

Almost gone:

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Positional concerns and the mediating
role of unavailability on choice

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To my family

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Abstract

This paper presents two experiments investigating the association between the scarcity/unavailability effect—when a real or perceived limit in availability increases desirability or value—and positional concerns, people’s tendency to be strongly influenced by relative consumption in some domains but not others. Examining choices between equivalent items, Experiment I found that unavailability motivated choice for positional but not nonpositional goods, and did so to a greater degree when popularity was offered as the reason for unavailability rather than an imposed limit in supply. Experiment II showed that for musical taste, a domain where positional concerns are not normally a notable factor, creating a situation drawing attention to relative position allowed unavailability to influence choice or desire.

Table of Contents

Introduction	1
Positional Concerns	1
The Effect of Unavailability	6
Experiment I	11
Introduction	11
<i>The Difference Between Choice and Self-Generated Valuation</i>	13
<i>Consumers' Need for Uniqueness</i>	14
Methods & Procedure	15
<i>Participants</i>	16
<i>Stimuli & Procedure</i>	16
Results	28
<i>Results for Individual Questions</i>	29
<i>Overall Results, by Question Response</i>	31
<i>Overall Results, by Participant</i>	32
<i>Correlation of Results with CNFU Questionnaire</i>	33

TABLE OF CONTENTS

Discussion	34
<i>The Reason for Unavailability</i>	35
<i>Positionality and Reason for Unavailability Combined</i>	36
<i>Overall Scarcity Effect</i>	38
<i>The University Question</i>	38
<i>The Car Questions</i>	40
<i>Limitations & Considerations</i>	41
Experiment II	45
<hr/>	
Introduction	45
Methods & Procedure	46
<i>Participants</i>	46
<i>Stimuli & Procedure</i>	47
Results	50
Discussion	51
<i>Limitations</i>	52
General Discussion	55
<hr/>	
Theoretical & Practical Implications	55
<i>Nonfunctional Demand</i>	57
<i>Of Bags and Positional Arms Races...</i>	58

POSITIONAL CONCERNS & UNAVAILABILITY

<i>... and Troubling Times</i>	62
<i>Limitations</i>	63
Concluding Remarks	65
Appendices	67
Appendix A: <i>Figures & Tables for Experiment I</i>	69
Appendix B: <i>Figures & Tables for Experiment II</i>	79
Appendix C: <i>Other Figures</i>	81
References	83

Lady Bracknell: I do not approve of anything that tampers with natural ignorance. Ignorance is like a delicate exotic fruit; touch it and the bloom is gone. The whole theory of modern education is radically unsound. Fortunately in England, at any rate, education produces no effect whatsoever. If it did, it would prove a serious danger to the upper classes, and probably lead to acts of violence in Grosvenor Square. What is your income?

Jack: Between seven and eight thousand a year.

Lady Bracknell: [*Makes a note in her book*] In land, or in investments?

Jack: In investments, chiefly.

Lady Bracknell: That is satisfactory. What between the duties expected of one during one's lifetime, and the duties exacted from one after one's death, land has ceased to be either a profit or a pleasure. It gives one position, and prevents one from keeping it up. That's all that can be said about land.

— Oscar Wilde, 1895
The Importance of Being Earnest

Introduction

As Lady Bracknell dramatizes in Oscar Wilde's *The Importance of Being Earnest*,¹ there are some goods, such as education and land, for which people's behavior is less reflective of a specific desire for an item, but rather, what that item represents and how it compares to those that others have. Goods such as these can be understood as "positional." This paper presents two experiments that examine the influence on choices and desire for positional goods that unavailability and scarcity can have—namely, that when a limit is imposed on something's availability, it increases in desirability or value.

Positional Concerns

In his book *Social Limits to Growth*, Fred Hirsch (1976) was the first to explain the concept of positional goods, defining positionality in terms of two distinct markets: a *material market* that seeks to meet our basic or biological needs (e.g., food and shelter), and a *positional market*. Hirsch theorizes that positional concerns arise when our material needs have been met, but yet the average level of consumption continues to rise. Furthermore, as this level rises, consumption takes on a social component. In the material market, consumers are individu-

¹ See previous page.

INTRODUCTION

ally or privately focused: for example, if you were to ask yourself “what should I buy to cook for dinner tonight,” you would be very unlikely to be concerned with what other’s have bought to make their own dinners. In other words your enjoyment of your dinner is not affected by the food others purchased. However, for goods with this added social component, what others have is directly related to the amount of satisfaction or value you gain from your consumption. Hirsch uses education as a primary example of something that has a large social component: the value of one’s education stands in direct relation to the amount of education everyone else has. If half of the country were to have doctorate degrees, the value of a doctorate would be far less to each person that holds one. The societal implications of Hirsch’s hypothesis can be in part summed up with his assertion that positional market is making “getting what one wants...increasingly divorced from doing as one likes” (1976, p. 10).

Hirsch (1976) explains the notion of a “positional economy” as “relating to all aspects of goods, services, work positions, and other social relationships that are either (1) scarce in some absolute or socially imposed sense or (2) subject to congestion or crowding through more extensive use” (p. 27). He claims that it can be true that with a “pure” social scarcity—an absolute limit in supply that arises for social rather than physically dictated reasons—that “satisfaction is derived from scarcity itself” (Hirsch, 1976, p. 28). However, he notes that it would appear to be rare for the satisfaction obtained from something to be *entirely* dependent on its scarcity.² Indeed, Hirsch goes on to explain

² However, examples of such goods might be hideous early piece (but yet, inherently one-of-a-kind) by an artist that becomes famous for their later works or a limited edition of a sports car that is many times the price of the non-limited edition but yet is only marginally better performance-wise. Still note that for even these examples, it is still dependent on the consumer; there are some people who might derive satisfaction from these items for reasons unrelated to their scarcity (e.g., an interest in seeing how an artist developed his technique over time).

how social scarcity can arise as a byproduct of positional consumption, rather than directly motivating it. When this is the case, an increase in demand for something reduces everyone's enjoyment of it, creating concerns about relative position as steps are taken to limit its availability (either by giving it to whoever is willing to pay the most for it or by instituting a more selective procedure necessary to procure the good).³

With social scarcities, social factors play a role such that when certain goods become more available, the satisfaction or value derived from their consumption decreases, such as the satisfaction derived from one's position relative to everyone else (Hirsch, 1976). The major question this paper is concerned with is: for positional goods in general (and not just for rare examples of certain types positional goods) are such scarcities, including social scarcities, just a byproduct of positional consumption, or is there a more direct relationship?

Although Hirsch's description of the positional market will be returned to later in this paper, Robert Frank (1985, 2007) provides an account of positionality in slightly different terms—terms that are more applicable to the discussions presented in this paper. Frank defines “positional goods” as those for which context is more important, and “non-positional goods” as those for which context is less important; in other words, for positional goods, how something compares (i.e., ranks) relative to all others within the same category of good or commodity is strongly associated with how much value or satisfaction someone will gain from that item. However, for nonpositional goods, this compari-

³ Hirsch (1976) uses the terms *crowding* and *congestion* to refer to this increase in demand, the term *quality reduction* to refer to the decrease in satisfaction or enjoyment that results from such *traffic*, and the term *congestion tax* to refer to an attempt to undo such a loss in satisfaction or enjoyment (see pp. 29-30). While Hirsch does make use of an ongoing analogy to vehicular traffic jams, these terms make it surprisingly easy to confuse a discussion of consumer behavior with a discussion about how to best to reduce gridlock on the interstate (two very different discussions), and will be avoided in the present paper.

INTRODUCTION

son plays less of a role in determining how much value or satisfaction one derives from something. Frank (2007) provides the following two illustrative thought experiments, both of for which you decide between two options that are exactly the same except for in one dimension:

*“The **first** choice is between World A, in which you will live in a 4,000-square-foot house and others will live in 6,000-square-foot houses; and World B, in which you will live in a 3,000-square-foot house and others in 2,000-square-foot houses.*

*“In the **second** thought experiment, your choice is between World C, in which you would have four weeks a year of vacation time and others would have six weeks; and World D, in which you would have two weeks of vacation and others one week”*
(Frank, 2007, p. 2).

Frank (2007) notes that most people choose World B for the first question, preferring a relatively larger house to an absolutely larger house, and World C for the second, preferring an absolutely longer vacation to a relatively longer one; as concerns about relative position entered into people’s choice for a house but not for vacation, housing can be understood as a positional good and vacation as a nonpositional good. Frank also proposes that the motivations for positional consumption are, for the most part, not driven by envy or a desire to boast superiority over others. Rather, he suggests that the context-dependent nature of positional goods leads people to care about how the different aspects of an item stand relative to what else is out there—for example, how the quality of one car compares to other cars or how the appear-

ance of your clothing stands in relation to the clothes that others have. Concerns about relative rank often arise—even amongst those who would insist they do not care about position—when there is a lot at stake, such as a for a job (Frank & Cook, 1995); for instance, if you were meeting with two potential surgeons for a risky operation, you would not be likely to choose one that drove to the consultation in a rusty Dayton wearing a clip-on tie. Furthermore, it is a local context in which positional goods are compared and a local hierarchy in which rank matters, not a universal one (Frank, 1985, 2007). The satisfaction you derive from the ownership of your car would not likely be lowered if you were to hear about Michael Bloomberg or the Sultan of Brunei buying a new car that happens to be much nicer than yours, but it would likely be lowered if your friend, peer, or colleague buys a very fancy new car.

Part of Hirsch’s definition of the positional market describes how a positional good is available to anyone but cannot be made available to everyone. This is where the small difference between the two accounts of positional goods we have looked at so far becomes crucial in regard to this discussion. According to Hirsch’s definition, a positional good is something that is necessarily scarce, whereas for Frank’s definition—the one that will be used in this paper—a whole category of goods can be positional and just the highest ranked items within that category are scarce.

To provide an example, under Frank’s definition, the whole category of “cars” could be considered positional in that concerns about relative position would weigh in whether you are buying a Maserati or a Ford. So, for instance, when someone is buying a Ford, even though it doesn’t convey high relative rank, it would still be considered a positional good to the extent that positional concerns could cause that person to derive less satisfaction from it than they would if we as a

society did not care about how our cars compare to others' cars; alternatively, maybe positional concerns caused the person to decide to buy a new Ford instead of a used Hyundai. So, whereas Frank's definition would count both the Maserati and the Ford as positional, Hirsch's would only include the Maserati. Insofar as this paper examines the role of scarcity and unavailability in regard to desire and choice for positional goods, the above clarification is important to get out of the way before proceeding.

The Effect of Unavailability

One of the earliest psychological accounts for the role of scarcity or unavailability on behavior is Timothy Brock's (1968) commodity theory. This theory applies to everything that can be considered a commodity, defined by Brock to be anything that both has value to its owner and can be transferred from one owner to another. Commodity theory has two main claims: (1) "that any commodity will be valued to the extent that it is unavailable," and (2) "that threat increases commodity-seeking behavior and the tendency to withhold commodities from others" (Brock, 1968, p. 246). So, according to this theory, if an item has some usefulness or value to a person, it will be valued by that person in a direct relationship to how unavailable it is, with lower availability resulting in higher value. Brock does not elaborate much on what he intends to be the scope of his second main claim—that threats can compound the effect of unavailability—to be, but does speculate that when commodities contribute to a person's own identity or self-notions of being unique, the more one relies on commodities for such contributions, the more effect unavailability will have.

Brock (1968) uses *unavailability* as an umbrella term to describe the effects that can arise from the following four types of limits on availability: *scarcity*: a limit or perception of a limit on the amount of a commodity available; *effort*: the amount of effort required to obtain a commodity, or the amount of effort required to conceal or reveal information about a commodity; *restriction*: a constraint on the distribution of a commodity (e.g., confidentiality or restricted access); and *delay*: the time between when one knows about the existence of a commodity, and when one receives it (see Brock, 1968, pp. 248-251).

Although Brock's explanations of unavailability are stated in terms of limits on the transmission and receiving of messages and information, based on his definition of a commodity, he intended the theory to be equally applicable to physical goods and services. Under commodity theory, scarcity only one of the ways in which unavailability is conveyed, but the fact that scarcity accounts for a large portion of the discussed and readily observable examples of unavailability effects means that the two terms are often used somewhat interchangeably.

To examine the empirical evidence of Brock's theory since it was proposed, Lynn (1991) performed a meta-analysis of all experiments examining the notion of scarcity increasing value, finding "strong support for commodity theory's proposition that scarcity enhances the value of anything that can be possessed, is useful to its possessor, and is transferable from one person to another" (p. 52). The 41 studies included in the analysis were experiments using both tangible and intangible goods and services.⁴ While it was found that scarcity did not have a very large effect size, Lynn found that the effect was nonetheless highly reliable—it would have taken the addition over one-thousand

⁴ Which ranged from experiments using consumer goods such as pens or clothing to experiments using the watching of television programs to experiences (Lynn, 1991).

experiments with null results included in the meta-analysis to make the finding insignificant.⁵

While Brock described the value-enhancing effect of unavailability, his theory did not make a direct claim as to how or why the effect arose. However, as mentioned earlier, he did mention the possible role of a need for uniqueness, a hypothesis that has been echoed in later accounts for the scarcity/unavailability effect (Brock, 1968; Fromkin, 1970; Fromkin & Brock, 1973; Lynn, 1991; Lynn & Harris, 1997; Verhallen & Robben, 1995) and continues to be a prevailing explanation. One experimental investigation of this theory found that when someone's self-uniqueness was attacked, there the attractiveness of an unavailable option increased, and furthermore, as self-perceived uniqueness decreased, participants' valuations of an unavailable option increased (Fromkin, 1970). In addition to the goal of regaining self-perceived uniqueness, it has been proposed that this effect may be due to a process of downwards comparison against those who lack the unavailable item or a sense of power over those who want, but cannot have, that item (Verhallen & Robben, 1995). A further theory accounting for the existence of the scarcity effect it is that it is a form of psychological reactance to a freedom that is potentially being limited (Worchel, Lee, & Adewole, 1975).

