

The glow of grime: Why cleaning an old object can wash away its value

Merrick Levene* Daisy Z. Hu* Ori Friedman†

Abstract

For connoisseurs of antiques and antiquities, cleaning old objects can reduce their value. In five experiments (total $N = 1,019$), we show that lay people also often judge that old objects are worth less when cleaned, and we test two explanations for why cleaning can reduce object value. In Experiment 1, participants judged that cleaning an old object would reduce its value, but judged that cleaning would not reduce the value of an object made from a rare material. In Experiments 2 and 3 we described the nature, age and origin of the traces that cleaning would remove. Now participants judged that cleaning old historical traces would reduce the object's value, but cleaning recently acquired traces would not. In Experiment 4, participants judged that the current value of an old object is reduced even when it was cleaned in ancient times. However, participants in Experiment 5 valued objects cleaned in ancient times as much as uncleaned ones, while judging that objects cleaned recently are worth less. Together, our findings suggest that cleaning objects may reduce value by removing valued historical traces, and by changing objects from their historic state. We also outline potential implications for previous studies showing that cleaning reduces the value of objects used by admired celebrities.

Keywords: object value, old objects, cleaning, psychological essentialism

1 Introduction

Of course this “sheen of antiquity” of which we hear so much is in fact the glow of grime.

Junichiro Tanizaki (1977)

In 1971, the 1831 London Bridge was transported to Lake Havasu in Arizona. The owners were soon upset to find that the new climate was cleaning the bridge of its accumulated soot (Lowenthal, 1975). One city official said, “It will be a tragedy if the bridge loses its coat of soot. So much of London's heritage is right there in that black stuff” (Bowen, 1972). This sentiment – stripping old things of accumulated dirt and grime can reduce their worth – is widespread among connoisseurs of old goods. For example, on the television show *Antiques Roadshow*, sellers often find they have unwittingly reduced the value of antiques by cleaning them (McNatt, 2006). The present paper examines whether such beliefs about the effects of cleaning old goods are held by lay people, who may not have expertise with antiques and factors that affect their value.

We know that cleaning reduces people's valuations of the possessions of famous people they admire (Newman

& Bloom, 2014; Newman & Smith, 2016). For example, people's ratings of how much they would pay for a sweater owned by an admired celebrity drops dramatically if they imagine that the sweater was sterilized (Newman & Bloom, 2014). This effect of cleaning may stem from beliefs in contagion and essentialism. People appear to believe that when a person physically handles an object, the person transfers their immaterial qualities or “essence” to it (Argo, Dahl & Morales, 2006; Fedotova & Rozin, 2018; Rozin, Nemeroff, Wane & Sherrod, 1989; Nemeroff & Rozin, 1994, 2000). When the person is an admired celebrity, this raises the value of the object (Gelman & Hirschfeld, 1999; Marchak & Hall, 2017; Newman, Diesendruck & Bloom, 2011). People may also believe that cleaning or sterilizing an object removes the essence (Diesendruck & Perez, 2015; Nemeroff & Rozin, 1994; Uhlmann & Zhu, 2013). Hence, sterilizing a celebrity possession may reduce its value by leading people to feel it no longer retains traces of the celebrity.

However, people's valuations of many old objects are unlikely to depend on these kinds of essentialist beliefs. The 1831 London Bridge was not valued because it was used by a particular famous individual. So cleaning it could not reduce its value by removing a famous person's immaterial traces (for related discussion, see Gelman, Frazier, Noles, Manczak & Stilwell, 2015 and Pesowski & Friedman, in press). As such, if people think that cleaning old and historic objects reduces their value, this would suggest that other mechanisms can underlie lowered valuations for cleaned objects. Investigating this possibility could inform us about why people value historic objects, how they view the accumulation of dirt and grime, and about the scope of psychological essentialism.

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*Department of Psychology, University of Waterloo.

†Corresponding author. Department of Psychology, University of Waterloo, 200 University Avenue W, Waterloo, Ontario, Canada N2L 3G1. Email: friedman@uwaterloo.ca.

We see two reasons why people might feel that cleaning an old object reduces its value. First, people may feel that dirt accumulated in an object's past contributes to its present value. For example, people might value an old object for its history (even if this history is largely unknown) and could construe accumulated dirt as part of this history. The notion that dirt adds value is implicit in the statement of the official from Lake Havasu about the heritage of London being in the soot. On this "dirt adds value" account, people may feel that cleaning reduces value because it removes dirt that contributes worth.

