

Closer to the Creator:

Temporal Contagion Explains the Preference for Earlier Serial Numbers

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The authors demonstrate a robust preference for items with earlier serial numbers (e.g., No. 3/100) over otherwise identical items with later serial numbers (e.g., No. 97/100) in a limited edition set. This preference arises from the perception that items with earlier serial numbers are temporally closer to the origin (e.g., the designer or artist who produced it). In turn, beliefs in contagion (the notion that objects may acquire a special essence from their past) lead consumers to view these items as possessing more of a valued essence. Using an archival data set and five lab experiments, the authors find the preference for items with earlier serial numbers holds across multiple consumer domains including recorded music, art, and apparel. Further, this preference appears to be independent from inferences about the quality of the item, salience of the number, or beliefs about market value. Finally, when serial numbers no longer reflect beliefs about proximity to the origin, the preference for items with earlier serial numbers is attenuated. The authors conclude by demonstrating boundary conditions of this preference in the context of common marketing practices.

*Keywords:* temporal contagion, essence, valuation

In 1968, the Beatles released their ninth studio album, the 'White Album.' The White Album is the tenth best selling album of all time and there are estimated to be roughly three million copies of the original vinyl pressing. Although each copy of this album is identical and originally sold for the same retail price in 1968-1970, curiously, the secondary market for this album favors records with earlier serial numbers. For example, in 2012 the White Album No. 23 sold for \$13,750; No. 5 sold for approximately \$31,000 in 2008; and in 2013, No. 1 sold for \$35,000 (popsike.com 2004-13). Similar patterns are often observed for books, photographs, artistic prints and certain consumer products.

In this article, we examine the preference for items with earlier serial numbers. Prior work on limited edition sets has examined how valuation is influenced by factors such as regular versus limited edition packaging (Gallopel-Moarvan et al. 2012) or how limited edition sets differentially affect demand for products of varying quality (Balachander and Stock 2009). However, relatively little is known about what leads to greater valuation of items with earlier (vs. later) serial numbers *within* the same limited edition set.

We propose that consumers value items with earlier serial numbers because they are perceived as being temporally closer to the artist or designer who produced them. Specifically, intuitive beliefs about contagion (the notion that objects may acquire a special aura or essence from their past) lead consumers to view those items with earlier serial numbers as possessing more of the creator's essence (Nemeroff and Rozin 1994; Newman and Dhar 2014; Newman, Diesendruck, and Bloom 2011). Therefore, when consumers are willing to pay more for an item with an early serial number (such as the

very first White Album), we demonstrate that it is not because it is seen as higher quality or more scarce, but rather, because it is perceived to be closer to the item's creative origins (e.g., it is thought to possess more of the Beatles' *essence*).

In the remainder of this article, we first review the current literature on contagion and value, which leads to our prediction that items that are seen as temporally close to the origin will be valued more than items that are perceived as more distant. We then test our proposal in an archival data set and five experiments. We demonstrate that within a limited edition set (1) people prefer items with earlier serial numbers across multiple consumer domains, including recorded music, art and apparel, (2) this preference is not limited to the very first item, but persists across a range of values, (3) this preference appears to be independent from inferences about the quality of the item, the scarcity of the item, the salience of the number, or the item's perceived market value, (4) when serial numbers no longer signify perceived temporal proximity to the origin, the preference for items with earlier serial numbers is attenuated, and (5) the preference for items with earlier (over later) serial numbers is moderated by liking of the source.

## **THE PREFERENCE FOR EARLIER SERIAL NUMBERED ITEMS**

Many firms offer limited edition products that are often, but not always, serial numbered. Although this practice is commonly observed for high-end luxury items like watches, pens, and scarves, the production of numbered limited edition sets can also be found among automobiles (e.g., Volkswagen GTI), videogames (e.g., Halo 5), and alcohol (e.g., Port Dundas). Serial numbering limited edition sets is also a standard

practice for many visual artists, particularly photographers and printmakers. Often the presumed reason for limiting production is to enhance the perceived exclusivity or scarcity of an item. Indeed, prior work has shown that consumers who desire exclusivity are willing to pay a higher premium for limited edition products, particularly when quality is known to be high (Balachander and Stock 2009).

However, scarcity seems less adept at explaining the valuation of items with earlier serial numbers in a limited set. Each item in the limited edition set is equally rare—for example, there is only one No. 1/100, one No. 2/100, and so on. Further, items within a limited edition set are usually identical in quality, and therefore, aside from the number, there is little else that differentiates one item from the next. So, what explains the preference for items with earlier serial numbers?

We hypothesize that consumers naturally interpret the serial number in a limited edition set as reflecting the chronological order in which each item was made. Thus, the premium placed on items with earlier (vs. later) serial numbers results from the perception that items with earlier serial numbers were produced before items with later serial numbers and therefore, are temporally closer to the designer or artist who produced them. Consequently, beliefs in contagion lead consumers to view those items with earlier serial numbers as possessing more of the creator's essence.

## **CONTAGION AND VALUE**

Although the present paper is (to our knowledge) the first to examine the preference for items with earlier serial numbers, there are several recent papers that lend

support to this proposal regarding contagion and value. In particular, several studies have found that physical contact with a particular person, place or event, can enhance the value of otherwise ordinary objects (Belk 1988; Beverland 2005; Grayson and Martinec 2004; Nemeroff and Rozin 1994; Newman and Bloom 2014; Newman and Dhar, 2014; Newman et al. 2011; O'Guinn 1991). For example, in a retail context, individuals are more likely to purchase a t-shirt if it was previously worn by an attractive person of the opposite sex (Argo, Dahl, and Morales 2008). Analogously, mundane objects increase dramatically in value if they were touched by well regarded celebrities (Newman and Bloom 2014; Newman et al. 2011). Consumers value an artwork more if its creation involved direct physical contact with the artist (Newman and Bloom 2012). And, individuals may even 'inherit' abilities, such as creativity or accuracy, if they use items that were previously touched by individuals who are high on those dimensions (Kramer and Block 2014; Lee et al. 2011).

These instances of so-called, 'positive' contagion appear to involve beliefs about the transfer of essence (Newman and Dhar 2014)—i.e., the objects become more valuable because they are seen as possessing the essence of a valued source. Moreover, increases in the amount of contact between the valued source and the object translate into increases in perceived value. For example, items that are believed to have had more physical contact with a celebrity sell for more at auction (Newman and Bloom 2014); or, in gambling contexts, people preferentially bet on objects that are closer to previously 'lucky' objects (Mishra 2009).

These effects are consistent with the notion that objects may be seen as extensions of others (Belk 1988; James 1890) and can vary in the degree to which they embody the

essence of a particular identity. However, consumers appear to have vague notions of exactly how the transfer of essence occurs, or what the essential property even is (Newman and Dhar 2014). Instead, these beliefs are often thought to operate as heuristics (Rozin and Nemeroff 2002) and have been shown to arise more frequently in individuals who are high in experiential processing (Kramer and Block 2014).

Given this, we hypothesize that in addition to physical proximity, other forms of proximity (such as temporal proximity) may engender beliefs about transferred essence. Specifically, consistent with a notion of *temporal contagion*, we hypothesize that objects that are perceived as temporally closer to the origin—a valued person, place or event—will be seen as possessing more of the essence of that source, and as a result, will be valued more. Anecdotally, one can observe some behavioral patterns that are consistent with this idea. For example, parents tend to regard a child’s earlier possessions (e.g., a child’s first pair of shoes) as more sentimental than possessions from later life stages (Gelman 2003).

The present studies draw on this concept of temporal contagion to explain why consumers value items with earlier serial numbers in a limited edition set. Beyond empirically documenting a new phenomenon, our studies contribute to existing research in several important respects. At a broad level, we support the notion that consumers can value a product not just for its immediate material properties, but also for its history (Ariely and Norton 2009). More specifically, these findings make a novel contribution to the literature on contagion. To date, previous studies on contagion have focused exclusively on manipulations of physical connectedness (e.g., Argo et al. 2008; Mishra 2009; Nemeroff and Rozin 1994; Newman et al. 2011). The present studies, however,



find evidence for a temporal contagion effect where the degree of physical contact is held constant, but valuation changes based on the perceived order in which the objects were made. This result demonstrates that there are in fact many different dimensions that may facilitate a sense of connection between consumers and the perceived origins of a product.