Robert Cialdini's observationally-based theory of the "scarcity principle" has a similar conclusion to that of commodity theory: "that opportunities seem more valuable to us when they are less available" (2001, p. 205). Cialdini also offers a number of potential explanations for what underlies this effect. One such factor relates to notions of prospect theory and loss aversion (Kahneman & Tversky, 1979;

⁵ In the meta-analysis, there were five of the 41 studies that showed a reversal of the scarcity effect, which was attributed to participants' potential worries of appearing selfish (Lynn, 1991).

Tversky & Kahneman, 1981), which account for the significant role that potential losses in can play in decision making processes. If people view missing an opportunity to obtain something that is scarce as a loss, then loss aversion could explain part of the reason why scarcity affects how people make decisions and choices.

One crucial aspect of the unavailability effect is that the cause or reason for an item's scarcity can also be a major factor. A study by Verhallen and Robben (1994) found that the scarcity effect on participants' preferences was present for tangible products⁶ (cookbooks) that were of limited availability because of market circumstances—either the supply of the product was limited, or it was a popular item and was thus less available—but was not present for products that were of limited availability due to accidental circumstances.

It is also important to note that the rest of this paper will use “scarcity” to refer to the concept of scarcity as a type of unavailability, which is not always equivalent to the formal economic definition of scarcity that indicates an inherently fixed supply of something. Thus, the scarcity of unavailability can include artificial scarcities⁷ or perceptions of scarcity—even if no actual limit exists. Also, this definition looks at unavailability beyond the scope implied by Hirsch's concept of social scarcity: it applies to not only social scarcities, but also to physical scarcities and perceived scarcities (either social or physical).

⁶ Alliteration unintentional.

⁷ For instance, the limiting of production of a certain item not because it is expensive to produce or because it requires some rare resource in order to manufacture, but just to be able to say it is a “limited edition.”

Experiment I

It has been suggested that especially in circumstances involving risk, uncertainty or social threat, the scarcity effect may work in part by tapping into people's aversion to loss (Cialdini, 2001), need to feel unique (Brock, 1968; Fromkin, 1970), or reactance to the limiting of a potential freedom (Worchel, et al., 1975). If such explanations underly the scarcity effect, an interaction between scarcity and positionality might be observed, considering that positional concerns are driven by an uncertainty, an insecurity, or—more generally—a concern about relative social position. Furthermore, there is often either a perceived or a real social risk (or both) in not engaging in positional consumption. For example, the person who refuses to buy a presentable outfit for a job interview might find him- or herself jobless.

To test whether the scarcity effect was exhibited to different degrees for positional goods versus nonpositional goods, an experiment was created manipulating both the positionality of products in question and the level of scarcity. Given the strong support for the existence of the scarcity effect in the literature (regardless of the category of good), as well as the theory presented here of an interaction with positionality, the following are hypothesized:

Hypothesis 1: *When a product is scarce for any reason (i.e., the quantity available is limited),*

EXPERIMENT I

people are more likely to choose that scarce item over other readily available, but otherwise equivalent, alternatives presented at the same time. Simply, the scarcity effect will be observed in a choice between equivalent products.

Hypothesis 2: *This scarcity effect is greater for positional product types than for nonpositional product types.*

In his theory of the scarcity principle, Cialdini posits about behavior, “Not only do we want the same item more when it is scarce, we want it most when we are in competition for it” (2001, p. 223)—suggesting that the effect of a product’s scarcity could be compounded by it being popular as well. This theory might be especially relevant to positional goods, as competition is inherent for positional goods; the value of something that is positional is determined relative to what others have, and is thus by definition a form of competition between those in the same local environment. Thus, the following are also predicted for the present experiment:

Hypothesis 3: *The scarcity effect will be greater when popularity is given as the reason for a product’s unavailability than when the manufacturer is responsible for the same product’s unavailability (i.e., limited supply); and that:*

Hypothesis 4: *This effect will be more pronounced for positional than for nonpositional goods.*

Hypothesis 5: *For a product type that is positional (e.g., cars), the scarcity effect will be stronger for a product that ranks highly against all products of that type (e.g., a luxury car) than it will for a product that ranks lower (e.g., a budget car).*

Solnick and Hemenway (2005) claim that two major limitations of their study examining the degree of positionality of a number of different types of goods was that their choices were entirely hypothetical and that they did not use the kinds of choices that participants are used to facing, such as brand choices. Thus, for Experiment I (as well as for Experiment II) the questions—although still hypothetical—were chosen to be (a) reflective of the types of choices people have to make on a regular basis, and (b) so that it superficially appeared that questions were at least partially concerned with preexisting preferences such as brands or colors.¹

The Difference Between Choice and Self-Generated Valuation

Most of the studies on the effects of scarcity/unavailability have used participant-generated valuations as the dependent variable. However, at best, people's valuations of items in an experimental setting are likely to be very approximate representations of how they value the same items in a real-world setting. Thus, for this experiment, a choice framework was used instead; participants selected which of three items they would most likely choose to purchase, rather than assessing how much they would value each of the three items. As people often do not consciously know why they prefer one item to another, asking them to

¹ And for Experiment II, musical preferences.

make a conscious valuation of each of a number of items in relation to one another may not give accurate insight into how they actually make decisions. However, when people are asked to make a choice (rather than a valuation), there is less pressure to consciously account for why one item is preferred over alternatives, and thus a choice framework might be preferable for this type of experiment.²

Consumers' Need for Uniqueness

A prevailing theory for a way in which unavailability can affect decision processes is that desire for what is unavailable is associated with a person's need for uniqueness; that those who have a strong desire to be or appear as a unique individual will derive more value from the scarcity of something than will those with less of a need for uniqueness (Brock, 1968; Fromkin, 1970; Lynn, 1992; Verhallen & Robben, 1995). However, few attempts at an empirical confirmations of this theory have been made, and those few experiments that have been performed have reached opposite conclusions (see Fromkin, 1970; Lynn, 1992).

² For instance, if you were to ask a group of people to rate how much they would value a brand-name bottle of aspirin versus a generic-brand bottle of aspirin—both of the same dose and containing the same number of pills—the valuations would likely reflect that the brand name was valued slightly, but not much, higher. However, if you were to ask another group to make a choice between the two bottles which one they would be most likely to purchase, there would probably be a much more notable preference for the brand-name product—providing a potentially more accurate reflection of how people act. Such a result could happen because while many people consciously know that there are few, if any, differences between brand-name and generic pharmaceuticals, they nonetheless act frequently in a way that suggests that they are not taking this knowledge into account. How else would Tylenol and Advil be able to stay in business charging considerably more money for the exact same product as their generic alternatives? Probably because of factors that are not consciously considered at the time of purchase, such as brand, trust, or packaging. Such factors may be heavily diminished in self-generated valuations, but are crucial to assess because they *do* factor into how people actually act.

In order to see whether a need for uniqueness was associated with a propensity to make scarce choices, as well as if there was any interaction with positionality, Tian, Bearden, and Hunter's (2001) Consumers' need for uniqueness (CNFU) questionnaire was administered in this experiment, which aims to measure "an individual's pursuit of differentness relative to others that is achieved through the acquisition, utilization, and disposition of consumer goods for the purpose of developing and enhancing one's personal and social identity" (Tian, et al., p. 50). As opposed to other scales for measuring a need for uniqueness, the CNFU was designed—as the name suggests—to reflect how this need for uniqueness is carried out through consumption behavior. As the present experiment is primarily concerned with how people make purchasing decisions, such a scale was deemed appropriate.

Methods & Procedure

This experiment was designed as a series of hypothetical consumption choices for nine commonly encountered types of products. These product types varied by whether or not they are understood to be strongly affected by positional concerns (positional) or not strongly affected by positional concerns (nonpositional). Each of the nine questions consisted of a decision between three items of the same type that differed in availability (being either scarce or readily available). Finally, for each of the nine choices, a reason for the scarce product's limited availability was given: it was either scarce due to the item's popularity (high demand) or scarce due to a limited supply of the item.

EXPERIMENT I

Participants

The participants for this experiment were 76 undergraduate students at Princeton University. Participants were recruited with an email message sent to a random sample of 300 undergraduate students,³ soliciting participation in a survey for a senior thesis examining music and consumer attitudes. Any mention of the words *psychology* or *experiment* was withheld, both in the recruiting email and in the instructions throughout the experiment. The message also informed potential participants that they would be compensated \$8 for completing this survey as well as have a chance to win a cash prize of \$100. Due to budgetary restraints, the survey closed after 76 completed surveys were received. The participants had a mean age of 20 years, and 55% were female.

Stimuli & Procedure

Experiment I was performed using the Key Survey online survey software, and was carried out in the same session as part of Experiment II, which preceded the current experiment for all participants, and the administration of the Consumers' Need For Uniqueness (CNFU) Questionnaire, which followed this experiment for all participants. The present experiment comprised a series of nine questions, each of which was a hypothetical purchase decision between three items of the same product type. Each question consisted of a scenario, followed by an image and a brief description for each of the three items (presented side-by-side), and a prompt for the participant to choose which of the three items they would most likely purchase in given the scenario. Refer to *Figure A.1* for an example of a question.

³ The sample of undergraduate students was generated by the Princeton Survey Research Center, Princeton University, 169 Nassau Street, Princeton, NJ 08542.

A question's scenario gave a brief background story to tell the participant why he or she was purchasing that product. The scenarios were chosen to be reflective of decisions that participants would likely face in the real world, as well as to prevent them from coming up with their own mental narrative or explanation for why they might be faced with having to make such a decision. For each three-way choice, two of the three items were indicated to be readily available while the third was indicated to be in very limited supply. In the scenario preceding the prompt to make a choice,⁴ the reason for the third item's scarcity was given to be due either to a limit in supply (i.e., the manufacturer or source of the product is responsible for the product's limited availability) or to the product's popularity.

Before starting the first question, participants were told that for each question, they would have to choose from three items the one that they would most likely buy given the scenario—taking into consideration both the scenario and their pre-existing preferences (e.g., colors, brands, style, etc.). It was strongly reinforced that they should thoroughly read the scenario and given product information, and not just select the image or photo that they liked most in an effort to hastily complete the survey. Also, participants were instructed not to use the internet or other outside sources to aid in their decision.

Different versions of the same question were created so that each of the three items would be equally likely to be the scarce one for any participant. Thus, there were six versions of each of the nine questions: two scarcity conditions and three items that could potentially be the scarce one for each condition. Using a random number generator, participants were randomly sent to one of the six versions of each question.

⁴ This information was presented in the scenario text for *most* questions, with the exceptions being the car and the college questions; see the explanations of individual questions later in this section for further detail.

EXPERIMENT I

Finally, the order in which the three items were displayed side-by-side was randomized. See *Table A.i* for a summary of the questions and the text displayed in each (and *Figure A.1* for an example of how a participant would see a question).

Questions were written so that they would reflect the types of choices people have to make in the real world rather than abstract one-dimensional choices that do not necessarily reflect how people actually make consumption decisions. Thus, for each of the nine questions, the three products presented to the participant differed notably in one major non-experimental way (other than in scarcity or availability condition), such as in brand or in style—in essence, a “decoy” factor. In addition, a list of product details were given for each item, but were chosen so that they did not differentiate the three products in notably (e.g., the resort amenities for each of the three vacation spots was given, but the amenities were almost entirely the same for each of the three). Since the scarce one of the three items was randomly decided, if the experimental manipulation were to have a significant bearing on participants’ responses, it would have to be in spite of any such differences. Price was not given as part of the information about the products, and participants were told that for all questions, the prices of all three items were roughly equivalent.

The questions were also worded to avoid the participant considering ever having to make such a choice implausible (e.g., to avoid participants thinking something along the lines of “Oh. If its out of stock there, I could just buy it online”). Finally, to avoid participants catching onto the experimental manipulation, the scarcity information was presented slightly differently between questions. Values for the availability of the two readily available items in each question were set by a random number generator. The maximum and minimum values for the possible range of the random number generator were chosen to be plausible for

the availability of the product type in question, but readily available enough that the actual value is almost meaningless (other than that it conveys ready availability).

While manipulations such as the decoy factor or the varied presentation of scarcity information had the potential to confound the results, it has been suggested by the results of previous studies that if participants catch on too easily to a scarcity manipulation, they react by acting in the exact opposite manner of those participants who did not catch on (Worchel, et al., 1975)—an undesired effect that would be far more detrimental to the results.

The product choices were designed so that only one three-up choice was presented at a time, requiring the participant to press a button to proceed to the next choice. Out of the nine product types, six were positional and three were nonpositional. The degree to which positional concerns affect consumption for these product types were chosen to have been previously established or generally understood (see Alpizar, Carlsson, & Johansson-Stenman, 2005; Frank, 1985, 1999, 2007; Hirsch, 1976; Solnick & Hemenway, 1998, 2005; Solnick, Hong, & Hemenway, 2007).

The six positional product types used for the present experiment were in the product categories of clothing and fashion accessories (sneakers, sunglasses, and women's wallet/purse), education (college), and cars (budget cars and luxury cars). Explanations of the six questions about positional product types (six of the total nine questions) are as follows:

Sneakers: Participants were given the following scenario: *“Your old sneakers just fell apart and you need a new pair by tomorrow. You’ve narrowed the choice down to one style, but are trying to decide*

EXPERIMENT I

which color you want. The shopkeeper has put the three pairs on hold until you make your decision.” Then, those in the limited supply condition were told, “[*The manufacturer*] produced a limited number of this style in [*Grey and Brilliant Blue/Black and Caribbean Sea/Black Graphic and Grey*], and you are currently holding onto the last pair in your size left in town,” while those in the popularity condition were told, “*Although the shop had equal numbers of each color of this style in stock at the beginning of the season, the [Grey and Brilliant Blue/Black and Caribbean Sea/Black Graphic and Grey] pair has sold especially well, and you are currently holding onto the last pair in your size left in town.*” Following the scenario was the presentation of three sneakers, all of which were of the same model/style but were in different colors (see Figure A.1). All three pairs were told to be on reserve, rather than just the pair that was scarce, in order to avoid an endowment effect (see Thaler, 1980). The scarce item was the last one in stock, while the availability of the other two items was given by a randomly generated number between 30 and 60.⁵

Sunglasses: Participants in the limited supply condition were told, “*You just broke your only*

⁵ Random numbers were generated with the Random.org online random number generator.

pair of sunglasses, and are about to buy a new pair on a major eyewear retailer's online shop. You are deciding between the three pairs below, but while all three are shown on the website, one of the pairs is not purchasable online because the manufacturer only made enough to distribute to the retailer's physical stores." Participants in the popularity condition were told, *"You just broke your only pair of sunglasses, and are about to buy a new pair on a major eyewear retailer's online shop. You are deciding between the three pairs below, but while all three are shown on the website, one of the pairs is sold out."* Then, participants in both availability conditions were told, *"After calling the retailer's local store, you confirmed that they have all three pairs in stock. You decide that it makes sense anyways to go to the store in order to compare the three pairs in person. All three are equivalently-priced unisex models."* In the item descriptions, the item that is sold in stores only is identified. All three pairs of sunglasses were of the same brand and color, but in different models/styles.