A second reason why cleaning could reduce value is that old objects may be especially prized if they remain as they were in the distant past. People could feel that old objects provide a connection to the past (e.g., Belk, 1991; Grayson & Shulman 2000), but that this connection is broken or weakened if the object is modified in the present. On this "historic state" account, cleaning reduces value by making people feel an old object has been adulterated by the present, and is no longer in its historic state.

We conducted five experiments in which people considered the impact of cleaning old objects. We started by testing whether people do, in fact, judge that cleaning reduces the value of old objects. In the first experiment, we examined this without mentioning dirt or other historical traces on the object. In the subsequent experiments, we did describe these traces, and manipulated their ages and origins to test mechanisms that could underlie judgments that cleaning old objects reduces value. In the last two experiments, we tested the "dirt adds value" and "historic state" accounts.

2 Experiment 1

2.1 Method

2.1.1 Participants

The experiment was completed by 182 participants ($M_{\text{age}} = 28.57$ years, $SD = 9.79$ years, range = 18-72, 130 males, 51 females, and 1 participant who did not indicate their gender); an additional 9 participants also responded to the test questions, but were excluded for failing or neglecting to answer comprehension questions. In all experiments, we used Amazon's Mechanical Turk to recruit participants from the United States.

2.1.2 Materials and procedure

Participants read that a worker at an auction house would receive some items to be sold soon. They then read separate descriptions of the items, a spoon and a scarf (order randomized), which were each described as valuable. The experiment used a 2X2 between-subjects design in which: 1) value was ascribed to each item either because of its age or

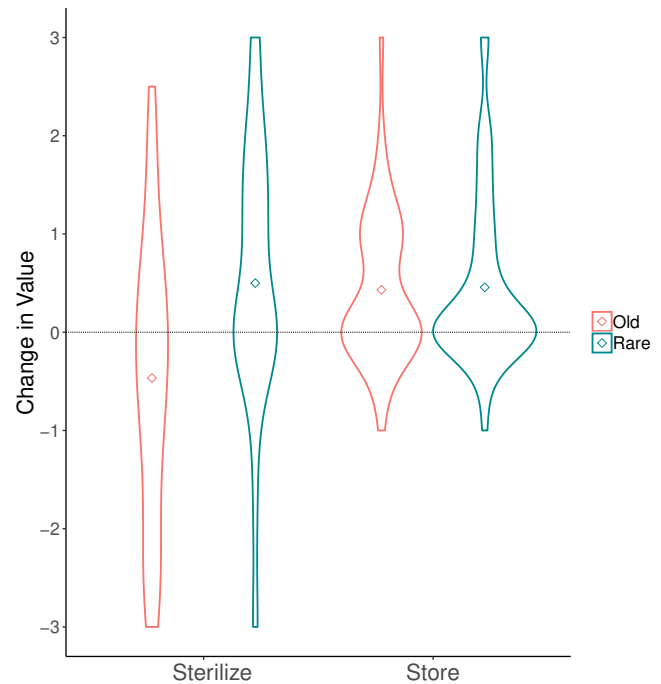


FIGURE 1: Violin plot for Experiment 1 showing participants' ratings of how item values would be affected. Ratings range from 3 "Greatly increases" to -3 "Greatly decreases".

because it was made of a rare material; 2) participants considered how the value of each item would be affected if the worker sterilized it without damaging it, or if the worker kept it in storage for a month. For the complete testing materials from all experiments, see <https://osf.io/ky8g6/>.

After participants read each description, they indicated how the value of the item would be affected by the action under consideration. They completed a statement about this possibility (e.g., "If [sterilized/stored], the value of the scarf. . .") using a 7-point Likert scale ranging from "Greatly increases" (3) to "Greatly decreases" (-3); the midpoint was labelled "Does not change" (0), and no other points of the scale had labels. After this, participants were asked two 3-option comprehension questions, and some basic demographic questions.