### **ALTERNATIVE EXPLANATIONS**

As highlighted earlier, examining differences in valuation within a limited edition set naturally controls for potential differences in the scarcity and quality of each serial numbered item (although we do directly test these mechanisms throughout the paper). Beyond these considerations, however, there are two plausible alternative explanations that we empirically address.

One potential alternative is that the numbers themselves hold special meaning and enhance value, independent of any properties of the product itself. For example, research has shown that Chinese consumers are willing to pay more for goods when the price ends in numbers that are considered to be lucky or have positive associations with other words (e.g., 6 and 8) and will avoid prices that end in numbers that are considered unlucky (e.g., 4 and 7) (Yang 2011). Additionally, people are more likely to associate “odd prices” like 1.99 with the whole number 1 despite it being numerically closer to ‘2’ (Thomas and Morwitz 2005). Thus, people do not solely respond to the magnitude of numbers but may be influenced by superstitious associations, calculation biases, and the significance of certain numerical demarcations. In this way, earlier serial numbers may seem meaningful

to people due to their enhanced salience. For instance, comparing No. 3 to No. 1278326, it could be that ‘3’ is perceived as more unique than ‘1278326’ and that is why people value it more. If true, however, this alternative predicts that consumers should not prefer No. 3 to other salient serial numbers such as ‘12345678’ or ‘1111111.’

Another explanation may be that consumers do not inherently value items with earlier serial numbers, but they believe that others value them. In other words, the stronger preference for items with earlier serial numbers is motivated by their perceived market value to others. This account is circular in that it does not address why the preference for items with earlier serial numbers exists in the first place. However, there is evidence suggesting that speculative behavior can increase prices. One of the more famous instances of this phenomenon was the Dutch tulip mania of 1637 (Mackay 1841; Thompson 2007). Therefore, it could be that items with earlier serial numbers are preferred because of some historical accident, and perceptions of market value sustain and perpetuate that increased demand.

The present studies empirically address all of the mechanisms outlined above (i.e., numerical salience, market value, as well as perceptions of quality and scarcity). In addition to ruling out these competing accounts, we also provide direct evidence for the proposed mechanism of temporal contagion.

## **OVERVIEW OF STUDIES**

Study 1 examines the preference for items with earlier serial numbers in an archival data set: auction results from sales of the Beatles’ White Album. We then

explore the nature of the early serial number preference with five experiments. Study 2 tests the salient number alternative and demonstrates a preference for items with earlier serial numbers over items with salient serial numbers. Study 3 provides evidence for the proposal that observers naturally infer that lower serial numbers (e.g., No. 3/100) were produced before higher serial numbers (e.g., No. 97/100) and demonstrates that when the serial numbers no longer signify chronological order, the preference for items with earlier serial numbers dissipates. Study 4 examines whether the preference for items with earlier serial numbers persists even when controlling for perceived market value. Study 5 provides mediation evidence for the mechanism of transferred essence. Finally, Study 6 demonstrates that the preference for items with earlier serial numbers is moderated by liking of the source.

### **STUDY 1: THE WHITE ALBUM**

Study 1 examined auction results from the sale of original pressings of the Beatles' White Album. The White Album was released in the UK and US in November 1968. The album covers were completely blank except for an embossed title, 'The Beatles' and a serial number, which appeared in the lower right-hand corner. The original vinyl pressing was discontinued in 1970 and the last known serial numbered copy is a US pressing, No. 3,116,706 (The Beatles Rarity 2013). Since 1970, there have been numerous reissues of the White Album in many different media. However, in this analysis we were interested specifically in the 1968-70 US and UK vinyl pressings because they are the 'original' versions of the album and are limited in number.

We examined this particular data set for three primary reasons. The first was that unlike some objects such as artistic lithograph prints, which may decrease in quality with successive printings, each White Album is identical in order to preserve the same acoustic properties from one record to the next. This fact makes it less likely that the preference for items with earlier serial numbers is due to differences in perceived quality. Second, the data set offers a reliable estimate of the early serial number preference because it includes nearly 8,000 unique auction records that span a large range of different serial numbers (1 to 3,133,076). This allowed us to examine whether the early serial number preference persists only for certain serial numbers (e.g., 1 to 100), or whether it instead persists across a range of values—a ‘bubble’ market would predict increased value over a fairly narrow range (Mackay 1841; Thompson 2007). Finally, this data set has external validity. With over three million identical records in circulation, this data set addresses the concern that the preference for items with earlier serial numbers may only exist for limited editions that consist of very few items in total.

## Method

The data were obtained from online auctions held by eBay from 2004 to 2014. We obtained 7,907 unique auction results (which included only completed sales). In addition to the serial number, and date of sale, we also created dummy variables that specified the pressing’s country of origin (UK, US, or unknown), as well as whether the album was sealed in original packaging (sealed). The eBay data were cross-referenced with popsike (popsike.com 2004-13), which is an online archive for vinyl record auction

results. These factors were used to predict final bids using a stepwise regression analysis. To normalize the distribution of residuals, both serial number and the final bids were  $\log^{10}$  transformed.

An additional 89 albums in the eBay data set were listed as signed albums, but the serial number was not included. These auction records were included in a subsequent analysis, which compared the effects of earlier serial numbered albums to the effects of signed albums that were physically touched the artist (physical contagion). Further details about this analysis are provided below.

## Results

We ran a stepwise regression with price as the outcome variable and serial number as the predictor. This analysis also included control variables of transaction date, country of origin, and whether the album was sealed. Results from the regression analysis are reported in table 1. Consistent with the predicted early serial number preference, we observed a significant negative effect of serial number on the final bids ( $\beta = -.46, p < .001$ ), see figure 1. Additionally, we observed positive effects of the date of sale (more recent auctions sold for more), as well as a positive effect of identifying that the album was a UK pressing—i.e., UK pressings were valued more than US pressings.

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Insert table 1 about here

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We then examined the effect of serial number at different points of the logarithmic scale (1-99, 100-999, etc.). Interestingly, we observed a significant negative

effect of serial number on final bids in all ranges below 1,000,000 (see table 2). In other words, despite the substantial premium for very low numbered albums (<1000), the effect of serial number could still be observed even in ranges where the serial numbers were comparatively high (e.g., 100,000-999,999).

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Insert figure 1 about here

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Insert table 2 about here

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In a second analysis we then compared the effect of albums with earlier serial numbers to the effect of signed albums (i.e., direct physical contact with the Beatles). To construct the comparison sets, we included auction records for signed albums ( $N = 89$ ), auction records for albums with serial numbers less than 1,000 ( $N = 107$ ), and then from the remaining albums (serial number  $> 1,000$ ) we randomly selected 100 auction results. Final bids (log-transformed) across these three groups were compared using a one-way ANOVA, which revealed a significant main effect,  $F(2, 296) = 172.78, p < .001$ . Post-hoc analyses indicated that the signed albums sold for significantly more ( $M = 2.89, SE = .04$ ) than the random selection of albums ( $M = 1.64, SE = .05$ ),  $t(187) = -20.19, p < .001, d = 2.94$ . And, the albums with earlier serial numbers sold for significantly more ( $M = 2.88, SE = .07$ ) than the random selection of albums  $t(205) = 14.58, p < .001, d = 2.01$ .

Interestingly, the signed albums, in aggregate, were sold for the same amount as the albums with earlier serial numbers,  $t(194) = .13, p = .90, d = .02$ , and the effect sizes (relative to the random selection of albums) were roughly comparable,  $d = 2.94$  and  $2.01$ ,

respectively. In other words, in this data set, the effect of the album being signed was roughly equivalent to the effect of temporal proximity to the artist. A follow-up analysis indicated that among the random selection of albums, the negative effect of serial number persisted ( $\beta = -.42$ ), indicating that it was a representative sample of the larger data set.

## Discussion

In Study 1, we observed that White Albums with earlier serial numbers were valued significantly more than those with later serial numbers. Moreover, the negative linear relationship between serial number and final bids was not restricted to a narrow range in the sample, but rather could be observed for albums with serial numbers even in the range of 100,000 to 999,999.

The persistence of the preference across a large range of values addresses a number of potential alternative explanations. For example, it seems unlikely that consumers would assume that album No. 100,000 should be higher quality than No. 999,999. Similarly, it is hard to imagine how scarcity concerns could explain a difference in value between No. 100,000 and No. 999,999. Or, one might also consider more circular explanations such as items with earlier serial numbers are valued only because they are perceived to be valuable to others. While one could imagine that consumers may value No. 1 simply for its perceived resale value, in this data set we find higher valuation of earlier serial numbers well into the long tail of the distribution. It is difficult to see how an explanation based on solely perceived market value could account for such a pattern.