Women's wallet: Participants were given the following scenario: *"You are splurging on a new wallet for yourself (or a significant other). You are deciding between three that are all exclusive to the store in New York you are purchasing this wallet from."* Participants in the limited supply condition were informed, *"Also, because of shipping*

EXPERIMENT I

problems from the manufacturer, the [Marc Jacobs/Balenciaga/Givenchy] wallet is the last of its kind in stock," while participants in the popularity condition were informed, *"Also, because of greater customer interest than anticipated by the manufacturer, the [Marc Jacobs/Balenciaga/Givenchy] wallet is the last of its kind in stock."* The three wallets were of the same color and size and of similar design, but were of different brands.

Budget car: All participants were given the following scenario: *"You are in the market for a moderately-priced but reliable new car, and after some research, you have narrowed your choice down to the following three comparably priced models. Which would you likely choose given the information provided to you by the dealership?"* Data about three American brands' competing models were given below the scenario.⁶ The product images given showed all three at the same angle in the same paint color. The scarcity information was not given in the scenario text for this question, but instead, in the item descriptions. This information was given by the following two values, which were specified for each of the three items: the *"number of units remaining at the dealership today"* and the *"number*

⁶ As with all three items for all the questions, all three models have roughly the same retail price (although the price information was not given to participants).

of units allocated to the local [Ford/Chevy/Saturn] dealership at the beginning of the year.” The “number of units remaining” was given to be 3 for the scarce item across all conditions, and a random number between 60 and 90 for each of the two readily available items. The “number of units allocated” was given to be a random number between 135 and 200 for all items in all conditions, except for the scarce item in the limited supply condition, where this value was given to be a random number between 20 and 35. Thus, for the limited supply condition, the scarce item was implied to be scarce because not that many units were allocated to the dealership originally. For the scarce item in the popular condition, the scarce model of car started with just as many units as the other items, but the fact that its almost sold out implies that it was a popular one.

Luxury car: The luxury car question used the same setup as the budget car question, except that the scenario text reads (also for all participants): *“After a friend wrecks the car you bought earlier, you decide to invest in a more reliable car. After some research, you have narrowed your choice down to the following three comparably priced luxury models. Which would you likely choose given the information provided to you by*

EXPERIMENT I

the dealership?" The three brands used were Lexus, Infiniti, and Acura.

College education: All participants were given data about three colleges (with the college names removed),⁷ preceded by the following scenario: *"One April, many years in the future, your son or daughter has just received his or her college acceptance letters and is trying to decide between four schools: Princeton and three other Northeastern universities. He or she is having trouble making this decision, so you suggest narrowing the choice down to two schools and then deciding. Together, you decide that Princeton should be one of these two schools, but your son or daughter is equally torn between the remaining three. You suggest that it would be interesting to pick the other school without looking at their names. Below is a brief overview of the remaining three schools. Pick the other school to narrow your son or daughter's choice down to, given that the cost of attendance and financial aid opportunities are roughly equivalent at all three universities."* Below the scenario text, information about three universities—Columbia, Duke,

⁷ This is the only question for which no image was given above the item description; a photo of a college campus could make it obvious which college it was. As students at Princeton—the pool from which participants for this study were drawn—are likely to know the actual admissions rates of other universities, the colleges could not be identified. This is also why it was made clear that Princeton was not one of the three in the scenario text; if the data of one of the colleges made it seem possible that it was Princeton, they might pick that one for affinity or loyalty reasons alone.

and Dartmouth—was given, with the name of each removed. For each of the three, the following data were given: size of the undergraduate student body, endowment, student-to-faculty ratio, setting (urban, suburban, or rural), and acceptance rate. The data pertaining to each of the three colleges stayed together, except for each college's acceptance rate; the three difference acceptance rates were randomly shuffled between the three college descriptions. The acceptance rates were 10.6% (Columbia's actual rate), 15.3% (Dartmouth), and 23.1% (Duke). The dependent variable—whether or not the scarce of the three items was chosen—was measured based on whether the college with the lowest acceptance rate was chosen. This is the only of the nine questions for which there was only one availability condition. Insofar as there are aspects of both limited supply and popularity indicated by a college's acceptance rate, each condition could not be measured separately. A spot at a college is not like the other products in this experiment; the limited supply of spaces available at a certain college is more set by an absolute constraint—it is not an easily adjustable decision by the supplier, unlike the decision of how many of an item to produce for a season. Thus, the acceptance rate for a given year is more indicative of a college's "popularity" that year, and thus, all responses to

EXPERIMENT I

the college question were treated as in the popularity condition for the experimental analysis.

The three nonpositional product types used for this experiment were vacation, laundry detergent, and fast food. Explanations of the three questions about nonpositional product types (three of the total nine questions) are as follows:

Vacation: Participants were given the following scenario: *“To alleviate his guilt for overworking you, your boss at work decides to give you a vacation starting next Monday. Furthermore, he has agreed to pay for the plane ticket and the resort, provided (a) you pick one of the three options his travel agent gives you and (b) you get super-saver tickets from his preferred airline (he wants the frequent flier miles).”* Participants in the limited supply condition were informed, *“Some of the super-saver tickets are almost sold out because this airline has had to cut costs by using smaller planes”* while participants in the popularity condition were informed, *“Due to the popularity of certain locations, super-saver tickets to some destinations are almost sold out.”* The scarce flight was given to have two available seats remaining.

Laundry detergent: Participants were given the following scenario: *“You are picking up supplies*

at CVS⁸ and are in need of some more laundry detergent.” Participants in the limited supply condition were informed, “Due to a limited supply of certain brands, CVS’s stock of some laundry detergents is very low, but you don’t have time to go to another store” while participants in the popularity condition were informed, “Due to the popularity of certain brands, CVS’s stock of some laundry detergents is very low, but you don’t have time to go to another store.” The scarce item was given to have two bottles left in stock.

Fast food: All participants were given the following scenario: “Midway through a road trip and quite hungry, you and your friends stop at a Burger King off the highway. Naturally, you would like a burger. If you had to make your choice between the three following burgers, which would you choose?” Information about three burgers was given, including the fact that two of the items are on the menu and one is not. For those participants in the limited supply condition, the item is simply told to be not on the menu, suggesting that it is not as readily available as the other two burgers.⁹ For those participants

⁸ The pharmacy closest to Princeton’s campus.

⁹ A specific reason was not given because it was hypothesized that pitching a burger as a “limited edition” would be pretty implausible. A limited time manipulation could have been used (a tactic that is commonly used at fast food restaurants), but it has been suggested that although quantity scarcity and time scarcity are often treated equivalently in the literature, the two types might not have the same effect on people

EXPERIMENT I

in the popularity question, the item not on the menu had the following note in its product description: *“Taken off menu temporarily; high demand is depleting this franchise’s supplies quicker than expected. Still available for order.”*

After the participants had completed all nine questions, they were prompted to write-in the reason they chose the item they did for each product type. This was done to confirm that, on the whole, participants did not catch onto the experimental manipulation, as well as to be able to potentially look at the disconnect between why participants made the choices they did and why they *thought* they made the choices they did.

Two potential product types for where are a large difference in pre-existing experiences or knowledge could have played a large confounding role were fast food and cars. Thus, participants were also asked to rank on a Likert-type scale (from 1 to 7) how often they feel they eat at fast food restaurants and how much they feel they know about cars.

Finally, after these control questions were asked, the participants answered the 31-question CNFU questionnaire, evaluating their agreement with the statements in *Table A.ii* on a Likert-type scale from 1 (strongly disagree) to 5 (strongly agree). All questions were presented on the same page, and participants were required to answer every question.

(Highhouse, Beadle, Gallo, & Miller, 1998), and all the other questions in this experiment involve limited quantity.

Results

Across all questions and conditions, the mean rate at which participants chose the scarce of the three items was 0.36—only slightly above the rate of one-third that would be expected had there been no scarcity manipulation at all. This difference was not significant, $\chi^2(1, N = 684) = 1.73, p > 0.5$, not lending support to Hypothesis 1—a surprising finding given the robustness of the scarcity effect in the literature. Overall, participants were more likely to choose the scarce item from the three possible items for any given question when the product type was positional ($M = 0.39$) than when it was nonpositional ($M = 0.28$), as well as more likely to choose the scarce item when it was scarce due to popularity ($M = 0.40$) than when it was scarce due to limited supply ($M = 0.30$).

In this section, the results to individual questions will first be examined, followed by the overall results, and finally, the correlation of these results to the Consumers' need for uniqueness (CNFU) questionnaire. The significance of the overall results are analyzed in two ways: by question response and by participant. The question response method, which took each participant's response to each of the nine questions (76 participants with nine responses each for a total of 684 responses), allows us to directly compare both by availability condition and by positionality whether or not a person chose the scarce item from the three possible items. However, a drawback with this method is that responses are not entirely independent; out of the 684 total responses, a single participant is responsible for nine of the responses—not one. Thus, the participant method uses the average rate at which a single participant chose the scarce item for all questions of a particular type (e.g., the rate at which they chose the scarce item for all questions about positional goods).

Results for Individual Questions

For analyzing results for a single question, a chi-square test for goodness-of-fit was performed to see to what degree the frequency of scarce choices deviated from the null distribution, and a chi-square test of independence to compare the frequency of scarce choices in the limited supply condition to the frequency of scarce choices in the popularity condition. Refer to *Table A.iii* for a summary of the question-by-question results and analyses.

As expected, for each of the three nonpositional product types the scarcity effect was not significant. If the scarcity manipulation were to have had no bearing on choices, the scarce item should have only been picked by one-third of the participants (with either one of the readily available items being picked by two-thirds). This result can be observed for each the vacation, fast food, and laundry detergent questions—each of which exhibits no significant difference in a participants' choices in regard to scarcity. Similarly, the availability condition had no effect either for these three product types.

The choice for college showed the hypothesized scarcity effect to the greatest degree of any question (see *Table A.iii*). Also, it was the only question for which over half of the participants picked the scarce item of the three more than half of the time (see *Figure A.5*). The responses given when participants were asked to try to recall the reasons they chose the items they did were notable for this question. While over half of the participants were drawn to choose the college with the lowest acceptance rate, only about 15% admitted that this was their primary reason for their choice. In comparison, nearly 40% said their choice was made because of the school's setting and about 25% said that it was

because of the student-to-faculty ratio. *Figure A.6* provides an illustration of the primary reasons given.¹⁰

The experimental manipulations did not have significant effects in the hypothesized direction for either the budget or the luxury car question, although there was a mildly significant effect in the *opposite* direction for budget cars (see *Table A.iii*). For this question, only about 20% of participants chose the scarce item—significantly less than the expected 33% if the scarcity manipulation were to have no effect. Luxury cars had an exact 33% scarce choice rate, suggesting that the scarcity manipulation had little to no effect for this question. While this does appear to be a notable difference in scarce choice rates between budget and luxury cars, this was not a significant difference as confirmed by a chi-square test for independence, $\chi^2(1, N = 76) = 2.11, p > 0.5$. Thus, Hypothesis 5 was not supported by these results.

Overall Results, by Question Response

Considering the responses of all participants to all nine questions together, a chi-square test of independence confirmed that the scarcity manipulation was very significant in regard to positionality, $\chi^2(1, N = 684) = 8.61, p = 0.003$, supporting Hypothesis 2, as well as in regard to the availability condition (limited supply or popularity), $\chi^2(1, N = 684) = 4.76, p = 0.029$, supporting Hypothesis 3. *Figures A.2* and *A.3* show the frequencies of choices for both factors.

Separating responses to questions by both positionality and the availability condition, a test for goodness-of-fit against the distribution expected if neither factor were to have an effect revealed that the fre-

¹⁰ The open-ended responses were categorized by interpreting and grouping the reasons given by the participants for their choices. For example a response of “I didn’t want to send them to a rural school” would be interpreted as “setting.” If a participant gave more than one reason for their choice, only the first reason listed was used.

EXPERIMENT I

quency of choices for those items that were both positional and scarce due to popularity ($M = 0.434$) was significantly more than predicted by the null distribution, $\chi^2(1, N = 256) = 11.7, p = 0.001$. This finding was not significant for items that were both positional and scarce due to limited supply ($M = 0.345$), $\chi^2(1, N = 200) = 0.13, p > 0.05$. Together, these previous two findings lend support to Hypothesis 4. Interestingly, the frequency of choices for products that were both nonpositional and scarce due to limited supply ($M = 0.267$) was noticeably lower than predicted by the null distribution, but this was not a significant finding, $\chi^2(1, N = 127) = 2.44, p = 0.119$.

In order to account for possible confounds, a binary logistic regression was also performed to confirm the above findings. Other than the experimental variables, the factors included in this analysis were age, gender, and the type of non-experimental decoy factor that was used (whether the three items in the question differed in brand or in style).¹¹ The results of the logistic regression are in *Table A.iv*. The analysis found none of the potential confounding factors to account significantly for the observed results, while positionality was found to be highly significant. However, the significance of the availability condition was found to be just above the $p = 0.05$ level.