2.2 Results and Discussion

For data from all experiments, see <https://osf.io/ky8g6/>. Preliminary analyses revealed no effects of item (scarf, spoon), so we averaged scores across these items. A 2(item-type: old, rare) X 2(action: sterilize, store) analysis of variance revealed main effects of item-type, $F(1, 178) = 8.45$, $p = .004$, $\eta_p^2 = .045$, a main effect of action, $F(1, 178) = 6.28$, $p = .013$, $\eta_p^2 = .034$, and an interaction between these factors, $F(1, 178) = 7.63$, $p = .006$, $\eta_p^2 = .041$; see Figure 1. For older items, participants gave lower valuations for sterilizing than

for storing, $t(67.05) = 3.69$, $p < .001$; for rare items, valuations did not differ across these actions, $t(78.28) = 0.18$, $p = .855$.

Also, single-sample tests (against the midpoint value of 0) showed that participants judged that sterilizing would decrease the value of old objects ($M = -0.47$, $SD = 1.44$), $t(44) = -2.17$, $p = .035$), but increase the value of ones made from rare materials, ($M = 0.50$, $SD = 1.36$), $t(46) = 2.51$, $p = .015$. In contrast, they judged that storing would increase the value for both old objects ($M = 0.43$, $SD = 0.76$), $t(43) = 3.77$, $p < .001$, and for rare ones ($M = 0.46$, $SD = 0.87$), $t(45) = 3.57$, $p = 0.001$.

In sum, participants viewed cleaning as detrimental to the value of old objects. Crucially, the current study demonstrated this without explicitly making reference to *what* is being removed from the objects. This suggests that people may assume that old objects accumulate historical traces which can be cleaned from them, and that removing these traces reduces the value of the objects. We followed up on this possibility in the next experiment by examining judgments about cleaning old objects with either very old or new historic traces on them.

3 Experiment 2

3.1 Method

3.1.1 Participants

The experiment was completed by 98 participants ($M_{\text{age}} = 28.14$ years, $SD = 7.98$ years, range = 18–66, 67 males and 31 females); 3 additional participants also completed the experiment, but were excluded for failing or neglecting to answer comprehension questions.

3.1.2 Materials and procedure

Participants read about an archaeologist who had discovered ancient items used by Roman soldiers in battle. They then read descriptions of four items, which each had a salient historical trace on it: a helmet with a blood stain on it; a sword with mud on its handle; an armored vest with burn marks on it; and a shield with scratch marks on it. The traces were either acquired in ancient times in a battle or recently from the activities of modern explorers. For example, the blood on the helmet was either from “a warrior injured in battle while wearing the helmet” or from “an explorer who recently cut his finger while handling the helmet”. For each participant, two items had old historical traces and two had recent historical traces. In one counterbalancing group, the old traces were on the helmet and sword and the recent traces were on the vest and shield; these pairings were reversed for a second counterbalancing group. Within each group, the presentation order of the items was random.

After participants read each description, they indicated how the object’s value would be affected if the historical trace were removed. They completed a statement about this possibility (e.g., “If the blood is removed, the value of the helmet...”) using a 7-point Likert scale ranging from “Greatly increases” (3) to “Greatly decreases” (–3); the midpoint was labelled “Does not change” (0), and no other points of the scale had labels. After this, participants responded to two 3-option comprehension questions, and some basic demographic questions.

3.2 Results and Discussion

We averaged each participant’s responses for the two items with old historical traces, and also averaged their responses for the two items with more recent traces. Participants gave more negative ratings for removing traces acquired in ancient times than for removing traces acquired more recently, paired-sample t-test, $t(97) = 11.64$, $p < .001$. They judged that removing old traces from an artifact would decrease its value, as ratings for removing old traces were significantly lower than the midpoint value of 0 ($M = -1.67$, $SD = 1.25$), $t(97) = 13.17$, $p < .001$. In contrast, participants judged that removing recent traces from an artifact would increase its value ($M = 0.68$, $SD = 1.56$), $t(97) = 4.34$, $p < .001$.

These findings suggest that the value of an old object is diminished if old historical traces are removed from it, but not if newer traces are removed. However, rather than being sensitive to whether traces are new or old, participants might instead have responded to whether traces were tightly linked with the objects’ historical roles. Consider the helmet with a bloodstain from an ancient battle. Participants might have cared about the stain because it was tightly linked with the helmet’s historical role, and not because it was old. We explored this possibility in the next experiment.

4 Experiment 3

4.1 Method

4.1.1 Participants

The experiment was completed by 246 participants ($M_{\text{age}} = 28.08$ years, $SD = 8.00$ years, range = 18–62, 166 males, 77 females, and 3 participants who did not indicate their gender); an additional 79 participants also responded to the test question in the experiment, but were excluded for failing or neglecting to answer comprehension questions.