We hypothesize that the observed early serial number preference results from a belief in temporal contagion: items with earlier serial numbers are seen as temporally closer to the item's origin (e.g., the Beatles), and therefore, thought to possess more of the Beatles' essence. In support of this explanation we observed that the effect of temporal proximity was roughly equivalent to the effect of an album that was actually touched and signed by the Beatles. It is also worth noting that consistent with the contagion mechanism, we observed a country of origin effect such that albums from the UK, the physical home of the Beatles, were valued more than identical albums produced in the US. This is consistent with previous research that has found a preference for products from the original manufacturing location (Newman and Dhar 2014). The goal of the remaining studies was to examine the mechanism underlying temporal contagion in greater detail, while also addressing alternative explanations.

## **STUDY 2: SALIENT NUMBERS**

The aim of Study 2 was to test the alternative explanation that items with earlier serial numbers are valued because the serial numbers themselves are salient or collectable. To test this, we simulated the experience of purchasing the original pressing of the Beatles' White Album. We presented participants with 5 different serial numbered albums: 0000003, 1000000, 1111111, 1147293, and 1234567. From this set, we constructed pairs of otherwise identical albums (e.g., No. 0000003 vs. No. 1111111) and participants were asked to indicate which album they would prefer to own.



This paradigm allowed us to directly contrast the preference for earlier serial numbered items versus other types of numerical salience. An explanation based on only numerical salience might predict that under such conditions, early numbers (e.g., 0000003 vs. 1147293) should be preferred roughly as often as other salient numbers (e.g., 1234567 vs. 1147291). However, we expected that the preference for items with earlier serial numbers should persist such that the albums should be preferred in their numerical order. Further, demonstrating the preference for albums with earlier serial numbers in a controlled setting addresses concerns that perhaps the eBay results are unique to certain populations (e.g. avid Beatle fans or collectors) who are familiar with the market value of these items.

## Method

We recruited 150 adults ( $M_{age} = 33.6$ , 42.7% female) from Amazon's Mechanical Turk. All participants viewed a photograph of an original pressing of the Beatles White Album accompanied with the following description:

*One of the most coveted items for Beatles fans and collectors are 'original pressings' of the White Album. These original pressings were manufactured from 1968 to 1970. The album covers are completely blank except for a stamped serial number, which indicates the order in which each record was made. The very first record (No. 0000001) was made in 1968, while the very last one was made in 1970 (No. 3133076).*

Participants were then presented with a series of choices involving original White Albums with different serial numbers. All participants made 10 separate binary choices for all possible pairwise combinations of the following numbers: 0000003, 1000000, 1111111, 1147293, and 1234567. For each choice, two photographs of identical albums were displayed with different serial numbers beneath each album (e.g., 1147293 vs. 0000003; 1000000 vs. 1234567, etc.), and participants were asked, *'If you had to choose between these two albums, which one would you select?'* The order in which the choices were presented was randomized as was the side on which each numbers was presented. After making the choices, on a separate page, participants viewed a randomized list of all five serial numbered albums and indicated their willingness to pay for each album.

## Results

Table 3 shows the percentage of trials in which each serial number was selected (e.g., looking at the first cell, 92% of the time 0000003 was preferred to 1000000). As can be readily seen, the frequency with which each album was selected corresponded to numerical order. This pattern was confirmed by a series of binomial comparisons for each binary choice (difference test from 50%). All comparisons were significant in favor of the earlier serial number, demonstrating that even salient serial numbers like 1234567 were preferred less often than earlier, less salient serial numbers like 1147293.

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Insert table 3 about here

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We then examined the willingness to pay (WTP) data for each of the five albums (see figure 2). Ten participants did not provide dollar amounts and therefore, could not be included in this analysis. These data show a striking resemblance to the data from the actual eBay auction results. A Spearman's rank correlation indicated a significant negative relationship between serial number and WTP ( $r_s = -.21, p < .001$ ).

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Insert figure 2 about here

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## Discussion

In Study 2, the negative linear trend between serial number and valuation persisted despite the introduction of salient serial numbers. Thus, the early serial number preference does not appear to be driven by some feature of the number itself. Results from both the binary choice measure and the WTP measure indicated a preference for items with earlier serial numbers throughout a range of values. This study also replicated the early serial number preference in a controlled context and, interestingly, the willingness to pay data paralleled the data from the eBay auction results. It is also notable that participants were aware of the total number of albums (over three million) making it unlikely that perceptions of scarcity drove valuation.

## **STUDY 3: TEMPORAL ORDER**

In line with the proposed mechanism of temporal contagion, we hypothesize that consumers naturally interpret the serial numbers in a limited edition set as reflecting the chronological order in which each item was made. Therefore, items with earlier serial numbers are perceived as temporally *closer* to the origin than items with later serial numbers. Study 3 tested this hypothesis by decoupling numerical order and chronological order.

In this study, participants were presented with a binary choice between identical, limited edition Andy Warhol prints. Between-subjects we varied whether a print with a lower serial number (No. 3/10,000) was made before a print with a higher serial number (No. 6532/10,000) or whether the print with the lower serial number was made after the print with the higher serial number. A third condition presented only chronological information and no numbers. We hypothesized that participants would base their preferences on chronological order rather than numerical order and thus, would only show the preference for a print with a lower serial number (i.e., No. 3) when it was said to have been created earlier in time. Note that this study directly addresses a numerical salience alternative as well as a market value alternative, since both explanations predict a preference for items with lower serial numbers regardless of the information regarding temporal order.

## Method

We recruited 301 adults ( $M_{age} = 29.8$ , 34.9% female) from Amazon's Mechanical Turk. All participants viewed two identical images of Andy Warhol's 'Campbell's Tomato Soup Can' prints with the following description:

*Andy Warhol was one of the world's most famous contemporary artists and is often recognized as the founder of the 'pop art' movement. From 1968 to 1972, Warhol made a total of 10,000 identical prints of Campbell's Tomato Soup Cans. Pictured below are two prints from this series.*

Between-subjects, participants were randomly assigned to one of three conditions in which they learned different information about the two prints. In one condition, the serial numbering of the prints was said to be temporally consistent (print No. 3/10,000 made in 1968 vs. print No. 6532/10,000 made in 1972); in a second condition, the serial numbering of the prints was said to be temporally inconsistent (print No. 3/10,000 made in 1972 vs. print No. 6532/10,000 made in 1968). In a third control condition, the prints were labeled with only information about time and no serial numbers were provided (made in 1968 vs. made in 1972).

Specifically, in the 'Temporally Consistent' condition, participants read:

*Warhol was known for being extremely meticulous in his record keeping. He labeled each print using the year in which it was made and the order in which he made them. The print on the left is one of the very first prints that he made in 1968 and is labeled No. 3/10,000. The print on the right is one of the later prints that he made in 1972 and is labeled No. 6532/10,000.*

In the ‘Temporally Inconsistent’ condition, participants read:

*Warhol was known for being a trickster and would often number his prints in deliberately misleading ways. The print on the left is actually one of the later prints that he made in 1972, even though it is labeled No. 3/10,000. The print on the right is actually one of the very first prints that he made in 1968, even though it is labeled No. 6532/10,000.*

Finally, in the ‘No Numbers’ condition, participants read:

*Warhol was known for being extremely meticulous in his record keeping. He labeled each print using the year in which it was made. The print on the left is one of the very first prints that he made in 1968. The print on the right is one of the later prints that he made in 1972.*

Participants in all conditions then rated the degree to which they valued the prints on a 1 to 9 scale with each print appearing on either end of the scale. Participants responded using the following scales: *Assuming you had the opportunity to purchase them, which print would you be willing to pay more money for? Which print would you rather own? Which print would you rather see in person? In your opinion, which do you think is more valuable?*

Results

We first conducted a reliability test on the four dependent measures. These measures formed a reliable scale ( $\alpha = .92$ ) and were averaged to form a single measure of valuation.

Looking at the conditions in which the prints were both serial numbered and dated, we observed that the No. 3 print was valued significantly more in the temporally consistent condition ( $M = 2.88$ ,  $SE = .15$ ) than in the temporally inconsistent condition ( $M = 6.39$ ,  $SE = .18$ ),  $t(210) = -14.73$ ,  $p < .001$ ,  $d = 2.03$  (see figure 3). Further, independent comparisons to the midpoint of '5' indicated that the print made in 1968 was valued more than the 1972 print in all three conditions. In the temporally consistent condition, this resulted in greater valuation of print No. 3,  $t(104) = -14.14$ ,  $p < .001$ ,  $d = 2.77$ . By contrast, this resulted in greater valuation of print No. 6532 in the temporally inconsistent condition,  $t(106) = 7.53$ ,  $p < .001$ ,  $d = 1.46$ . In the control condition this resulted in a greater valuation of the 1968 print,  $t(88) = -12.44$ ,  $p < .001$ ,  $d = 2.65$ .

