchors in pricing decisions in the public leisure field. The findings are tentative. Their confirmation and generalizability is dependent on an accumulation of convergent empirical results. The need for cumulative evidence refers not only to the lack of generalizability beyond a student population which was discussed earlier in the Methods section, but also to their generalization within a student population because of the likelihood of differences among different student samples addressing the same issue (Peterson & Merunka, 2014).

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