4.1.2 Materials and procedure

Participants were randomly assigned to read one of four brief descriptions of a statue used in ancient rituals in a temple.

The statue was coated in an oily residue caused by exposure to oil and ashes. The origin and age of this historical trace varied across the four conditions. In three conditions, it formed in ancient times, through means that were either strongly, moderately, or weakly linked with the statue's historical role — the oils and ashes were either rubbed onto the statue by temple priests (strong link), came from lamps used in ancient temple rituals (moderate link), or came from fires that once burned in an ancient market near the temple (weak link). In the fourth condition, the residue was from modern times, and was caused by exhaust and pollution. After reading the description, participants judged how the value of the statue would be affected if the oily residue were removed without damaging the statue. As in Experiment 1, participants responded using a 7-point Likert scale. Participants then completed three 3-option comprehension questions, and demographic questions regarding gender and age.

4.2 Results and Discussion

Participants' responses varied across the conditions, $F(3,242) = 50.31, p < .001, \eta_p^2 = 0.38$. They gave higher valuations for removing new historical traces than for removing all kinds of old traces, all $ps < .001$ (Tukey tests), but their judgments did not significantly vary depending on whether old traces were strongly, moderately, or weakly linked with the object's historical role, $ps \geq .574$. As in the first experiment, participants judged that removing old historical traces from an artifact would decrease its value: strong link ($M = -1.59, SD = 1.25$), $t(55) = 9.54, p < .001$; moderate link, ($M = -1.56, SD = 1.44$), $t(63) = 8.71, p < .001$; weak link, ($M = -1.25, SD = 1.55$), $t(66) = 6.62, p < .001$. They likewise judged that removing recent traces would increase its value, ($M = 1.17, SD = 1.50$), $t(58) = 5.99, p < .001$.

These findings suggest that it is the age of historical traces which influences how their removal affects object value. The extent to which traces were linked with historical role, in contrast, did not significantly influence participants' judgments, though it is of course possible that effects would be revealed with larger sample sizes.¹

Our findings so far are generally consistent with both explanations raised earlier regarding why removing old traces from an object diminishes its value. The "dirt adds value" account posits that old historical traces contribute to the present value of old objects, and so removing these traces subtracts value. The "historic state" account posits that old objects are especially valued when they remain as they were in the past, and that cleaning diminishes value by taking them out of this state. We tested these views in the next experiment.

¹This is not to deny that that valuations of objects could be affected by the nature of old traces. For example, if participants estimated the monetary value of the artifact in each condition, we might find that the statue with strongly linked old traces (oils rubbed onto statue in temple rituals) is worth more than the statue with the weakly linked ones (oils from fires in a market near the temple).

In contrast with the experiments so far, participants in this experiment were not asked about how the value of an object would be affected if historical traces were removed from it. Instead, they judged which of two ancient objects is more valuable — an object retaining old historical traces or an object from which these traces have been removed.

5 Experiment 4

5.1 Method

5.1.1 Participants

The experiment was completed by 291 participants ($M_{\text{age}} = 37.38$ years, $SD = 11.52$ years, range = 18–74, 137 males, 151 females, and 3 participants who did not indicate their gender); an additional 81 participants also responded to the test question, but were excluded for failing or neglecting to answer comprehension questions.

5.1.2 Materials and procedure

Participants read about two identical ancient statues in a temple high atop a mountain. Both statues were coated in ashes and oily residue caused by ancient sacrifices of the Midorian people. However, the state of one of the two statues then changed, and the nature of this change varied across three between-subjects conditions: it was cleaned by the Midorian people just before they vanished and abandoned the temple; it was cleaned by other ancient people right after the Midorians vanished and abandoned the temple; or it was recently cleaned by some modern explorers. In all three conditions, this statue remained clean, in contrast to the other statue which was untouched and remained dirty.

After reading the description, participants judged which statue was more valuable in an auction. Participants indicated responses using a 7-point Likert scale, ranging from "Definitely the statue coated with residue and ashes" (3) to "Definitely the statue that was cleaned" (-3); the midpoint was labelled "They have the same value" (0), and no other points of the scale had labels. After answering this test question, participants were asked two 3-option comprehension questions, and demographic questions regarding gender and age.