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Insert figure 3 about here

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## Discussion

The results from Study 3 indicate that the preference for earlier (vs. later) serial numbered prints obtains only when the serial numbers correspond to chronological order. In fact, the preference completely reversed toward "later" numbers when the print with the higher serial number was said to have been made earlier in time. This flip in valuation provides strong evidence for the hypothesis that serial numbered items within a limited edition set are valued based on the perceived temporal sequence in which they were made.

This result also rules out a number of alternative explanations. It reinforces the findings in Study 2 by demonstrating that participants are not responding to properties of the numbers themselves, such as salience, as they preferred either No. 3 or No. 6532 depending on the order in which the items were made. Further, this result rules out the explanation that items with earlier (vs. later) serial numbers are valued only for their potential market value. In fact, these findings suggest that people are willing to forgo potential signals of market value in favor of items that come earlier in time—i.e., preferring the No. 6532 print to the No. 3 print in the temporally inconsistent conditions. Similarly, perceptions of scarcity also do not explain the differences in valuation. If No. 3 was valued more than No. 6532 because it seemed more rare, we should expect that preference to persist even when numerical order and chronological order were inconsistent.

#### **STUDY 4: MARKET VALUE**

The aim of Study 4 was to directly examine the role of perceived market value. In this study, participants provided their willingness to pay for two identical limited edition items from the same set (items with earlier versus later serial numbers). Between-subjects we manipulated the potential market value of those items. Specifically, we used an established measure from previous research (Newman and Bloom 2014; Newman et al. 2011) in which half of the participants were asked to provide their WTP while imagining that they could not resell the items. We predicted that while this manipulation of market value may reduce WTP overall, participants should still be willing to pay



significantly more for the items with earlier (vs. later) serial numbers. In other words, we would expect the main effect of early serial number preference to persist in both the can't resell and control (no "can't resell" information) conditions. In contrast, if the preference for items with earlier serial numbers is driven only by their perceived market value, then eliminating the ability to resell the item should effectively eliminate any difference in WTP, yielding an interaction between number and condition.

## Method

We recruited a new group of 200 adults ( $M_{age} = 31.8$ , 31% female) from Amazon's Mechanical Turk. In all conditions, participants first read about John Lennon, the lead singer of the Beatles. In addition to biographical information about Lennon, participants also read that he created a limited edition of 500 handprints. Specifically, participants were shown a picture of a handprint and read:

*In addition to being a prolific songwriter, Lennon also experimented with other artistic mediums like printmaking. In 1978, he made 500 identical prints of his hand with India ink. The very first hand print (No. 001) was made in January 1978, while the very last one was made in December 1978 (No. 500).*

Participants were then shown two identical prints—No. 003 and No. 467.

Participants were then asked:

*Suppose that you had the opportunity to own these particular prints. What is the most you would be willing to pay (in dollars) for the print on the left (No. 003)*

*and what is the most you would be willing to pay (in dollars) for the print on the right (No. 467)?*

Participants in the “can’t resell” condition were exposed to the exact same information with the exception that they additionally read:

*Suppose that you had the opportunity to own these particular prints. However, one condition of owning these prints is that you CANNOT resell them to anyone else. In other words, the prints are yours to keep, but it must remain in your possession.*

This manipulation of market value was taken directly from published studies on celebrity memorabilia (Newman and Bloom 2014; Newman et al. 2011). Participants in both conditions then provided their WTP using text boxes that appeared below each of the prints.

## Results

Three participants provided WTP values that were greater than 3.5 standard deviations from the group mean and were dropped from subsequent analyses. A repeated-measures ANOVA with the two WTP values (No. 003 vs. No. 467) as a within-subjects factor and condition (control vs. can’t resell) as a between-subjects factor indicated only a significant effect of number,  $F(1, 195) = 16.85, p < .001$ , where participants were willing to pay significantly more for the No. 003 handprint ( $M = \$410.39, SE = 60.45$ ) than the

No. 467 handprint ( $M = \$243.24$ ,  $SE = 39.49$ ). There was also a marginal effect of condition,  $F(1, 195) = 2.82$ ,  $p = .09$ , where participants were willing to pay more in the control condition ( $M = \$405.49$ ,  $SE = 66.38$ ) than in the can't sell condition ( $M = \$248.13$ ,  $SE = 66.05$ ). Critically, however, there was no interaction between serial number and condition,  $F(1, 195) = .02$ ,  $p = .90$ . Thus, in the both the control condition ( $M_{earlier} = \$486.50$ ,  $M_{later} = \$324.48$ , paired-samples  $t(97) = 2.89$ ,  $p = .005$ ) and the can't resell condition ( $M_{earlier} = \$334.27$ ,  $M_{later} = \$161.99$ , paired-samples  $t(98) = 2.92$ ,  $p = .004$ ) participants were willing to pay significantly more for the print with an earlier serial number (see figure 4).

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Insert figure 4 about here

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As a robustness check, we also conducted the same analyses using the entire data set and log-transformed values. Replicating the analyses with the raw values, we observed a significant main effect of serial number,  $F(1, 198) = 123.92$ ,  $p < .001$ , a significant main effect of condition,  $F(1, 198) = 4.44$ ,  $p = .04$ , but no interaction,  $F(1, 198) = 0.12$ ,  $p = .73$ .

## Discussion

Taken together, the results from this study indicate that while perceptions of market value can impact the absolute amount that people are willing to pay, market value does not appear to be responsible for the greater relative valuation of earlier versus later

serial numbered items *within* the same limited edition set. Specifically, even when controlling for perceived market value of the items, we still observed that participants were willing to pay significantly more for items with earlier serial numbers. Further, the stimuli used in this study (handprints) distinguished the present effects from previous research on physical contagion since in the case of handprints it is quite obvious (and in fact, necessary) that the creator had equivalent physical contact with every item. Such a result suggests a notion of contagion that corresponds to differences in perceived temporal proximity—a mechanism that we explore further in Study 5.

### **STUDY 5: TRANSFERRED ESSENCE**

The previous studies documented a preference for items with earlier serial numbers. We hypothesize that this effect arises because items with earlier serial numbers are perceived as being temporally closer to the item's origin, and therefore, are thought to possess more of the creator's essence. In Study 5, we use a mediation analysis to directly test whether perceptions of transferred essence explain the preference for items with earlier serial numbers. Additionally, we were interested in testing this mechanism in the context of a common marketing practice—the use of guest designers to create limited edition offerings for a given brand (e.g., Alexander Wang for H&M).

We hypothesized that consumers should value items with earlier serial numbers to the extent that they can associate those items with a particular individual (e.g., a designer such as Alexander Wang). However, if the origin of the product is inanimate and vague, like a company (e.g., H&M), temporal proximity should be less important because there

is no particular essence for the product to be proximate to. While there may be some exceptions such as luxury brands, we propose that, in general, a product's temporal connectedness to specific individuals will be valued more than a product's temporal connectedness to a company. Therefore, we predict that the early serial number preference should obtain in instances in which the creator is a particular individual, but not when the creator is a company.

## Method

We recruited a new group of 398 adults ( $M_{age} = 29.63$ , 32.4% female) from Amazon's Mechanical Turk. Two participants did not finish the survey and were dropped from the analysis. All participants saw an advertisement for the same H&M jacket. Half of the participants read that H&M invited a guest designer, Alexander Wang, to design the jacket (individual origin), while the other half of the participants were not told about a guest designer (company origin). This factor was crossed with whether the jacket was described as having an earlier serial number (No.3/10,000) or a later serial number (No.6,542/10,000). Thus, participants were randomly assigned to one of four conditions in a 2 (individual vs. company origin) x 2 (serial number: 3 or 6,542 of 10,000) between-subjects design.