Overall Results, by Participant

For analyzing the overall results by participant instead of by question response, the average rate at which a single participant chose

¹¹ The three items for some of the questions did not really fit into the categories of either varying in brand or varying in style. However, for the analysis, the colleges question was included in the “brands” category (as different colleges are somewhat like different brands), and the vacation question was included in the “styles” category (as the three resorts were in different locations, but were all owned by the same international resort chain).

the scarce item for all questions of a particular type was compared to the expected mean of the null distribution—one-third, the average rate of choice for the scarce item if the experimental manipulations were to have had no effect—with a one-sample *t*-test.¹² The results are displayed in *Table A.v*. These tests show that participants were significantly more likely to pick a scarce item when the product type was positional than when it was nonpositional, again supporting Hypothesis 2, and that participants were significantly more likely to pick a scarce item when it was scarce due to popularity than when it was scarce due to limited supply, again supporting Hypothesis 3.

Separating the results by both the positionality of the product type *and* availability condition revealed that participants were significantly more likely to choose a scarce item when it was both positional and scarce due to popularity, but not when it was both positional and scarce due to limited supply. This finding provides further support for Hypothesis 4.

As can be seen, both analyses of the overall results (by question response and by participant) largely agree with one another. It should be noted that although the effect of the availability condition was found to be significant with both the test of independence when looking at the data by response and the *t*-test when looking at the data by participant, the logistic regression of data response found the effect of the availability condition to be just above the significance level. This should be taken into consideration when interpreting the results, but the results of the other two tests plus the results of the multiple tests that separated results by both availability condition and positionality suggest that the availability condition did have a substantially noteworthy role.

¹² The central limit theorem is guaranteed by the sample size; the *t*-test is able to be used with a sample of this size because reported results are based upon the CLT.

Correlation of Results with CNFU Questionnaire

Participants' overall scarce choice rate showed no significant correlations with their total score on the CNFU questionnaire, nor any of the sub-scales of the CNFU (creative choice counterconformity, unpopular choice counterconformity, or avoidance of similarity). Comparing total CNFU scores to participant's scarce choice frequencies for individual questions, a barely significant association was found for the vacation question (see *Table A.iii*). However, the CNFU score for those who did not choose the scarce item ($M = 2.57$) was higher than for those who did ($M = 2.27$).

Discussion

As predicted, there was an interaction between the choice for a scarce item and positionality: the rate at which the scarce item of a positional product type was chosen was notably higher than the rate for a nonpositional product type, and a very significant scarcity effect was found for positional goods, but not for nonpositional goods, supporting the hypothesis that the presence of the scarcity effect is indeed dependent on a product type's positionality.

This finding might indicate that for a positional product type, a single item's unavailability could act as a motivating factor for the choice of that item over otherwise equivalent items of the same type. While the highest ranked positional goods are inherently defined as scarce, these results build on that notion by suggesting that solely making a product or good less available¹³ may markedly increase people's assessments of its rank relative to others products or goods of the same type.

¹³ Whether by increasing its popularity, limiting its supply, or both.

Recall Fred Hirsch's account of the nature of positional goods, which states¹⁴ that the highest ranked of a positional good is "scarce in some absolute or socially imposed sense" (1976, p. 27). The results of this experiment suggest—providing a confirmation of part of Hirsch's theory—that a socially-driven scarcity (i.e., popularity) may have more of an effect on positional consumption behavior than just a physical limit in supply. However, it should be noted that Verhallen and Robben (1994) found that when *both* a popularity and a limited supply explanation were given for an item's unavailability, the size of the scarcity effect was greater than for either explanation alone. It is likely that this result would have been seen in Experiment I as well, had participants been given a condition in which they received both explanations; a future experiment would be necessary to confirm this hypothesis.

The Reason for Unavailability

The effect of the reason given for the scarce item's unavailability was a notable factor as well, with those items that were scarce because they were popular being chosen significantly more than those that were scarce because their supplier or manufacturer limited the quantity available. Not only did a popularity explanation for scarcity elicit scarce choices at significantly higher rate than a limited supply explanation, but when participants' rates of scarce choices were separated by availability condition, a limited supply explanation was not shown to be significantly associated with a scarcity effect whereas a popularity explanation was. This finding contradicts the results of earlier studies that found both popularity and limited supply explanations to produce reliable scarcity effects (Verhallen, 1982; Verhallen & Robben, 1994).

¹⁴ This account is phrased here in terms of Robert Frank's definition of positional goods rather than Hirsch's.

EXPERIMENT I

The finding that a popularity explanation evoked the scarcity effect significantly more than did a limited supply explanation (regardless of positionality), considered along with the lack of correlation between a participant's propensity to make scarce choices and their score on the CNFU questionnaire, suggests that a need for uniqueness may not adequately account for the scarcity effect. If a need for uniqueness was driving the scarcity effect, a product's popularity would not be expected to motivate scarce choices more than limited supply, as was found in this experiment; choosing a popular item is not that unique at all. While there has been limited support for a correlation between the scarcity effect and a need for uniqueness (e.g., Fromkin, 1970) the small number of studies investigating this link has not provided a conclusive acceptance or rejection of this explanation (Lynn, 1991).¹⁵ The results of Experiment I do not provide support for the theory that someone's propensity to value something higher because it is scarce correlates with their need for uniqueness.

Positionality and Reason for Unavailability Combined

The separation of results by both positionality and the reason given for scarcity (see last four rows of *Table A.v* and *Figure A.4*) allow for a more specific conclusion to be drawn: if a product type was positional *and* one of the items was scarce because it was popular, then that scarce item was chosen reliably more often than equivalent, but readily available, alternatives. It may seem somewhat counterintuitive that

¹⁵ It might also be worth mentioning that Fromkin's (1970) study, which is often one of the few cited to support the link between a need for uniqueness and the scarcity effect, examined the choice and valuation of four different "psychedelic chambers." As psychedelic chambers are rarely encountered on a day-to-day basis (or in a lifetime), the way people choose their preferred psychedelic chamber might be different from the ways in which they make other types of choices, such as consumption choices.

popularity increased choice for scarce positional goods given that that being popular can indicate the opposite of exclusivity, and positional goods can often be exclusionary.¹⁶ However, when popularity is indicated in tandem with scarcity, it indicates that while many people may *want* something, many people probably do not actually *have* it. This would provide a logical account for why the observed results were found: high desirability among one's peers is indicative of that item's high relative rank compared to others of the same product type, with the fact that it is also scarce suggests providing confirmation. It is possible that that popularity might thus work strongest in tandem with scarcity for positional goods. If something is both popular and readily available, high relative rank would likely not be conveyed to nearly the same extent. A future study could investigate whether or not this is true by singling out specific items of a positional product type as popular, but making the popular items of equivalent availability to the less popular items.

Also notable was the finding that if a product type was positional *and* one of the items was scarce because of a limit in supply, then that scarce item was not chosen significantly more often than the readily available alternatives. Even though a popularity explanation was hypothesized to have *more* of an effect than a limited supply explanation, the limited supply condition was still expected to have some effect given the previous support for both explanations of market scarcity evoking an unavailability effect (Lynn, 1991; Verhallen, 1982; Verhallen & Robben, 1994). Perhaps this result was found because information about scarcity due to limited supply is not factored into positional concerns if information about one's peers is not known.

An unexpected finding was that the average choice rate of a scarce nonpositional item that was of limited supply was nearly significantly

¹⁶ For example, everyone cannot have the highest relative salary, everyone can not have the comparatively best car, etc.

EXPERIMENT I

lower (see *Figure A.4* and *Table A.v*) than expected, with only a quarter of participants choosing the scarce item in questions of this type. One possible explanation is that an expectation of price factored into this decision. If scarcity is used as a sort of heuristic for higher price/value, as has been suggested (Cialdini, 2001; Lynn, 1992; Suri, Kohli, & Monroe, 2007), then perhaps in a choice between three equivalent items of a nonpositional product type, an assumed higher price of the scarce item might motivate people to choose an item that they feel would be cheaper (one of the readily available items).

Overall Scarcity Effect

Another somewhat surprising result was that no overall scarcity effect was found. That is, there was no significant preference for the scarce item disregarding both the availability condition and positionality. While finding this overall effect was not at all a major goal of the present experiment, given the substantial attention given to the topic over the past few decades and the robustness of the findings, the fact that no overall scarcity effect was found was unexpected. However, this could possibly be explained by the fact that most studies on the scarcity effect have examined participant-generated valuations rather than choice. Alternatively, a study that uses stimuli that are not immediately relevant to the kinds of decisions its participants commonly face (e.g., psychedelic chambers) might cause them to rely on scarcity information more than when they are making a decision about stimuli that they have experience dealing with.

The University Question

The question for which the scarcity effect was observed to the highest degree was the university question: participants chose the college with the lowest acceptance rate with almost twice the frequency that would be expected if the scarcity (acceptance rate) information were to have no effect. This result is despite the fact that the highest value for acceptance rate, 23.1 percent, was only about twice that of the lowest acceptance rate, 10.6 percent, whereas for other questions, the readily available items were many, many times more available than the scarce item. This is surprising in that 23.1 percent is still considerably unavailable, and it is not that such an acceptance rate should give much of a cue (if any) about the relative quality of education as compared to schools with 15.3 and 10.6 percent rates—all three rates are indicative of a highly selective school, and moreover, each of the three had a very sizable endowment and a small student-to-faculty ratio, signaling that all three were academically strong.

The reasons given by participants for their choices were also quite interesting for this question: while there was a *very* strong tendency for participants to choose the college with the single lowest acceptance rate, the qualitative reasons they gave when accounting for their choices (assessed after the experimental questions were completed) did not reflect this tendency. It seems that participants may have consciously or unconsciously used one differentiating factor other than acceptance rate to validate their choice of the most selective school. To illustrate, even though seventy percent of participants listed the primary criterion for their college choice as either the student-to-faculty ratio, the setting, or the endowment size, only about ten percent chose the least selective of the three colleges.¹⁷

¹⁷ And of those few participants who chose the least selective college, one admitted to only choosing it because it made it more likely that, given the scenario, their son or

Indeed, *The New York Times* notes about Harvard, the most selective university in the Ivy League, “Colleges that emphasize teaching may well offer a better education than Harvard [b]ut it still exerts a pull on teenagers that is unmatched” (Leonhardt, 2006). The results of the present study suggest that phenomena such as this be in large part due to the compounded effect of the positional nature of college education and the unavailability of spots caused by its popularity.

The Car Questions

The results to the two questions about cars contrasted expectations: there was no scarcity effect on participants’ choice for either the budget or the luxury car, with there even being a mildly significant opposite effect on scarce choice rate for the budget car. Cars are often used as an example of a positional product type (Brekke, Howarth, & Nyborg, 2003; Frank, 1985, 1999, 2007), and it has been empirically shown that people consider cars to be positional (Carlsson, Johansson-Stenman, & Martinsson, 2007) even though some absolute aspects of consumption are nevertheless still important for cars (Alpizar, et al., 2005).

One possible explanation for why the same effect was not seen for cars as was seen for the other positional product types is that the non-experimental information presented in these two questions was far more technical than it was for other questions,¹⁸ and the technical information may have cued participants to think about the practical aspects of cars and neglect the positional aspects that might factor in more heavily to many people’s actual automobile purchase decisions.

daughter would opt for Princeton over that school.

¹⁸ The product descriptions for this question included detailed numerical information about the engine and the performance of the car.

Another possibility is that because the information about the level of availability was presented more subtly in these two questions than in any of the others, the scarcity information was not fully internalized.

Even though the hypotheses about the interactions between scarcity and positionality were not supported in results from the two car questions, the fact that the overall effects of positionality and the overall effects of the availability condition on scarce choice were observed in spite of the two car questions obtaining null results (or more specifically, obtaining results slightly in the opposite direction) illustrates the degree to which the hypothesized effects were observed for the other four questions about positional product types.

Limitations & Considerations

One drawback of the methodology was the limited randomization options possible with the online survey software. As such, the order in which the questions were displayed was the same for every participant (i.e., the first question was about laundry detergent, the second question was about sneakers, etc.). Thus, ordering effects might have played a confounding role. For instance, participants might have started paying less and less attention to each successive question, or, if they caught onto the experimental manipulation, later responses would follow a different pattern. However, the similar pattern of responses to the budget car and the luxury questions might suggest that many participants might have been answering in the same fashion throughout the experiment.

One piece of information that was not used in this study was price—doubtlessly a very important factor in people's actual consumption choices and decisions. The role of price with regard to scarcity may be notable: Lynn (1989) found that scarcity increased ratings of the

EXPERIMENT I

desirability of a product—a bottle of wine—but only when the price of the product was not given. Lynn's findings disagree with an earlier study (Szybillo, 1973, as cited in Lynn, 1989) that found the existence of the scarcity effect whether or not price information was given for a product (which in this case was women's fashion—specifically, pants suits).

Lynn (1989) attributes these contrasting results to uniqueness concerns being crucial for fashion in way that is not as applicable to wine. However, given the findings of Experiment I, positionality might be the mediating factor rather than a need for uniqueness. While the assessment of participants' need for uniqueness showed almost no correlation with a propensity to make any type of scarce choice, positionality did. Furthermore, the fact that Lynn (1989) used a product type that is relatively nonpositional¹⁹ while Szybillo used a product type that is very highly positional might account for part of the reason that these contrasting results were found. For positional goods, price could be treated as more arbitrary than for nonpositional goods; value is derived relative to what others have, rather than absolutely, and as such price information might be less informative for these types of products.

Another notion to consider is that there are large cross-cultural differences in what types goods invoke positional concerns; Solnick, Hong, and Hemenway (2007) found that there were significantly different patterns of what was considered positional between the United

¹⁹ Wine—the product used in the study by Lynn (1989)—is a tricky product to deem as either positional or nonpositional, as it can be treated differently in different situations. Much of the market for fancy wines is likely reflective of status consumption, but the participants in Lynn's study were undergraduates, and the phrasing of the question implied that a participant was only purchasing one bottle. Thus, as wine is probably not very positional to many college students (the practical aspects of wine are of greater importance), the item in this question most likely did not evoke strong positional concerns. In contrast, clothing has been shown to be among the most highly positional—if not the most positional—consumer products (Solnick & Hemenway, 2005).