This experiment allows for separate tests of both accounts of why cleaning reduces value. The predictions of the "dirt adds value" account concern participants' choices *within* each condition. It predicts that participants in each condition should favor the dirty object over the cleaned one, because regardless of condition, the dirty statue has value lacked by the clean one.

Meanwhile, the predictions of the "historic state" account concern comparisons *between* the conditions. This account posits that cleaning an old object can reduce its value by

changing it from its historic state. It is clear that cleaning can have this effect when the dirt has been on the object for a long time, and the cleaning occurs in modern times. But if the object was cleaned in ancient times (and especially by the people most connected with it), then being clean can be construed as part its historic state. As such, this account predicts that statues cleaned in ancient times should be valued more than those cleaned recently.

5.2 Results and Discussion

There was only a marginally significant effect of condition, $F(2, 288) = 2.51, p = .083, \eta_p^2 = 0.02$. In each condition, participants indicated that the uncleaned statue was more valuable than the cleaned one: cleaned-by-Midorians ($M = 1.13, SD = 1.83, t(105) = 6.36, p < .001$; cleaned-by-other-ancient-people ($M = 1.51, SD = 1.69, t(78) = 7.91, p < .001$, cleaned-by-modern-explorers ($M = 1.63, SD = 1.53, t(105) = 11.19, p < .001$).

These findings suggest that people feel that historical traces contribute value to objects. Even when historical traces on an item were removed in ancient times and by people linked with these traces, this removal still reduces the value of the object (i.e., makes it less valuable than a similar object that retains the historical traces). The fact that we only observed a marginally significant effect of condition also suggests that participants' judgments do not reflect beliefs that objects are most valuable when they are in their ancient state.

A potential concern, though, is that this experiment tested the accounts in very different ways. The "dirt adds value" account was tested using single-sample analyses conducted within each condition, whereas the "historic state" account was tested using between-subjects comparisons that were probably less sensitive. To address this concern, our final experiment tested both accounts using a fully within-subjects design. In contrast with the previous experiments, participants in this experiment were asked to make monetary valuations.

6 Experiment 5

This study was preregistered at <https://aspredicted.org/85989.pdf>.

6.1 Method

6.1.1 Participants

The experiment was completed by 202 participants ($M_{\text{age}} = 35.71$ years, $SD = 11.22$ years, range = 20–71, 111 males, 89 females, and 2 participants who did not indicate either gender). An additional 55 participants were tested but excluded for at least one of the following reasons (as specified in the

preregistration): not responding to all test questions; incorrectly responding to a "catch" item; failing a comprehension question.

6.1.2 Materials and procedure

Participants read that an auction house was selling statues recently discovered in a Midorian temple. The statues had once been coated in ashes and oily residue (resulting from sacrifices in the temple), but some statues had since been cleaned. Participants were informed that statues like these usually sell for between 50 to 90 thousand dollars, and were asked to rate the approximate value of some statues using a 5-point scale with corresponding values (i.e., \$50K, \$60K, \$70K, \$80K, \$90K). For analysis, these dollar values were recoded onto a numerical scale ranging from 1 to 5.

One statue had never been cleaned, and three had been cleaned — one by the Midorians, one by members of a different ancient tribe, and one by present-day archaeologists. The experiment also included a fifth statue as a "catch" item that participants were instructed to rate as valued at \$90K. Presentation order of the statue descriptions was random, though the "catch" item always appeared fourth in the list of five statues. After participants rated the statues, they were asked a 3-option comprehension question, and demographic questions regarding gender and age.

This experiment again allows for separate tests of both accounts of why cleaning reduces value. The "dirt adds value" account predicts that the uncleaned statue will be valued more than all cleaned ones. Meanwhile, the "historic state" account predicts that the statues cleaned in ancient times will be valued more than the one recently cleaned by archaeologists. This account is also consistent with the possibility that the statue cleaned by the Midorians will be more valued than the one cleaned by a different tribe.

6.2 Results and Discussion

Responses varied across the conditions, $F(3,603) = 59.17, p < .001, \eta_p^2 = 0.23$; see Figure 2. The statue recently cleaned by archaeologists was less valued than all other statues, all $ps < .001$, and the statue cleaned by the Midorians was more valued than the one cleaned by the other tribe, $p < .001$ (pairwise comparisons). Crucially, the uncleaned statue was *not* valued above either statue cleaned in ancient times, $ps \geq .056$.