The exact wording for each condition was as follows:

Individual Origin: *This jacket was recently released by H&M, a multinational retail-clothing company. The company invited NYC designer Alexander Wang to design and*

*make this jacket. H&M made only a limited number of the jackets. This particular one is No. 3 of 10,000 (No. 6,542 of 10,000).*

Company Origin: *This jacket was recently released by H&M, a multinational retail-clothing company. H&M made only a limited number of the jackets. This particular one is No. 3 of 10,000 (No. 6,542 of 10,000).*

Participants in all conditions then reported how much they were willing to pay for the jacket. They also rated whether they would be willing to pay a premium for it (1 = Would not pay a premium, 9 = Would pay a premium) and how much they would be willing to pay for the jacket compared to the average jacket of the same kind (1 = Substantially Less, 9 = Substantially More).

In order to test for the hypothesized mediator of transferred essence, participants responded to three items (1 = Strongly Disagree, 9 = Strongly Agree): *This item contains a certain essence; This item embodies an essential identity; There is some special quality or essence that this item embodies.* These measures of transferred essence have been used and validated by previous research in this area (Newman and Dhar 2014; Newman et al. 2011).

In order to address potential alternative explanations, we also included measures of perceptions of quality, scarcity and brand association. For the quality items, participants assessed the materials, craftsmanship, and overall quality of the jacket (1 = Low, 9 = High). To measure perceived scarcity, participants completed the following items (1 = Strongly Disagree, 9 = Strongly Agree): *This jacket is rare; This jacket is*

*unique; This jacket is scarce.* Finally, to measure the degree of brand association, participants completed the following three items (1 = Strongly Disagree, 9 = Strongly Agree): *It is accurate to say that this item was made by H&M; It is legitimate to sell this product as an item produced by H&M; This item is not a knock-off or replica.*

## Results

We created a composite score for valuation. Raw willingness to pay values were log-transformed to correct for right-skew. Next, we transformed the willingness to pay, ‘willingness to pay a premium’ (Likert scale), and ‘willingness to pay above average’ items (Likert scale) into z-scores in order to allow them to be on comparable scales. A reliability analysis indicated that the three items of valuation formed a reliable scale ( $\alpha = .75$ ), and were averaged to create a single measure of valuation.

A 2 (serial number: 3 vs. 6,542 of 10,000) x 2 (origin: individual vs. company) between-subjects ANOVA revealed a significant interaction between origin and serial number  $F(1, 394) = 7.44, p = .007$ . When the creator was an individual (i.e., Alexander Wang was the guest designer), jacket No. 3/10,000 was valued significantly more ( $M = .24, SE = .09$ ) than jacket No. 6,542/10,000 ( $M = -.10, SE = .08$ ),  $t(196) = 2.82, p = .005, d = .40$ . However, when only the company was mentioned, the serial number had no effect on valuation ( $M_s = -.13$  and  $-.04$ , respectively),  $t(198) = -.92, p = .36, d = .13$  (see figure 5). We also observed a main effect of origin,  $F(1, 394) = 3.80, p = .052, d = .20$ , where overall, the jackets designed by Alexander Wang ( $M = .08, SE = .06$ ) were valued more than the jackets made by H&M ( $M = -.08, SE = .05$ ).

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Insert figure 5 about here

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### *Mediation*

We then conducted a reliability test on the measures of transferred essence ( $\alpha = .90$ ), quality ( $\alpha = .95$ ), scarcity ( $\alpha = .81$ ), and brand association ( $\alpha = .72$ ). These measures all formed reliable scales and were averaged to four different mediators.

We then conducted a bootstrapping analysis (Preacher and Hayes 2004) on the guest designer conditions with serial number as the independent variable and valuation as the dependent variable. This analysis (5000 resamples) revealed that belief in transferred essence significantly mediated the relationship between the number and valuation [estimated indirect effect =  $-.20$ ; 95% CI =  $-.33$  to  $-.08$ ], while brand association [estimated indirect effect =  $-.01$ ; 95% CI =  $-.05$  to  $.01$ ] and scarcity items [estimated indirect effect =  $-.01$ ; 95% CI =  $-.05$  to  $.02$ ] did not. In this study we did find that perceived quality also mediated the effect of serial number [estimated indirect effect =  $-.09$ ; 95% CI =  $-.19$  to  $-.02$ ]. However, the indirect effect of quality was much smaller than the indirect effect of transferred essence. We further tested, via a serial mediation model, whether perceptions of quality differed because of differences in perceived essence: NUMBER  $\rightarrow$  ESSENCE  $\rightarrow$  QUALITY  $\rightarrow$  VALUATION. This analysis indicated a significant serial mediation effect through the mediators of essence (M1) and quality (M2), [estimated indirect effect =  $-.05$ ; 95% CI =  $-.10$  to  $-.02$ ], a significant indirect effect of essence [estimated indirect effect =  $-.20$ ; 95% CI =  $-.34$  to  $-.08$ ], and no indirect effect of quality [estimated indirect effect =  $-.04$ ; 95% CI =  $-.11$  to  $.03$ ].



## Discussion

In Study 5, we observed that participants valued jackets with earlier (vs. later) serial numbers made by an individual designer, Alexander Wang, but not jackets with earlier (vs. later) serial numbers made by the company, H&M. This interaction between the early serial number preference and the type of origin is consistent with the transferred essence explanation and helps to further address potential alternative explanations (scarcity, salience of number, market demands, etc.) since, in general, all of these accounts would predict that a preference for items with earlier serial numbers should persist, regardless of the origin of the item. Further, we find direct support for the transferred essence explanation via the mediation analysis. This analysis also included several potential alternative mechanisms, thereby providing positive evidence for the mechanism as well as discriminant validity.

### **STUDY 6: THE ROLE OF LIKING**

The goal of Study 6 was to provide further insights regarding the mechanism of temporal contagion. We hypothesize that people value items with earlier serial numbers because those items are perceived as being closer to a valued source. Consistent with this explanation, Study 5 demonstrated that the preference for items with earlier serial numbers obtains when the item is associated with a well-known individual (Alexander Wang), but not when the origin is more generic. Additionally, mediation measures in

Study 5 demonstrated that the preference for items with earlier serial numbers is explained by perceptions of transferred essence.

In Study 6, we test a further prediction of this theory. Specifically, the preference for items with earlier (vs. later) serial numbers should be moderated by the extent to which people like the target. That is, based on a mechanism of temporal contagion, we would expect individuals who like the target entity (e.g., the creator) more should show a stronger preference for items with earlier serial numbers as compared to those who do not like the target. To test this, we selected a well-known figure whom people from the United States have varying opinions about, President Barack Obama. In this study, participants rated their willingness to pay for a print with an earlier and a later serial number in a limited edition set of Obama HOPE posters. Our central prediction was that individuals who hold a more favorable opinion of the President should exhibit a stronger preference for items with early (vs. later) serial numbers as compared to those who have a less favorable opinion of him.

Besides providing an additional test of our theory, this design also helps to address competing explanations of market value, quality, or numerical salience, which all predict that individuals should prefer items with earlier (vs. later) serial numbers regardless of their own liking of the target.

## Method

We recruited a group of 201 adults from Amazon's Mechanical Turk ( $M_{age} = 34.29$ , 38.8% female). All participants viewed an Obama HOPE poster with the following description:

*Pictured below is an original printing of the Obama HOPE poster. The poster was created just before the official launch of the 2008 Obama presidential campaign and quickly became an iconic image representing the Obama presidency. It consists of a stylized stencil portrait of Obama in solid red, beige and blue.*

*The poster was originally produced as a limited edition set of only 1500 prints. The very first poster (No. 0001) was made in November 2007, while the very last one (No. 1500) was made in December 2007.*

All participants then reported their willingness to pay for both a poster with an earlier serial number (No. 0002) and a poster with a later serial number (No. 1457). To capture liking of the President, participants answered the following item taken from Gallup polling, *Do you approve or disapprove of the way Barack Obama is handling his job as president?* (1 = Strongly Disapprove, 9 = Strongly Approve). In addition to other basic demographic information, participants also indicated their political orientation (Liberal or Conservative).

## Results

Three participants provided WTP values that were greater than 3.5 standard deviations from the group mean and were dropped from subsequent analyses. Overall, participants were willing to pay significantly more for the No. 2 poster ( $M = \$87.68$ ,  $SE = 13.67$ ) than the No. 1457 poster ( $M = \$47.24$ ,  $SE = 8.80$ ), paired-samples  $t(197) = 7.59$ ,  $p$

< .001. However, a repeated-measures ANOVA with the two WTP values (No. 2 vs. No.1457) as a within-subjects factor and approval rating as a covariate indicated a significant interaction between WTP and approval ratings,  $F(1, 195) = 6.39, p = .012$ . As predicted, individuals who had higher approval ratings of the President showed larger differences in their willing to pay for prints with earlier (vs. later) serial numbers. A similar pattern was observed when we compared the difference in WTP between liberals and conservatives. Specifically, liberals ( $M_{diff} = \$48.68, SE = 10.20$ ) showed a larger difference in their willingness to pay than conservatives ( $M_{diff} = \$18.48, SE = 4.94$ ),  $t(189.78) = 2.66, p = .008$ , Levine's for unequal variances ( $F=8.72, p = .004$ ).