States and China. For instance, Solnick et al. found that for American participants, their child's attractiveness had the *highest* level of positionality of those goods that were tested, whereas for Chinese participants, their child's attractiveness had the *second lowest* level of positionality. However, some goods were equivalently positional between the two cultures, such as income and one's own education (Solnick, et al.). As participants for Experiment I were taken from a pool that has sizable number of internationally-born people, such cross-cultural differences in what is considered positional might have had an unintended effect on the results.

Experiment II

Many goods that are labeled as positional goods can be considered as positional for some people and not others, or in some situations and not others. For instance, if a band needs to a car in order to transport concert gear to their shows, positional concerns are not going to weigh as heavily as they would for a doctor who drives to work everyday and parks in front of the hospital. The large cross-cultural differences in what is considered positional, as found by Solnick, Hong, and Hemenway (2007), suggest that positional concerns are indeed fickle beasts.

Why is this the case? From the results of Experiment I, it was theorized that that scarcity/unavailability alone could provoke positional concerns about something; in other words, positional concerns could have allowed the unavailability of the scarce item to indicate higher relative rank or value and thus motivate choice for that item. However, the product types in Experiment I were divided between things that are often considered quite positional versus things that are considered to be nonpositional. As such, Experiment II seeks to investigate whether or not the unavailability of something that is not generally viewed as either particularly positional *or* nonpositional could elicit the unavailability effect when given a situation designed to invoke positional concerns.

Hypothesis 6: When positional concerns are involved or invoked, limiting the availability of items will increase choice for that which is less available (i.e., scarce).

Methods & Procedure

This experiment was designed as a one-question prompt for which participants create a playlist of ten songs for a friend. While participants could use any songs they wanted to for their playlist, a list of songs was given to them (the “given list”) that they could use if they wanted. The experimental manipulation was the instruction corresponding to this list: half of the participants could use as many songs as desired from this provided list (the unlimited availability condition), while the other half could use at most two songs from this list (the limited availability condition). The dependent variable was whether or not a subject used *at least one song* from this list (with two levels being recorded, *yes* or *no*).

Participants

The participants for this experiment were 121 undergraduate students at Princeton University. Participants were recruited in two “waves” with an email message sent to a random sample of undergraduate students, asking them to participate in a survey for a senior thesis examining music and consumer attitudes.¹ For the first wave, the message

¹ The recruitment of additional participants was not originally intended, but was necessary after a fluke in the random assignment of experimental conditions left one of the two experimental conditions very unrepresented.

was sent to 300 students, and for the second wave, six days after the first, the message was sent to 285 different students. Any mention of the words *psychology* or *experiment* was withheld, both in the recruiting email and in the instructions throughout the experiment.

Those in the first wave of participants ($N = 76$) were told in the recruiting email that they would be compensated \$8 for completing this survey as well as have a chance to win a cash prize of \$100. Due to budgetary restraints, the first wave of the experiment had to close after 76 completed responses were received. This group of participants had a mean age of 20.2 years, and 55% were female. Those in the second wave of participants ($N = 45$) were told in the recruiting email the same information as the first group, but without the mention of an \$8 compensation (they were still informed about the \$100 prize). This group of participants had a mean age of 20.1 years, and 49% were female.

Together, all the participants for this experiment ($N = 121$) had a mean age of 20.2 years and 53% were female.

Stimuli & Procedure

For the first wave of participants, this experiment and was carried out in the same session as Experiment I and the administration of the Consumers-Need-For-Uniqueness (CNFU) Questionnaire, both of which followed this experiment chronologically. For the second wave of participants, this experiment was preceded by a repetition of the questions from Experiment I. So that participants would not try to read into how this experiment was associated to Experiment I, they were told before starting the experiment that the different parts of the survey were unrelated to each other and the break between the sections was made obvious. This experiment was also performed using the Key Survey online survey software.

EXPERIMENT II

All participants were given a scenario prompting them make a track list of ten songs for a close friend who is going to be isolated in Antarctica for a year and would only have a disc of these ten songs to listen to for the entire year. They were told that they could use *any* songs of their choosing in making this list and were free to use the internet, their music library, iPod, or any other source to aid them.

A list of twelve popular songs was presented alongside the question/scenario text. Participants were informed that this list was given to them to help them out in making their own playlist and they could feel free to use these songs in their playlists if desired. The twelve songs on this list were chosen to be well known and widely-adored songs.² The songs predominately fall into the category of “classic rock,” as such songs are likely to be known by the student body and have already stood the test of time (see *Table B.i* for the list of the twelve songs). The same list was presented to all participants, a fact that participants were explicitly informed of in the question text.

To test the hypothesis, participants were randomly assigned to one of two conditions: either a limited availability condition or an unlimited availability condition. There was an equal chance of getting either condition. For participants in the limited condition, an additional instruction informed those participants that they could choose *at most* two songs from the given list of twelve songs. Participants in the unlimited condition were provided no extra instruction, allowing them the freedom to choose as many songs as they would like from the given list of twelve songs in making their playlist. Besides the information about the limit of two songs, all text was identical between participants assigned to either condition. Refer to *Table B.i* for the complete

² Roughly half of the songs on this list were taken from Rolling Stone’s (very subjective) list, “The 500 Greatest Songs of All Time” (Crandall, et al., 2004).

question text for both conditions. The dependent variable was whether or not a participant used any (one or more) songs from the list.

Finally, all participants were informed that at the conclusion of this study, the playlists created would be sent out to a random group of participants who would vote on their favorite³—with the winner getting a cash prize of \$100. This instruction was given for two reasons: (a) so that participants had motivation to put thought into the task knowing that their peers would see the playlists they create, and (b), so there was incentive to be creative and original.

The scenario was written so that there were equal incentives and disincentives to use a song from the given list for participants in either condition. Incentives might include being able to finish the experiment quicker or liking the songs on the list. The disincentives, however, are more interesting. Such disincentives to use a song from the given list would likely include the desire to *appear* original, and—perhaps more significantly⁴—the desire to *be* original: if one chose too many songs from the given list, that playlist would be much more likely to be similar to others' lists and thereby judged as less interesting. Thus, such a playlist would be much less likely to win a vote (and consequently, \$100).

³ They were also informed that they could not vote for their own playlist.

⁴ It would be hard to judge the role of a desire to appear original would play; participants were informed about the confidentiality of their responses in a consent form they had to agree to before starting the experiment. While many of them probably did not read this, at least some doubtlessly did. Thus, for those who realized that their names could not be attached to their playlist, concerns about appearing original would be affected.

Results

In order to see whether Hypothesis 6 was supported, a chi-square test of independence was performed, showing a significant difference in whether or not a participant chose a song from the given list by availability condition, $\chi^2(1, N = 121) = 4.97, p = 0.026$. Participants who were limited to only using two songs from the given list (should they want to) were much more likely to choose *any* songs from this list than were those who could use as many as they wanted: 50% of those in the limited condition chose a song from the list, as opposed to only 30% of those in the unlimited condition. Refer to *Figure B.1* for a chart of choice frequencies by condition.

Tests for possible confounds suggest that it is highly unlikely that gender, $\chi^2(1, N = 119) = 0.11, p > 0.05$, or age, $t(116) = -0.12, p > 0.05$, had much of an effect on the results. A major concern with the methodology of this experiment is the effect of the participants being recruited at different times, but a comparison of the responses of those in the first wave to those in the second suggests that that this splitting of the experiment did not affect the results significantly, $\chi^2(1, N = 121) = 0.409, p > 0.05$.

To take all these factors into consideration in measuring their effects on the dependent variable—whether or not a participant chose a song from the given list—a logistic regression was performed in order to account for the effect of each the availability condition (the independent variable), age, gender, and which wave the participant was in. As expected, the only significant predictor of the dependent variable was the availability condition, while each of the potential confounds were not. Considering all these factors, the odds of someone in the limited availability condition choosing a song from the given list was nearly fifty percent more than someone in the unlimited availability condition, $B = -0.86, p = 0.029$.

As the present experiment was performed along with Experiment I for the first wave of 76 participants, scores from the CNFU questionnaire were also obtained for these participants. No significant correlations were found between these participants' CNFU scores and their propensity to chose a song from the provided list.

Discussion

This experiment was designed to evoke positional concerns by creating a scenario in which participants were cognizant that they were in essence being ranked according to their music taste through a vote by their peers. The potential of both social affirmation and a monetary reward likely caused participants to care how their musical taste compared to one another. Only three of the total 121 participants picked five or more songs from the given list, indicating both that people (a) were taking the task seriously and (b) probably wanted to win.

If this was the case, participants were in essence treating their music and their own musical taste as positional: they would be concerned—on either a conscious or a subconscious level—about how their relative rank compares to others' rank in the local environment. While monetary rewards are definitely different than social rewards (both of which may have been in play in this experiment), positional consumption is indeed concerned with both. For instance, for monetary reasons, positional concerns could affect a person's choice of university if that person is focused primarily on their future career and salary prospects, while for social reasons, positional concerns could cause a different person to choose to go to an easier university over an

EXPERIMENT II

academically stronger one that they were also accepted to if he or she would rather be at the top of their class rather than in the middle.⁵

So, accepting that the scenario successfully brought about or heightened positional concerns in participants, the main finding of this experiment mirrors that of Experiment I: for something that is positional, scarcity or unavailability can drastically alter the ways in which we make choices. When someone was limited in the number of songs from the given list they could use, they were much more likely to use at least one song from among the provided ones than were those who could use as many of the provided songs as desired.⁶

From the results, it can be concluded that for a situation in which positional concerns weigh heavily, when a limit is imposed on choice people value those items that are of limited availability more than when no limit is imposed on a choice for the exact same items.

Limitations

One major limitation of this experiment was the lack of randomization options possible with the online survey software. Ideally, as this experiment was administered at the same time as Experiment I, the order in which participants were presented with each experiment would be randomly determined. Perhaps the largest methodological concern with this experiment—a concern that was not the case for Experiment I—was the fact that participants were recruited in two different waves, each of which got a slightly different promise of compensation. However, the analysis in the previous section controlling for

⁵ Just as “a frog might choose to live in a pond populated by frogs smaller than himself” (Frank, 1985, p. 9).

⁶ Participants in the unlimited condition could potentially take *all* of their songs from the provided list, something only one participant ended up doing.

this potential confound indicates that this factor had little effect on the results. This is likely because the potential of winning \$100 described in the question for Experiment II made the \$8 that participants in the first wave were promised seem relatively insignificant.

A potential future experiment could use both the version of the question from this experiment as well as a nonpositional version of this question to be able to better confirm the positional nature of the scenario in Experiment II. This nonpositional version could use the same question text, although leaving out any mention of the peer sharing of playlists and the cash prize. This manipulation of the original question would be reflective of nonpositional desire in that relative concerns would be far more unlikely to factor into decision processes when a participant would have little reason to care about how his or her playlist stacks up against others' playlists (or to even consider the existence of other participants). As such, results for this nonpositional question would likely show that people in both the limited and unlimited conditions would pick songs from the list at a far higher rate than those receiving the positional question. While imposing a limit on choice might have some positive scarcity effect, it would probably not be very notable.

General Discussion

This paper presents two experiments that found unavailability to have a sizable effect on the ways in which people make choices for otherwise equivalent items. Whereas Experiment I investigated goods for which positional concerns are already largely engrained in our society, Experiment II showed that for something for which positional concerns are not normally a notable factor, creating a situation in which people are motivated to care about relative position can allow unavailability to influence desire or choice.

Theoretical & Practical Implications

The results of the experiments presented in this paper suggest that scarcity, positionality, and desire might be related—assuming desire can be understood as what primarily underlies how we make choices or decisions. It was found that between items that are all equally positional, the introduction of unavailability can increase desire for that which is scarce. Some have incorrectly interpreted positional goods to be defined as those that are desirable just because they are scarce.¹

¹ For instance, one claim that has been made in a summary of Hirsch's theory is that positional goods are defined as "ones that are desirable because they are scarce" (Ackerman, 1997, p. 193). This is an assertion that Hirsch (1976) directly contradicts, stating that this would only apply to a subset of positional goods (see pp. 20-22, 28-29).

However, the findings of Experiments I and II do not suggest that unavailability is making an item more positional; rather it may increase that item's relative rank amongst the pool of other items of the same type, or at least serve as a signal of higher relative rank.

These findings elaborate on Hirsch's (1976) theory insofar as they show how scarcity can directly increase desire for positional goods without it being a "pure" social scarcity: the unavailability of an item was found to increase people's choice, valuation, or desire for it, but it is highly doubtful that scarcity was the *only* reason people desired or chose an item (as would be true of a "pure" social scarcity). For instance, someone who has a high propensity to make scarce choices would still probably not choose to buy an unavailable sneaker if it was in a color he or she is not very fond of. These experiments also possibly extend the scope of commodity theory (Brock, 1968) in that some of the items used, such as education and music taste, are outside what is considered a "commodity." Under Brock's definition, commodities have to be transferable from one person to another, something that is not necessarily true for some positional goods. For instance, being awarded a spot in a prestigious university is something that is not transferrable from one to another.

Hirsch claims of "pure" social scarcity, "Such social limits exist in the sense that an increase in physical availability of these goods ... changes their characteristics in such a way that a given amount of use yields less satisfaction ... This social limitation may be derived, most directly and most familiarly from psychological motives of various kinds, notably envy, emulation, or pride. Satisfaction is derived from relative position alone, of being in front, or from others being behind" (p. 20). However, Hirsch notes that most often, social scarcity is not a "pure social scarcity in the sense that satisfaction is derived from the scarcity itself. But social scarcity may also be a by-product, or incidental. A social limitation may be derived from influences on individual satisfaction that are independent of the satisfaction or position enjoyed by others and that are yet influenced by consumption or activity of others" (pp. 21-22).

Nonfunctional Demand

Before Hirsch's theory of positional goods was formulated, Harvey Leibenstein (1950) theorized the existence of three factors influencing "nonfunctional" consumer demands, or "that portion of the demand for a consumers' good which is due to factors other than the qualities inherent in the commodity" (p. 189). From this definition, nonfunctional demand is a concept that appears to be tightly tied to the concept of positional goods in that the relative aspects of an item—the focus of the discussion about positionality—are not reflective of the intrinsic properties of that item (rather, the relative aspects of an item tell you more about the *other* items in the same category of good than the item in question). The three factors Leibenstein investigates are bandwagon, snob, and Veblen effects: bandwagon effects account for how one's demand for a good can *increase* as a result of other people consuming that good, snob effects account for how demand for a good can *decrease* as a result of other people consuming that good, and Veblen effects account for how demand for a good can increase as a result of that good's price increasing.