One concern was that perhaps the relationship between difference in WTP and approval ratings is an artifact—that is, it could be that people who have a low approval of Obama are unwilling to pay anything for either poster. Thus, the interaction between approval rating and posters with earlier versus later serial numbers may be driven by a floor effect in which people with low approval ratings of Obama are not paying for either poster. However, inspection of the raw WTP values indicated that only 7% of participants were not willing to pay anything for either poster. Further, dividing participants with different approval level ratings into separate groups (approval rating of 1, 2, 3, etc.), we found that among all groups (1 through 9) participants were willing to pay more than zero for the posters (via a series of one sample t-tests) all  $ps \leq .08$ . Thus, we can conclude that the interaction is not just due to a floor effect, but instead that individuals with lower approval ratings place a smaller premium on temporal proximity to Obama relative to those with higher approval ratings.

Discussion

The results of Study 6 supported our prediction that the degree to which someone likes the individual in question should moderate the preference for items with earlier (vs. later) serial numbers. Specifically, we demonstrate that the preference for the HOPE posters with the earlier serial numbers is moderated by approval of the President, with individuals who are higher in presidential approval demonstrating a stronger sensitivity to temporal proximity than those who are lower in presidential approval. In addition, the moderation by liking reinforces the results from the previous studies. If items with earlier serial numbers were valued for some other reason entirely, we would not expect liking of the individual to impact valuation. For example, this study provided a further demonstration that market forces cannot fully explain the preference, since an account based only on perceived market value predicts that the difference in WTP (items with earlier vs. later serial numbers) should be roughly equivalent, regardless of one's own liking of the President.

Further, Study 6 is unique in that the stimuli were ambiguous as to whether President Obama was directly involved in the making of the posters (presumably not). In this case, the posters are only symbolically associated with President Obama. This suggests that temporal contagion effect may reflect a more general desire to seek connections to various entities, and this connectedness can be generated even for items that were not directly created by the target entity. Thus, temporal contagion may hint at a broader tendency to seek “symbolic proximity” to extensions of others' identities (Belk 1988). We explore the theoretical implications of this idea in more detail in the General Discussion.

## GENERAL DISCUSSION

This paper examines the psychological mechanisms underlying consumer preferences for items with earlier (vs. later) serial numbers in a limited edition set. We first identified this preference in auction sales of the Beatles' White Album. Studies 2-6 then replicated the preference for items with earlier serial numbers across several consumer domains. Specifically, Study 2 ruled out a salient number explanation, demonstrating that the preference for items with earlier serial numbers persists despite the presence of items with salient serial numbers (e.g., No. 1234567). Study 3 directly tested the relationship between number and chronological order by showing that the preference for items with earlier serial numbers dissipates when the numbers no longer signify chronological order. Study 4 showed that the preference for items with earlier serial numbers persists even when controlling for perceived market value. Study 5 demonstrated that perceptions of transferred essence mediate the preference for items with earlier serial numbers. Finally, Study 6 showed that the preference for items with earlier serial numbers is moderated by the degree to which people like the target entity.

Consistent with a temporal contagion mechanism, we find direct support for the hypothesis that items with earlier serial numbers are preferred because they are perceived as being temporally closer to the origin, and therefore, are thought to possess more of a valued essence (Study 5). Moreover, the present studies help to address alternative explanations such as perceived market value. We most directly address this alternative in Study 4. Further, we find that the preference for items with earlier serial numbers persists

over a wide range of values (Study 1), is dependent on chronological order, rather than the number itself (Study 3), persists only when the object is associated with a specific entity (Study 5), and is reduced for individuals who hold less favorable evaluations of the target entity (Study 6). In each case, a market value explanation makes a different set of predictions. Therefore, while it may be that perceptions of market value contribute to the valuation of limited edition items overall, when examined together, the results of these six studies suggest that market value alone cannot explain the preference for items with earlier serial numbers within the same limited edition set.

### **CONTAGION AND SYMBOLIC PROXIMITY**

These findings have important implications for contagion effects and valuation more generally. With respect to the existing research on contagion, the first thing to note is that the preference for items with earlier serial numbers does not seem to rely on differences in physical contact. Consider, for example, the ‘handprint’ stimuli used in Study 4. In this case, it was obvious that each print had the same amount of contact with John Lennon, and yet participants showed a consistent preference for handprints with earlier (versus later) serial numbers, even when controlling for perceived market value. Moreover, in the case of the Beatles albums (Studies 1 and 2) it is highly unlikely that participants inferred that the physical vinyl records themselves were actually physically touched or created by the Beatles (obviously the music was, but the records were not). Similarly, it is unlikely that in Study 5 participants inferred that the guest designer, Alexander Wang, physically made every jacket. Finally, in Study 6, it was unclear

whether President Obama played any role in even designing the poster (in actuality, he did not) and yet, participants showed a pattern of valuation that was consistent with a temporal contagion mechanism.

Given these stimuli, the fact that we find differences in value stemming from notions of transferred essence suggests a variant of essential contagion that is much more symbolic in nature. Specifically, value corresponds to the extent to which objects are seen as embodying the essence of a particular entity. The present studies suggest that temporal proximity may be one important dimension influencing this type of valuation, but there are likely others. For example, Stavrova, Fetchenhauer, and Newman (2015) demonstrated that objects that are designed, but not touched by moral or immoral creators are also seen as possessing the creator's essence (a phenomenon the authors term, 'intention-based contagion'). The broader, novel point is that with respect to contagion effects, the critical factor does not seem to be physical contact per se, but rather the extent to which an item is symbolically associated with a valued entity.

We suggest that this broader phenomenon is interpretable within the framework of an extended self. Historically, the link between contagion and the extended self has been discussed in relation to one's own identity and processes of self-concept maintenance (Belk 1988; James 1890; Newman, Bartels, and Smith 2014; Olson 2011). For example, anthropologists (Frazer, 1890/1959; Mauss, 1902/1972) discussed the practice of attaching one's own lock of hair to land as a means of establishing ownership. However, Belk (1988) further highlighted the role that the extended self plays in the consumption of objects that are symbolically associated with others—for example, why we might seek out items that have come into physical contact with a loved one or a well



regarded celebrity. While less is known about this latter process, the present studies suggest that it may be importantly related to the desire to be symbolically close to the entity in question. This predicts that other forms of symbolic proximity (e.g., a person's favorite sweater; Einstein's desk versus his hat) may similarly enhance valuation through a related mechanism.

At the same time, not all types of associations enhance value at similar rates. For example, a t-shirt with the image of John F. Kennedy is worth far less than a t-shirt that was actually worn by him. Therefore, one could ask, why do certain types of associations, but not others, make people feel that they are closer to a particular entity? Prior work coupled with our current findings would suggest that the most relevant dimensions informing perceptions of transferred essence would include factors such as physical contact, temporal proximity, intentionality, etc. However, at this point, any answer to this question is merely speculative and we see this as an exciting avenue for future research.

## **FUTURE DIRECTIONS**

The present studies are important because they highlight how contagion may influence valuation through many different channels. Future research could further explore the similarities and differences between the novel form of temporal contagion documented here and better understood mechanisms of physical contagion. For example, the analysis presented in Study 1 comparing signed Beatles' albums versus albums with earlier serial numbers suggests that the valuation of these two dimensions may be roughly equivalent in isolation. However, when both forms of contagion are present, it is possible

that physical contagion may trump temporal contagion, or that the effects may be additive or even multiplicative.

Further, one could explore whether consumers have different intuitions about the kinds of essential properties are likely to be transferred via physical versus temporal contagion. Previous research has shown that people think that abilities can be transferred via physical contact (e.g., using a golf club used by a skilled golfer can positively impact one's own golf ability, Lee et al. 2011). However, such an effect seems unlikely for temporal contagion—for example, it would be very surprising if owning an earlier numbered Beatles album increased one's musical ability. This suggests another interesting avenue for future research in differentiating these two different forms of contagion.

Future work could also explore other ways in which temporal contagion may play a role in perceptions of essence transfer. Though we focused on temporal proximity to a product's origin, we might also see these contagion effects emerge from other kinds of meaningful events in a product's history. For instance, the very last painting a great artist created or items made during a significant period of time in history (e.g., the Civil War) may similarly be imbued with more essence than otherwise identical items made at a different time. The enhanced valuation of items that are close to the origin may be tapping into a more general desire to be proximate to meaningful events. Future research could explore what kinds of events are likely to be seen as meaningful by testing for variation in how much people value items that were made before, during, or after a particular event.

Finally, though our work demonstrates that temporal proximity is desired due to perceptions of essence transfer, it is unclear why essence is valued in the first place. Future work could begin to explore the underlying psychological motivations behind this process. Qualitative work suggests that perhaps consumers value contagion items because they seek to feel connected to others (Beverland and Farrelly 2010), which is consistent with the notion of an extended self. Thus, attention to spatial and temporal cues could reflect a deeper underlying need to connect socially. Future work could directly examine this by manipulating a sense of social belongingness and examining the effects of contagion on value.

### **PRACTICAL IMPLICATIONS**

The present studies may also hold practical implications for real-world marketing and manufacturing practices. Many firms offer limited edition sets in which items are serial numbered. Here we demonstrate a preference for items with earlier serial numbers within a limited edition set especially when the origin of the item is a valued entity (e.g., a guest designer). Marketers could use this result to determine when it is beneficial to provide a serial number on products in a limited edition. Specifically, a serial numbered edition may benefit from this clear specification of the original creator, whereas products originating from a company may not benefit from specifying their precise serial number.

Additionally, this research contributes to a growing body of work that has identified the importance of essence in consumer valuation (Beverland 2005; Newman and Dhar 2014), and the multiple routes through which consumers may see goods as

inheriting those essential characteristics. These broader insights may be of importance to marketers, especially when brands have the ability to capitalize on this type of messaging.

## **DATA COLLECTION AND ANALYSIS PARAGRAPH**

The first author acquired the archival data for the first study from eBay in August 2014. For studies 2-6, the first author collected the data from Amazon's Mechanical Turk from June 2014 to October 2015. For all studies, the first and second authors jointly analyzed the data. All data and materials are available at the following address:

[www.XXX.xxx](http://www.XXX.xxx)

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**TABLE 1**

## STEPWISE REGRESSION RESULTS FROM BEATLES WHITE ALBUM SALES

Step	1	2	3	4	5
Serial Number	-.58***	-.47***	-.47***	-.47***	-.46***
UK pressing		.37***	.36***	.36***	.35***
Date of Sale			.09***	.09***	.09***
Sealed				.07***	.07***
US pressing					-.04***
<i>df</i>	7905	7904	7903	7902	7901
<i>R</i> <sup>2</sup>	.33	.45	.46	.47	.47

$p < .001$ \*\*\*;  $p < .01$ \*\*;  $p < .05$ \*

**TABLE 2**

## DESCRIPTIVE STATISTICS FOR THE BEATLES WHITE ALBUM SALES

Serial Number	<i>N</i> <sub>total</sub>	Mean <sub>price</sub>	Median <sub>price</sub>	SE <sub>price</sub>	UK <sub>pressing</sub>	US <sub>pressing</sub>	$\beta$ <sub>number</sub>
1-99	28	\$4,459.82	\$3,403.00	789.14	16	4	-.62***
100-999	79	\$1,004.20	\$750.00	118.15	32	14	-.22*
1000-9999	336	\$360.19	\$236.96	21.47	149	37	-.13**
10000-99999	1582	\$153.95	\$105.62	3.95	818	100	-.10***
100000-999999	4417	\$72.46	\$46.76	1.31	1580	448	-.11***
1000000+	1465	\$27.23	\$16.51	1.00	36	996	-.02

$p < .001$ \*\*\*;  $p < .01$ \*\*;  $p < .05$ \*

NOTE.—The final column indicates the effect of serial number on final bids within each range.

**TABLE 3****DIRECT COMPARISON OF EACH PAIRING IN STUDY 2**

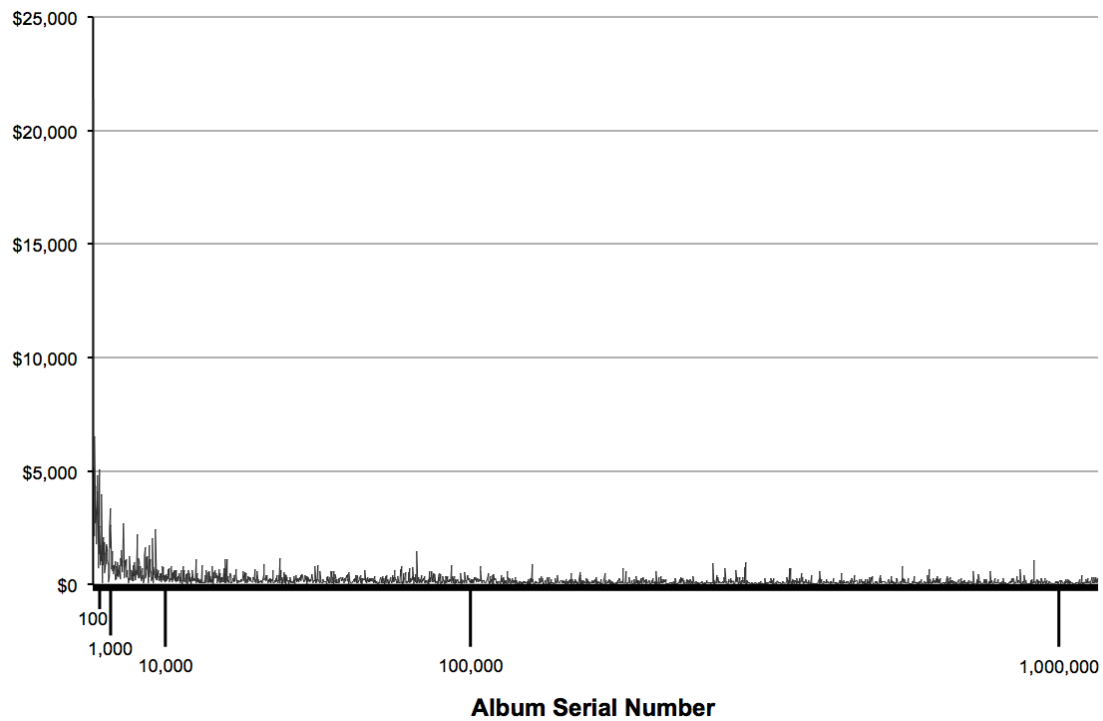
	<b>No.1000000</b>	<b>No.1111111</b>	<b>No.1147293</b>	<b>No.1234567</b>
<b>No.0000003 preferred</b>	0.92***	0.91***	0.98***	0.95***
<b>No.1000000 preferred</b>		0.85***	0.96***	0.88***
<b>No.1111111 preferred</b>			0.97***	0.85***
<b>No.1147293 preferred</b>				0.59*