It seems intuitive that snob effects would be observable for many positional goods. After all, it is inherent to Hirsch's account of the nature of social scarcity that when scarcity causes demand, "social limits exist in the sense that an increase in physical availability of these goods... changes their characteristics in such a way that a given amount of use yields less satisfaction" (1976, p. 20). Thus, following this definition, a decrease in demand as others' consumption increases—the snob effect—would definitely be expected, or even assumed, in demand for those positional goods for which satisfaction or value is increased as a result of unavailability. However, the finding that an item's popularity motivated choice for that item when the product type was positional, but not when the product type was nonpositional, could be interpret-

ed as the opposite result of what would happen if the snob effect were to be observable in positional consumption.² One objection could be that even though the item was popular, it was still nonetheless scarce. While this is definitely a valid objection, we would have then expected a limit in supply to motivate choice for scarce positional items to a greater degree than popularity. This post-hoc relation to the snob effect provides support for the suggestion that positional consumption is not driven by motivations such as a wish to outdo others (Frank, 2007).

Of Bags and Positional Arms Races...

To continue along this path of perhaps over-stretching the implications allowed by the experiments presented in this paper, the effect that unavailability can have on people's decisions and desires offers one likely explanation for the psychological motivations underlying positional consumption and the "positional arms races" that ensue. Frank (2007) describes positional arms races as how people try to compensate for their positional consumption by drawing resources from their nonpositional consumption—an action that results in a disproportionately small gain in satisfaction. In other words, if everyone wants to be relatively better off, and everyone acts in such a way as to make themselves relatively better off, then everyone will spend time, effort, and/or money to achieve this. Yet, if *everyone* does this to the same extent, absolutely no one will be better off at all.

How are we drawn into traps such as positional arms races? It could be either be that we are being "duped" by advertisers, as Galbraith (1958) claims, or that what is "smart for one is dumb for all" as

² Also, it could be viewed as the bandwagon effect, which is the opposite of the snob effect.

Frank claims (2007, pp. 91-92). Either way, people's susceptibility to the effects of unavailability can be seen in the actions of companies that stand to benefit most from positional arms races. Once a product type is established as positional, corporations can then in essence "manufacture" a scarcity—insofar as they have no other reason to limit the availability of a product besides for creating nonfunctional demand—or create a perception that something is scarce.

For instance, consider the example of the fashion industry. The dynamic of this industry has changed considerably over the past few decades, with major conglomerates such as Moët Hennessy · Louis Vuitton (LVMH) now controlling a majority of the fashion market, as opposed to the small family-run houses that used to run their own namesake brands. While, obviously, profit was always a primary goal of the fashion industry, it has become pretty much the *only* goal of companies such as LVMH. As a result, quality suffers: many such brands have switched to cheaper fabrics and have moved manufacturing from the workshops of skilled artisans to machine-driven assembly lines, while, at the same time, raising prices for their products (Thomas, 2007).³ Meanwhile, paradoxically, consumers are buying goods such as clothing or cars in higher numbers and at higher prices than ever before (Frank, 1999; Silverstein & Fiske, 2003).

This success of some companies such as these is doubtlessly due in part to the fact that they have taken advantage of the positional nature of their products by manipulating perceptions of unavailability. Consider the case of Louis Vuitton, a brand that produces a line of very expensive, yet ubiquitous, canvas bags—all of which are emblazoned with an identical brown monogram pattern (for an example, refer to

³ Some major companies even go to lengths such as shaving half an inch off of all their sleeves in order to save on material costs, claiming in their defense, "When you get to a thousand [sleeves], you see the savings" (Thomas, 2007, p. 201).

Figure C.1). An informal survey confirmed that many do not find these bags to be uncommonly attractive, and to many, they are downright hideous. It also cannot be said that these bags better made than their competitors: LVMH is notorious for sacrificing quality in order to cut costs (Thomas, 2007), and furthermore, these bags are made from canvas (a comparatively inexpensive material), yet sold at a price point at which many competing items are made from high-quality leather. Thus, given these bags' questionable attractiveness and their popularity despite the fact that they all share an identical design, it would appear, unsurprisingly, that neither aesthetics nor a desire to appear unique factor heavily into people's consumption of such products; this suggests the large degree to which positional concerns motivate such purchases. This is by no means meant to imply that such purchases are conscious efforts to gain rank at the expense others' interests. Rather, it just means that one's consumption can be largely affected by others' consumption for goods such as these.

Perhaps part of how LVMH gained the level of success they did⁴ was by manipulating the availability of their products and/or creating the perception that these products are scarce—even though anyone who wants one (and is willing to pay) can have one. Such bags are not absolutely scarce, as Hirsch's definition would require of positional goods. Indeed, some forty percent of people in Japan own at least one Louis Vuitton product (Thomas, 2007). Yet given the discussion above, it is highly likely that positional concerns explain *why* people purchase these bags. Assuming this to be true, the results of the experiments presented in this paper might provide insight into why Vuitton's strategies worked so well. Unlike most luxury brands, their products are only

⁴ And there is little doubt that they are *very* successful; the Louis Vuitton brand within LVMH is thought by analysts to have a profit margin of about 80 percent, a figure that other successful competitors such as Gucci barely have half of (Thomas, 2007).

sold in their own retail stores, of which there are only a couple hundred worldwide,⁵ and they are never discounted. Yet, taking a stroll pretty much anywhere in Manhattan would tell you that these bags are both (a) not actually scarce (in any sense of the word) and (b) are in fact, ridiculously popular. Perhaps it is LVMH's taking advantage of their product's positional nature that accounts for their success. Such strategies are in essence creating the perception that these bags are unavailable: it makes it seem like fewer are available if only one store per city carries these products, and they are hard to get compared to those of equal price or quality that you could get at a local department store.⁶

In addition, this theory can also be tied to Frank and Cook's (1995) related discussion of "winner-take-all markets"—markets for which there are large gaps in success between things that are nearly equivalent; in these markets, a minor difference between products can have huge impacts on whether or not it succeeds or fails, including differences such as popularity. In regard to markets for positional goods, Experiments I and II suggest that such small, yet crucial, differences might include how unavailable something is or is perceived to be—especially if popularity is involved as well.

It is not necessarily that companies such as LVMH deserve the blame for fueling positional arms races—these would likely occur to some extent whether or not such tactics were employed and regard-

⁵ Unlike most luxury brands, which are sold in many thousands of department stores worldwide. Furthermore, there is only one online store permitted to sell Louis Vuitton products, and it is owned by LVMH.

⁶ An simultaneously amusing and illustrative anecdote from the UK's *The Independent* (Lichfield, 2001): Paris' Louis Vuitton store on the Champs Elysées had to start imposing quotas on the purchase of bags by Asian tourists, who were trying to buy ten or more bags at once. After the (unofficial) quota was imposed, these tourists started paying Parisian pedestrians some ten percent of the retail price to go inside and buy the bags for them. Interestingly, these tourists were only interested in the bags from the more famous Champs Elysées store, and not the exact same bags from Paris' two other Louis Vuitton stores.

less of the companies involved. Rather, the above discussion is merely meant to provide an explanation for why people behave as they do when positional concerns are involved.

... and Troubling Times

Finally, it is a widely echoed claim that the markets for luxuries are hit hardest in economic crises.⁷ However, continuing with the example from the previous section, consider the fact that LVMH's revenue in the fashion sector actually *grew* ten percent in 2008 with increases seen both in the United States and worldwide, in addition to a rise in profits ("2008 Full Year Results," 2009)—despite nationally and globally difficult financial times. Such patterns were not limited to consumer goods that are positional; for instance, there were across-the-board spikes in college applications to the only the country's most selective schools for the incoming class of 2013, while changes in application numbers varied drastically for other schools (Steinberg & Lewin, 2009). While countless articles have been published since the fall of 2008 citing of examples of people cutting back on all kinds of spending,⁸ it would

⁷ It should be noted that while there is a large amount of overlap between what can be considered a luxury good and what can be considered a positional good, the two are not equivalent.

⁸ To illustrate: a search on April 12, 2009 for stories on *The New York Times*' website that (a) were published only within the last month and (b) contained the words "cutting back," found well over twenty unique articles where the main focus was a way (or ways) in which individuals have been restricting their spending (this figure did not include any of the many stories about the ways in which organizations or companies have also been "cutting back"). The articles found in this investigation described how people are cutting back on their spending for healthcare, water, romance novels, extravagant pet care, movies, travel, housecleaning, books, wine, hedge trimming, restaurants, and—disturbingly—lifesaving diabetic care. Take further note of the fact that none of these cost-saving measures are for things that would be considered particularly positional.

appear from these examples that positional consumption might be somehow more resilient.

The claim could be made, for instance, that an increase in demand for college was just because people were scared about entering the job market, but then why would increases only be reliably predictable for the most selective schools? Alternatively, it could be because such fears of a recession have invoked a greater concern for one's own relative rank in certain domains, such as education (and apparently, handbags also), allowing unavailability and scarcity to subtly, yet markedly, influence the ways in which we make decisions. This is most likely not a good thing; Louis Vuitton's sales should have risen while the sales of necessary diabetic medications have markedly dropped off as a result of the current recession ("Diabetics skimp on lifesaving care in recession," 2009). However, perhaps just being aware of the effects unavailability and positional concerns can have would be enough to at least diminish their combined influence.

Limitations

Among the largest methodological concerns for both experiments include the fact that a convenience sample was used, possible cross-cultural differences, a limited sample size, and ordering effects, as expanded upon in greater detail the preceding experimental chapters.

Popularity was not explicitly investigated by Experiment II as it was in Experiment I. However, the songs from the given list in Experiment II were all very popular and well-known songs—many of which are among the best-selling songs of all time. So while popularity was not manipulated, the items (songs) people were choosing between can all be taken to place highly on a scale of popularity.

Finally, a potential concern in regard to the Consumers' Need For Uniqueness (CNFU) questionnaire (which was investigated in both experiments) will be addressed here. The CNFU—which followed the administration of questions for both Experiment I and the first wave of Experiment II—might have been most influenced by ordering effects. There is a chance that the not-so-subtly worded questions⁹ of the CNFU questionnaire made the motives behind the questions for Experiments I and II readily apparent, which could cause participants to alter what their responses would be otherwise to the CNFU questionnaire as a form of self-defense. If this happened, participants who chose the most scarce items in Experiment I might have been the most likely to cover themselves by altering their responses to the CNFU questions.

However, if the order had been reversed and the CNFU questionnaire had come *before* the experimental questions, the direct (blunt) question approach employed by the CNFU questionnaire would have almost definitely revealed the motives of Experiments I and II. Thus, the problem discussed above with obtaining within-subject scores on the CNFU questionnaire is largely unavoidable for this type of experiment. Instead, this issue should just be a consideration when interpreting the results of the correlation between the CNFU and the results of the experiments.

Alternatively, and perhaps more likely, an individual's need for uniqueness might just not be a very good explanation for why scarcity and unavailability affect choices for positional goods. In fact, in these experiments, the only good for which a need for uniqueness had a even a marginally significant correlation with scarce choice was for vacation, something that is towards the least positional end of the scale.

⁹ An example of a question, showing the direct fashion in which answers are obtained with the CNFU: "When products or brands I like become extremely popular, I lose interest in them" (Tian, et al., 2001, p. 56).

Concluding Remarks

This paper brought together the concepts of positional concerns and unavailability, two notions that are together theoretically related, yet empirically untested. This paper intended to explore the extent and nature of the relationship between these two concepts.

The first experiment, which examined choices between equivalent items, found that unavailability motivated choice for positional goods but not for nonpositional goods, and did so to a greater degree when popularity caused scarcity rather than when a limit in supply caused scarcity. Furthermore, when an item was both popular *and* positional, the effect that unavailability had was compounded.

In the second experiment, positional concerns were created in a domain in which they normally do not exist, showing that such concerns can enter into myriad choice and desire processes, even where entirely unexpected. Moreover, the present investigation revealed that when this happens, factors such as unavailability—while seemingly trivial—can invoke large biases in such processes.

Together, the experiments and discussions presented here provide evidence that for something that is positional, scarcity or unavailability can fundamentally alter the ways in which we make choices, potentially allowing a small glimpse into the motivations underlying our desires.

Appendices

APPENDICES

Appendix A: *Figures & Tables for Experiment I*

Table A.i: Question text by availability condition

#	product type / positionality	availability condition	question/scenario text*
1	laundry detergent nonpositional	limited supply	"You are picking up supplies at CVS and are in need of some more laundry detergent. Due to a limited supply of certain brands, CVS's stock of some laundry detergents is very low, but you don't have time to go to another store."
		popularity	"You are picking up supplies at CVS and are in need of some more laundry detergent. Due to the popularity of certain brands, CVS's stock of some laundry detergents is very low, but you don't have time to go to another store."
2	sneakers positional	limited supply	"Your old sneakers just fell apart and you need a new pair by tomorrow. You've narrowed the choice down to one style, but are trying to decide which color you want. The shopkeeper has put the three pairs on hold until you make your decision. Asics produced a limited number of this style in [color of scarce item], and you are currently holding onto the last pair in your size left in town."
		popularity	"Your old sneakers just fell apart and you need a new pair by tomorrow. You've narrowed the choice down to one style, but are trying to decide which color you want. The shopkeeper has put the three pairs on hold until you make your decision. Although the shop had equal numbers of each color of this style in stock at the beginning of the season, the [color of scarce item] pair has sold especially well, and you are currently holding onto the last pair in your size left in town."
3	college positional	popularity the only condition for this question	"One April, many years in the future, your son or daughter has just received his or her college acceptance letters and is trying to decide between four schools: Princeton and three other Northeastern universities. He or she is having trouble making this decision, so you suggest narrowing the choice down to two schools and then deciding. Together, you decide that Princeton should be one of these two schools, but your son or daughter is equally torn between the remaining three. You suggest that it would be interesting to pick the other school without looking at their names. Below is a brief overview of the remaining three schools. Pick the other school to narrow your son or daughter's choice down to, given that the cost of attendance and financial aid opportunities are roughly equivalent at all three universities."
4	vacation nonpositional	limited supply	"To alleviate his guilt for overworking you, your boss at work decides to give you a vacation starting next Monday. Furthermore, he has agreed to pay for the plane ticket and the resort, provided (a) you pick one of the three options his travel agent gives you and (b) you get super-saver tickets from his preferred airline (he wants the frequent flier miles). Some of the super-saver tickets are almost sold out because this airline has had to cut costs by using smaller planes. Below is information about the three destinations/resorts and flight availability."
		popularity	"To alleviate his guilt for overworking you, your boss at work decides to give you a vacation starting next Monday. Furthermore, he has agreed to pay for the plane ticket and the resort, provided (a) you pick one of the three options his travel agent gives you and (b) you get super-saver tickets from his preferred airline (he wants the frequent flier miles). Due to the popularity of certain locations, super-saver tickets to some destinations are almost sold out. Below is information about the three destinations/resorts and flight availability."

APPENDICES

Table A.i (continued): Question text by availability condition

#	product type / positionality	availability condition	question/scenario text*
5	budget car positional	both information about level of scarcity given only in item descriptions	"You are in the market for a moderately-priced but reliable new car, and after some research, you have narrowed your choice down to the following three comparably priced models. Which would you likely choose given the information provided to you by the dealership?"
6	woman's wallet/ purse positional	limited supply	"You are splurging on a new wallet for yourself (or a significant other). You are deciding between three that are all exclusive to the store in New York you are purchasing this wallet from. Also, because of shipping problems from the manufacturer, the [brand of scarce item] wallet is the last of its kind in stock."
		popularity	"You are splurging on a new wallet for yourself (or a significant other). You are deciding between three that are all exclusive to the store in New York you are purchasing this wallet from. Also, because of greater customer interest than anticipated by the manufacturer, the [brand of scarce item] wallet is the last of its kind in stock."
7	fast-food burger nonpositional	both information about level of scarcity given only in item descriptions	"Midway through a road trip and quite hungry, you and your friends stop at a Burger King off the highway. Naturally, you would like a burger. If you had to make your choice between the three following burgers, which would you choose?"
8	sunglasses positional	limited supply	"You just broke your only pair of sunglasses, and are about to buy a new pair on a major eyewear retailer's online shop. You are deciding between the three pairs below, but while all three are shown on the website, one of the pairs is not purchasable online because the manufacturer only made enough to distribute to the retailer's physical stores. You decide that it makes sense anyways to go to the store in order to compare the three pairs in person. All three are equivalently-priced unisex models. Which pair would you choose to purchase?"
		popularity	"You just broke your only pair of sunglasses, and are about to buy a new pair on a major eyewear retailer's online shop. You are deciding between the three pairs below, but while all three are shown on the website, one of the pairs is sold out. After calling the retailer's local store, you confirmed that they have all three pairs in stock. You decide that it makes sense anyways to go to the store in order to compare the three pairs in person. All three are equivalently-priced unisex models. Which pair would you choose to purchase?"
9	luxury car positional	both information about level of scarcity given only in item descriptions	Please read the following, then select below which vehicle you would most likely purchase given the scenario: After a friend wrecks the car you bought earlier, you decide to invest in a more reliable car. After some research, you have narrowed your choice down to the following three comparably priced luxury models. Which would you likely choose given the information provided to you by the dealership?

* each question is preceded by the prompt: "Please read the following, then select below which [product/college/vehicle] you would most likely purchase given the scenario," and is followed by images and product descriptions for each of the three items, shown side by side (except for the college question, for which there is no image)

POSITIONAL CONCERNS & UNAVAILABILITY

Table A.ii: Questions comprising the Consumers' Need For Uniqueness scale, answered on a 5-point Likert-type scale

number*	question text from Tian Bearden & Hunter (2001, pp. 55-56)
1	"I collect unusual products as a way of telling people I'm different"
2	"I have sometimes purchased unusual products or brands as a way to create a more distinctive personal image"
3	"I often look for one-of-a-kind products or brands so that I create a style that is all my own"
4	"Often when buying merchandise, an important goal is to find something that communicates my uniqueness"
5	"I often combine possessions in such a way that I create a personal image for myself that can't be duplicated"
6	"I often try to find a more interesting version of run-of-the-mill products because I enjoy being original"
7	"I actively seek to develop my personal uniqueness by buying special products or brands"
8	"Having an eye for products that are interesting and unusual assists me in establishing a distinctive image"
9	"The products and brands that I like best are the ones that express my individuality"
10	"I often think of the things I buy and do in terms of how I can use them to shape a more unusual personal image"
11	"I'm often on the lookout for new products or brands that will add to my personal uniqueness"
12	"When dressing, I have sometimes dared to be different in ways that others are likely to disapprove"
13	"As far as I'm concerned, when it comes to the products I buy and the situations in which I use them, customs and rules are made to be broken"
14	"I often dress unconventionally even when it's likely to offend others"
15	"I rarely act in agreement with what others think are the right things to buy"
16	"Concern for being out of place doesn't prevent me from wearing what I want to wear"
17	"When it comes to the products I buy and the situations in which I use them, I have often broken customs and rules"
18	"I have often violated the understood rules of my social group regarding what to buy or own"
19	"I have often gone against the understood rules of my social group regarding when and how certain products are properly used"
20	"I enjoy challenging the prevailing taste of people I know by buying something they wouldn't seem to accept"
21	"If someone hinted that I had been dressing inappropriately for a social situation, I would continue dressing in the same manner"
22	"When I dress differently, I'm often aware that others think I'm peculiar, but I don't care"
23	"When products or brands I like become extremely popular, I lose interest in them"
24	"I avoid products or brands that have already been accepted and purchased by the average consumer"
25	"When a product I own becomes popular among the general population, I begin using it less"
26	"I often try to avoid products or brands that I know are bought by the general population"
27	"As a rule, I dislike products or brands that are customarily purchased by everyone"
28	"I give up wearing fashions I've purchased once they become popular among the general public"
29	"The more commonplace a product or brand is among the general population, the less interested I am in buying it"
30	"Products don't seem to hold much value for me when they are purchased regularly by everyone"
31	"When a style of clothing I own becomes too commonplace, I usually quit wearing it"

* question order was randomized in experiment


Figure A.1: Example of a question as seen by participants (question 2, limited supply condition)

Attitudes Survey

Please read the following, then select below which product you would most likely purchase given the scenario:


Your old sneakers just fell apart and you need a new pair by tomorrow. You've narrowed the choice down to one style, but are trying to decide which color you want. The shopkeeper has put the three pairs on hold until you make your decision.

Asics produced a limited number of this style in Grey/Brilliant Blue, and you are currently holding onto the last pair in your size left in town.




• EVA two-tone midsole
• Cushioned footbed
• Leather and suede upper
• Rubber outsole

Color: Black Graphic/Grey
54 pairs remaining



• EVA two-tone midsole
• Cushioned footbed
• Leather and suede upper
• Rubber outsole

Color: Black/Caribbean Sea
41 pairs remaining



• EVA two-tone midsole
• Cushioned footbed
• Leather and suede upper
• Rubber outsole

Color: Grey/Brilliant Blue
1 pair remaining

Next ▶

..... question/
scenario text

..... item pictures

..... item descriptions

POSITIONAL CONCERNS & UNAVAILABILITY

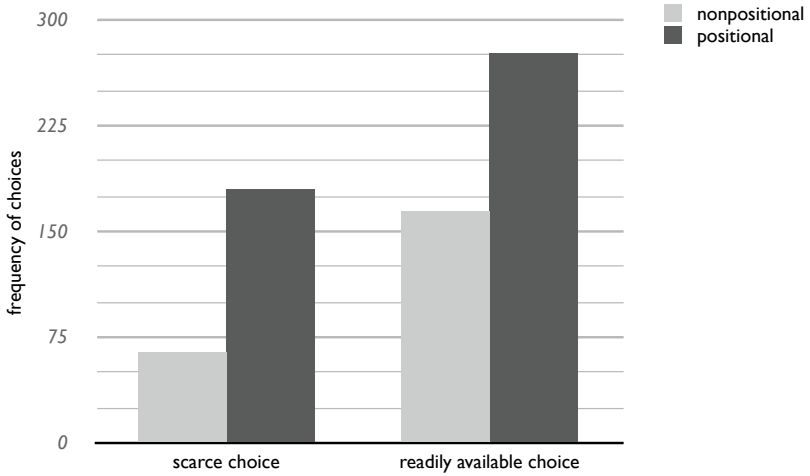


Figure A.2: Scarce vs. available choices made, by positionality¹

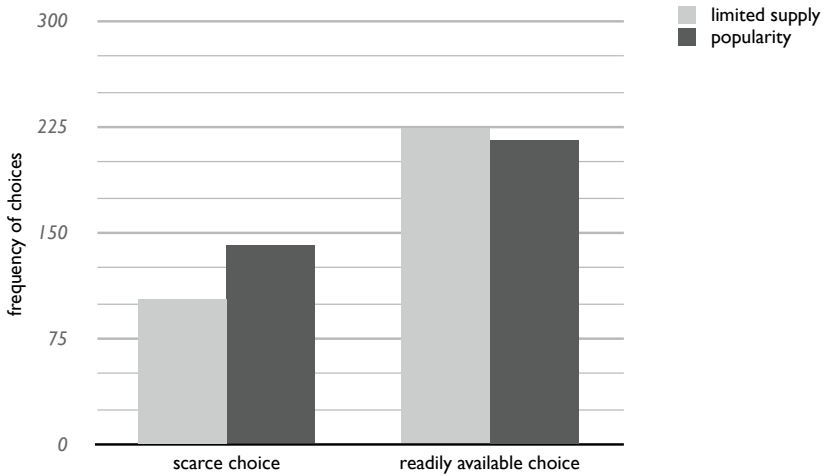


Figure A.3: Scarce vs. available choices made, by availability condition¹

APPENDICES

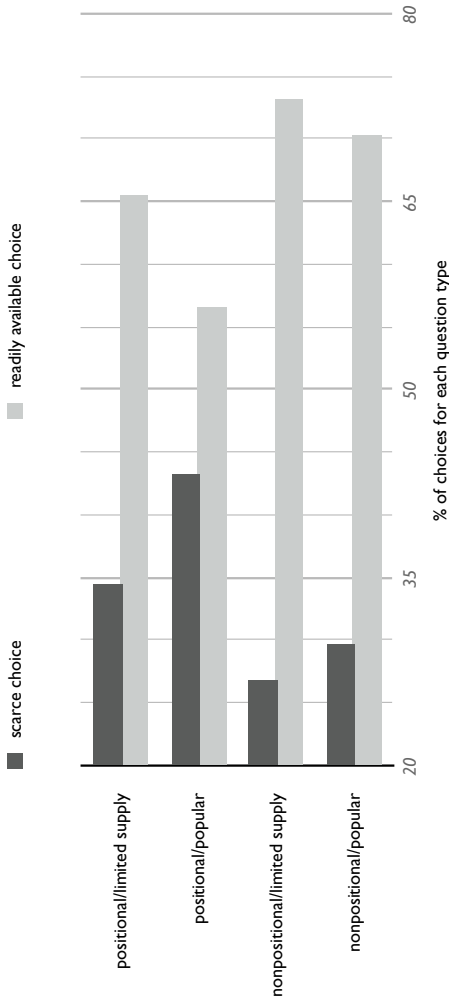


Figure A. 4: Percent of scarce vs. available choices, grouped by positionality and availability condition together¹

¹ Since there were two readily available items and one scarce item, the null hypothesis would suggest that the frequency of choices for either of the readily available items should be twice that of the scarce item; restated, if the experimental manipulations were to have no effect, the scarce item should be chosen at one-third the rate of the readily available items.

POSITIONAL CONCERNS & UNAVAILABILITY

Table A.iii: Choice frequencies, chi-square tests, and t-test for association of scarce choice frequency with Consumers' Need For Uniqueness (CNFU) questionnaire, by individual questions

	sneakers	sunglasses	wallet	budget car	luxury car	college	vacation	detergent	fast food
N	76	76	76	76	76	76	76	76	76
choice for scarce item (across both conditions)	50.0%	31.6%	46.1%	22.4%	32.9%	53.9%	27.6%	28.9%	27.6%
choice for either available item (both conditions)	50.0%	68.4%	53.9%	77.6%	67.1%	46.1%	72.4%	71.1%	72.4%
χ^2 test for goodness-of-fit	9.54	0.1	5.56	4.09	0.01	14.59	1.01	0.65	1.01
degrees of freedom	1	1	1	1	1	1	1	1	1
p-value (two-tailed)	0.002†	0.750	0.018†	0.043†*	0.940	0.000†	0.294	0.421	0.294
choice for scarce item in limited supply condition	41.0%	35.1%	51.3%	23.4%	25.6%	—	33.3%	23.9%	23.1%
choice for scarce item in popularity condition	59.5%	28.2%	40.5%	20.7%	40.5%	53.9%	20.6%	36.7%	32.4%
χ^2 test for independence	2.58	0.42	0.88	0.076	1.91	—	1.53	1.44	0.83
degrees of freedom	1	1	1	1	1	—	1	1	1
p-value (two-tailed)	0.11	0.516	0.348	0.783	0.167	—	0.217	0.231	0.362
t (association of scarce choice frequency with CNFU score)	0.43	1.23	0.68	-0.83	-0.91	0.20	2.00	-0.55	-0.36
degrees of freedom	74	74	74	74	74	74	74	74	74
p-value (two-tailed)	0.670	0.222	0.499	0.407	0.366	0.839	0.049†*	0.582	0.717