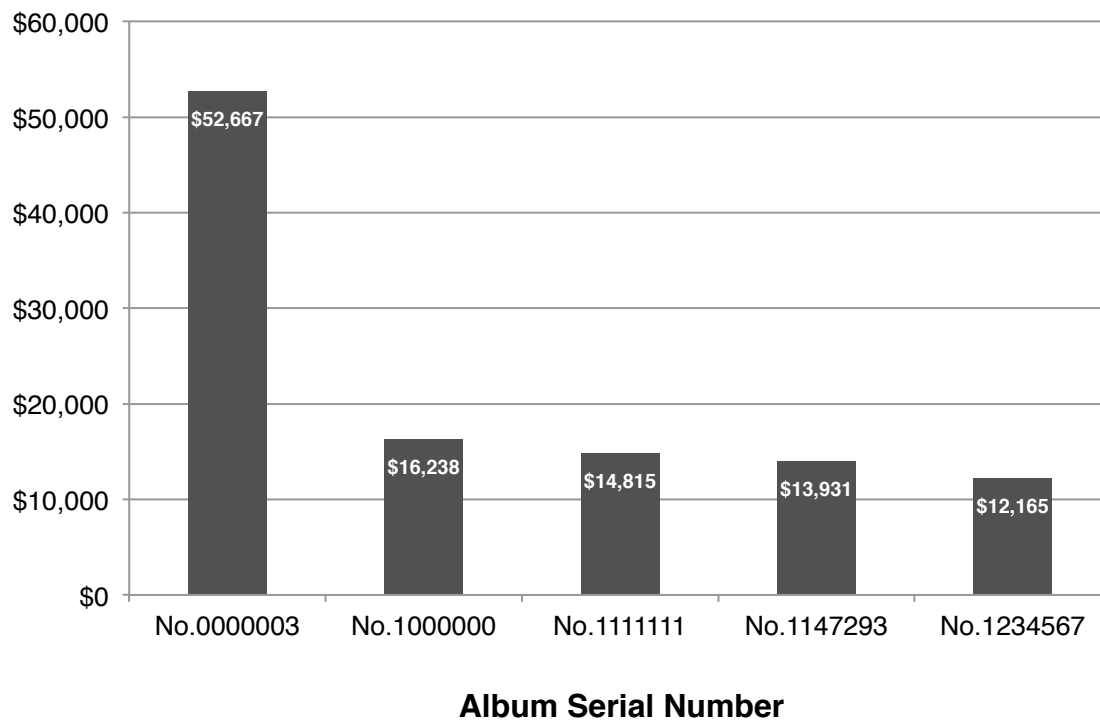
*p* < .001\*\*\*, *p* < .05\*

NOTE.— Numbers signify the proportion that each serial number in the left-hand column was preferred to serial numbers in the top row. Significance tests reflect results of binomial comparisons.

**FIGURE 1**

THE RELATIONSHIP BETWEEN SERIAL NUMBER AND FINAL AUCTION BIDS  
FOR THE BEATLES WHITE ALBUM (UK PRESSINGS)



**FIGURE 2****WILLINGNESS TO PAY RESULTS FOR STUDY 2**

**FIGURE 3**

PREFERENCE FOR DATED AND NUMBERED PRINTS FOR STUDY 3

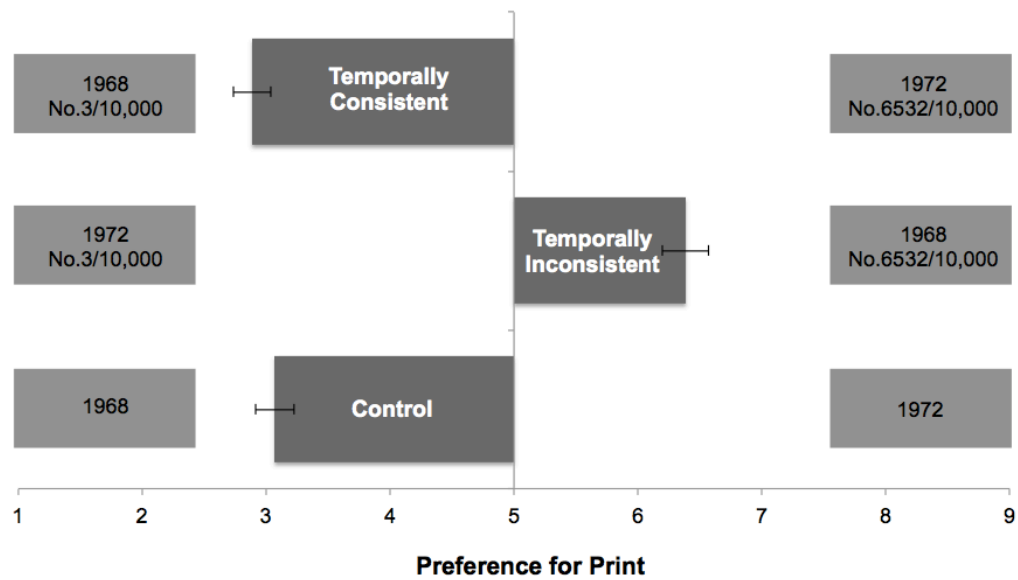
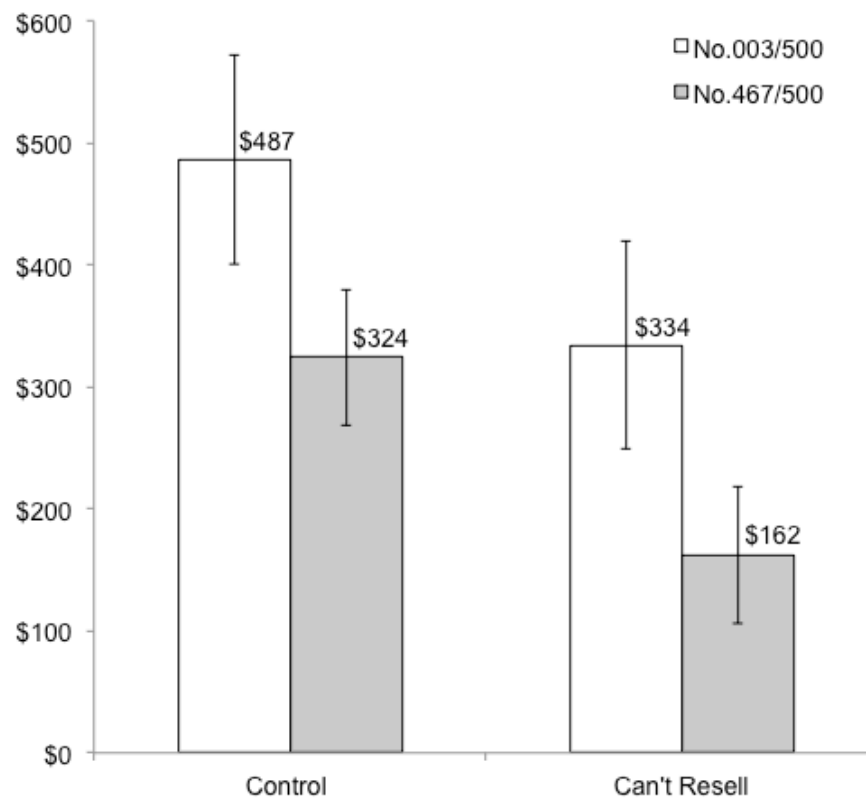
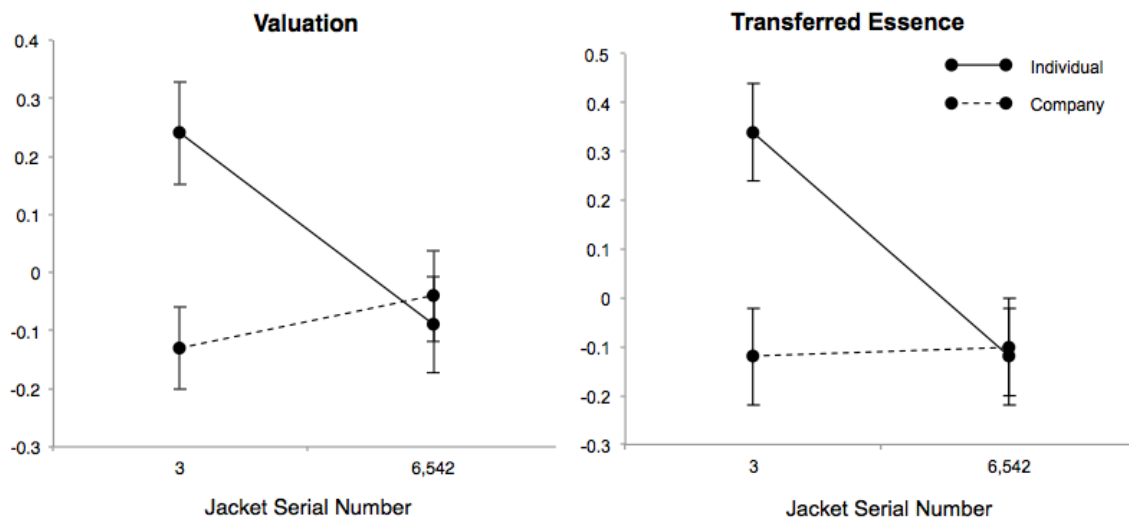


FIGURE 4

WILLINGNESS TO PAY FOR JOHN LENNON HANDPRINT FOR STUDY 4



**FIGURE 5**  
RESULTS OF STUDY 5





## **Headings List**

### **1) THE PREFERENCE FOR EARLIER SERIAL NUMBERED ITEMS**

#### **1) CONTAGION AND VALUE**

#### **1) ALTERNATIVE EXPLANATIONS**

#### **1) OVERVIEW OF STUDIES**

#### **1) STUDY 1: THE WHITE ALBUM**

##### **2) Method**

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#### **1) GENERAL DISCUSSION**

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#### **1) REFERENCES**