† this result is significant at the $p < 0.5$ level

* this result is significant, but not in the direction predicted

APPENDICES

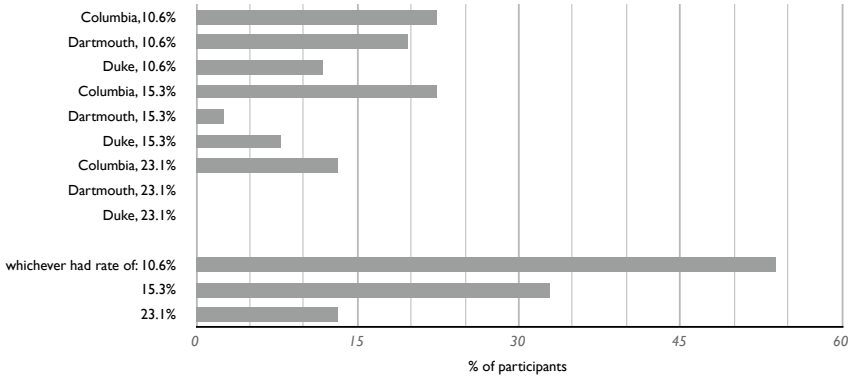


Figure A.5: Percentages of choices for colleges (question 4), with the given acceptance rate² (top); percentages of choices for whichever college had each of the three possible acceptance rates (bottom)

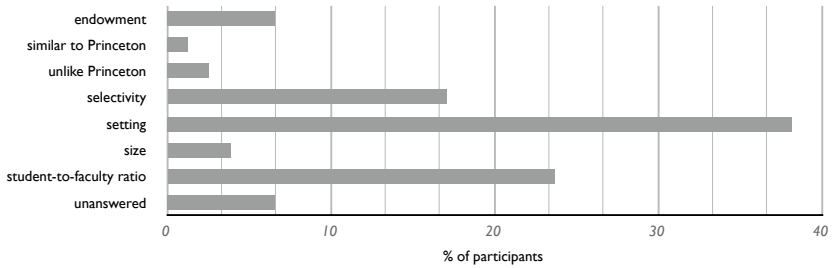


Figure A.6: Interpretation of primary reason given by participants for why they chose the college they did in the college question

² The real acceptance rates are: Columbia, 10.6%; Dartmouth, 15.3%; Duke, 23.1%

POSITIONAL CONCERNS & UNAVAILABILITY

Table A.iv: Results of binary logistic regression for results by response, with the effects on the frequency of scarce choices of possible confounds listed above that of the experimental conditions ($N = 675$)

	coefficient (B)	Wald χ^2	degrees of freedom	p (two-tailed)	odds ratio
gender	0.03	0.03	1	0.871	1.02
age	-0.06	1.37	1	0.242	0.94
decoy factor	0.02	0.02	1	0.900	1.02
availability condition	0.29	3.09	1	0.079	1.33
positionality	0.50	7.24	1	0.007 [†]	1.66

[†] this result is significant at the $p < 0.5$ level

Table A.v: Average overall scarce choice rates by participant and t-test results

	mean scarce choice rate	N	t	degrees of freedom	p (two-tailed)
overall positional choice rate (of scarce item)	0.39	76	2.71	75	0.008 [†]
overall nonpositional choice rate	0.28	76	-1.72	75	0.090
overall choice rate in limited supply condition	0.29	76	-1.26	75	0.211
overall choice rate in popularity condition	0.40	76	2.51	75	0.014 [†]
choice rate in limited supply condition for positional product type	0.35	73	0.34	72	0.739
choice rate in popularity condition for positional product type	0.44	76	3.25	75	0.002 [†]
choice rate in limited supply condition for nonpositional product type	0.25	73	-1.95	72	0.055
choice rate in popularity condition for nonpositional product type	0.32	65	-0.10	64	0.921

[†] this result is significant at the $p < 0.5$ level

³ Responses missing both age and gender data ($n = 9$) were excluded from analysis

APPENDICES

Appendix B: *Figures & Tables for Experiment II*

Table B.i: Question text by condition

Condition	Question/scenario text	Given list of songs (same for both conditions)*
limited	<p>"You are making a CD for a friend who is going to Antarctica for a year where the only music he or she will have all year is your CD. Make a playlist of 10 songs for this friend, writing the artist name and song title for each song in the box below.</p> <p>"You can use any songs that you want, and you are welcome to use your computer, iPod, music library, etc. in making this playlist. To help you out, there is a list of songs to the right that you may use in making your playlist. You may use at most two of these songs in making your playlist.</p> <p>"In a few weeks' time, the playlists you and all the other participants create will be emailed out to a random subset of participants, who will be asked to vote on their favorite (not including their own). The winner will get a prize of \$100."</p>	<p>The Beatles, "Yesterday"</p> <p>The Clash, "Rock the Casbah"</p> <p>AC/DC, "Back in Black"</p> <p>Bob Marley, "Redemption Song"</p> <p>Sublime, "What I Got"</p> <p>Michael Jackson, "Billie Jean"</p>
unlimited	<p>"You are making a CD for a friend who is going to Antarctica for a year where the only music he or she will have all year is your CD. Make a playlist of 10 songs for this friend, writing the artist name and song title for each track in the box below.</p> <p>"You can use any songs that you want, and you are welcome to use your computer, iPod, music library, etc. in making this playlist. To help you out, there is a list of songs to the right that you may use in making your playlist.</p> <p>"In a few weeks' time, the playlists you and all the other participants create will be emailed out to a random subset of participants, who will be asked to vote on their favorite (not including their own). The winner will get a prize of \$100."</p>	<p>Billy Joel, "Only The Good Die Young"</p> <p>The Eagles, "Hotel California"</p> <p>Bob Dylan, "Like a Rolling Stone"</p> <p>Girl Talk, "In Step"</p> <p>Madonna, "Like A Prayer"</p> <p>Red Hot Chili Peppers, "Snow (Hey Oh)"</p>

* presented below the list was the following reminder: "you may use [at most two of the above songs / the above songs] in making your playlist; all participants see the same list"

APPENDICES

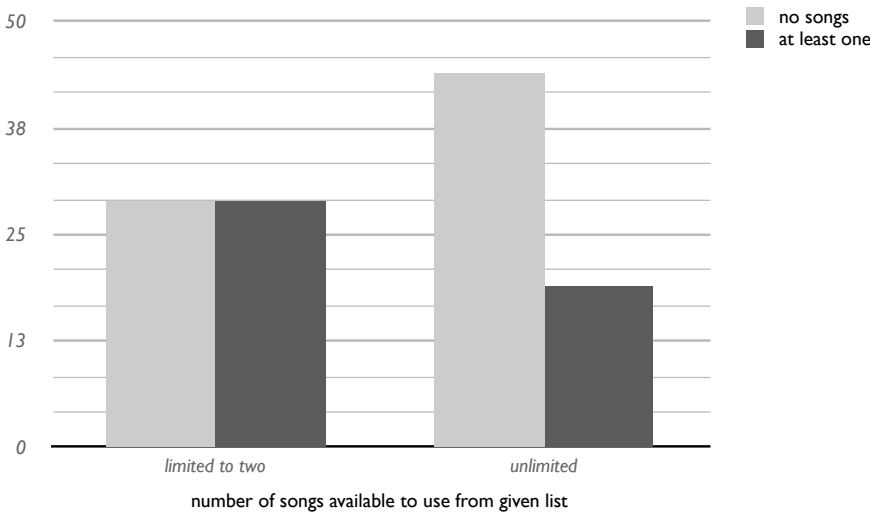


Figure B.1: Frequency of choices of at least one song from the provided list vs. no songs from the provided list, grouped by availability condition

Appendix C: *Other Figures*



*Figure C.1: Example of bag with monogram print
(source: Louis Vuitton)*

APPENDICES

References

- Ackerman, F. (1997). Critiques and alternatives in economic theory: Overview essay. In N. Goodwin, F. Ackerman & D. Kiron (Eds.), *The consumer society* (pp. 189-200). Washington, D.C.: Island Press.
- Alpizar, F., Carlsson, F., & Johansson-Stenman, O. (2005). How much do we care about absolute versus relative income and consumption? *Journal of Economic Behavior and Organization*, 56, 405-421.
- Brekke, K. A., Howarth, R. B., & Nyborg, K. (2003). Status-seeking and material affluence: evaluating the Hirsch hypothesis. *Ecological Economics*, 45(1), 29-39.
- Brock, T. C. (1968). Implications of commodity theory for value change. In A. G. Greenwald, T. C. Brock & T. M. Ostrom (Eds.), *Psychological foundations of attitudes* (pp. 243-275). New York: Academic Press.
- Carlsson, F., Johansson-Stenman, O., & Martinsson, P. (2007). Do you enjoy having more than others? Survey evidence of positional goods. *Economica*, 74, 586-598.
- Cialdini, R. B. (2001). *Influence: Science and practice* (4th ed.). Boston, MA: Allyn and Bacon.
- Crandall, B., Edwards, G., Eliscu, J., Fine, J., Fricke, D., Hoard, C., et al. (2004). The 500 greatest songs of all time. *Rolling Stone*, 963, 65-163.
- Diabetics skimp on lifesaving care in recession (2009, April 12). *The Associated Press*, from <http://www.nytimes.com/aponline/2009/04/12/business/AP-Diabetes-Economy.html>
- Frank, R. H. (1985). *Choosing the right pond: Human behavior and the quest for status*. New York; Oxford [Oxfordshire]: Oxford University Press.
- Frank, R. H. (1999). *Luxury fever: Money and happiness in an era of excess*. Princeton, N.J.: Princeton University Press.
- Frank, R. H. (2007). *Falling behind: How rising inequality harms the middle class*. Berkeley: University of California Press.

REFERENCES

- Frank, R. H., & Cook, P. J. (1995). *The winner-take-all society: How more and more Americans compete for ever fewer and bigger prizes, encouraging economic waste, income inequality, and an impoverished cultural life*. New York: Free Press.
- Fromkin, H. L. (1970). Effects of experimentally aroused feelings of undistinctiveness upon valuation of scarce and novel experiences. *Journal of Personality and Social Psychology*, 16(3), 521-529.
- Fromkin, H. L., & Brock, T. C. (1973). Erotic materials: A commodity theory analysis of the enhanced desirability that may accompany their unavailability. *Journal of Applied Social Psychology*, 3(3), 219-231.
- Galbraith, J. K. (1958). *The affluent society*. Boston: Houghton Mifflin.
- Highhouse, S., Beadle, D., Gallo, A., & Miller, L. (1998). Get 'em while they last! Effects of scarcity information in job advertisements. *Journal of Applied Social Psychology*, 28, 779-795.
- Hirsch, F. (1976). *Social limits to growth*. Cambridge, Mass.: Harvard University Press.
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47(2), 263-291.
- Leibenstein, H. (1950). Bandwagon, snob, and Veblen effects in the theory of consumers' demand. *The Quarterly Journal of Economics*, 64(2), 183-207.
- Leonhardt, D. (2006, September 17). Ending early admissions: Guess who wins? *The New York Times*, from <http://www.nytimes.com/2006/09/17/weekinreview/17leonhardt.html>
- Lichfield, J. (2001, May 24). Champs Elysees mercenaries wage handbag war for Japanese tourists. *The Independent* [UK].
- LVMH (2009). 2008 Full Year Results. Retrieved April 12, 2009: http://www.lvmh.com/comfi/pg_resultats.asp?rub=10&srub=2&str_annee=2008
- Lynn, M. (1989). Scarcity effects on desirability: Mediated by assumed expensiveness? *Journal of Economic Psychology*, 10, 257-274.
- Lynn, M. (1991). Scarcity effects on value: A quantitative review of the commodity theory literature. *Psychology and Marketing*, 8(1), 43-57.
- Lynn, M. (1992). Scarcity's enhancement of desirability: The role of naive economic theories. *Basic and Applied Social Psychology*, 13(1), 67-78.
- Lynn, M., & Harris, J. (1997). Individual differences in the pursuit of self-uniqueness through consumption. *Journal of Applied Social Psychology*, 27(21), 1861-1883.
- Silverstein, M. J., & Fiske, N. (2003). Luxury for the masses. *Harvard Business Review*, 81(4), 48-57.
- Solnick, S. J., & Hemenway, D. (1998). Is more always better?: A survey on positional concerns. *Journal of Economic Behavior and Organization*, 37, 373-383.

POSITIONAL CONCERNS & UNAVAILABILITY

- Solnick, S. J., & Hemenway, D. (2005). Are positional concerns stronger in some domains than in others? *American Economic Review*, 95(2), 147-151.
- Solnick, S. J., Hong, L., & Hemenway, D. (2007). Positional goods in the United States and China. *Journal of Socio-Economics*, 36, 537-545.
- Steinberg, J., & Lewin, T. (2009, March 29). For top colleges, economy has not reduced interest (or made getting in easier). *The New York Times*, Retrieved April 12, 2009, from <http://thechoice.blogs.nytimes.com/2009/03/29/for-top-colleges-economy-has-not-reduced-interest-or-made-getting-in-easier/>
- Suri, R., Kohli, C., & Monroe, K. B. (2007). The effects of perceived scarcity on consumers' processing of price information. *Journal of the Academy of Marketing Science*, 35(1), 89-100.
- Thaler, R. (1980). Toward a positive theory of consumer choice, *Journal of Economic Behavior and Organization*, 1, 39-60.
- Thomas, D. (2007). *Deluxe: How luxury lost its luster*. New York: Penguin Press.
- Tian, K. T., Bearden, W. O., & Hunter, G. L. (2001). Consumers' need for uniqueness: Scale development and validation. *Journal of Consumer Research*, 28, 50-66.
- Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science*, 211(4481), 453-458.
- Verhallen, T. (1982). Scarcity and consumer choice behavior. *Journal of Economic Psychology*, 2(4), 299-322.
- Verhallen, T., & Robben, H. (1994). Scarcity and preference: An experiment on unavailability and product evaluation. *Journal of Economic Psychology*, 15(2), 315-331.
- Verhallen, T., & Robben, H. (1995). Unavailability and the evaluation of goods. *Kyklos*, 48(3), 369-387.
- Wilde, O. (2000). *The importance of being Earnest and other plays*. London: Penguin Books.
- Worchel, S., Lee, J., & Adewole, A. (1975). Effects of supply and demand on ratings of object value. *Journal of Personality and Social Psychology*, 32(5), 906-914.

This paper represents my own work in accordance with University regulations.

A handwritten signature in black ink, consisting of a stylized first name followed by a surname.