In contrast with the previous experiment, these findings do not support the "dirt adds value" account, but are in-line with the "historic state" account. Statues cleaned in ancient times were valued as much the one that remained dirty. Cleaning only reduced value insofar as it removed statues from their historic state.

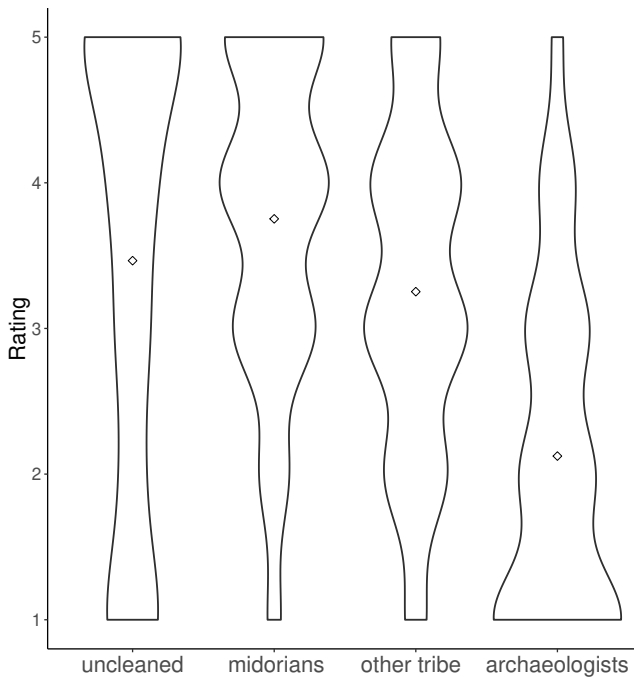


FIGURE 2: Violin plot for Experiment 5 showing ratings of items' values. Ratings range between 5 (\$90K) to 1 (\$50K).

7 General Discussion

Our findings show that people judge that cleaning an old object can reduce its value. Participants judged that cleaning would reduce the value of an object when uninformed about dirt and historical traces on it, and when traces were described as having old origins. In contrast, when traces on the object were described as recent, participants judged that cleaning would not reduce its value. Some of our findings also suggest that the value of cleaned objects depends on when they were cleaned, and by who. Together, these findings are informative about why people judge that cleaning reduces value, and how they view dirt and historical traces that accumulate on objects. The findings may also have implications for the interpretation of how contact and cleaning affect the value of objects previously used by famous individuals.

Why does cleaning an old object reduce its value? One possibility is that old objects are especially valued when they remain as they were in the distant past — when they remain in their historic state. On this view, cleaning may reduce the value of an old object by changing it from this state. A key prediction of this account is that the effects of cleaning should depend on when it occurs. Cleaning that takes place in modern times may remove an object from its historic state. But if the object was cleaned long ago, being clean may be viewed as part of its historic state. Overall, our findings support this account. Although it was not supported in the fourth experiment, it was supported in the final experiment,

which used a more sensitive design. This account could also explain other aspects of people's valuations of objects. For example, the belief that objects are most valuable in their historic state could explain why collectibles are often worth more if they are in mint condition (e.g., collectible action figures kept in their original packaging for protection).

The effects of cleaning may also depend on people's beliefs about old dirt and other historical traces. People could believe that these traces contribute to an object's value, and that ridding an object of these traces removes a source of worth. We found support for this account in the fourth experiment, where participants indicated that dirty ancient objects were more valuable than cleaned ones, even when the cleaning had occurred long ago. But against this, in the fifth experiment, monetary ratings of uncleaned items were no greater than ratings of items cleaned in ancient times. For now, we can only speculate about why these two experiments yielded different findings — perhaps there are critical differences in thinking depending on whether participants make abstract assessments of value or monetary ones, or depending on whether they compare objects or independently rate them (see Hsee, Zhang & Chen, 2004 for a review of other instances where joint and separate evaluations yielded differing results).

Besides providing support for these accounts (and especially the historic state one), our findings cast doubt on other potential explanations for why cleaning might reduce the value of old objects. For example, people could feel that dirt and historical traces contribute value by helping old objects look their age. People may feel that “old things should look old” (Lowenthal, 1975), and treat this appearance as a sign of authenticity (Grayson & Martinec, 2004). This appearance-based account is not specific to *old* dirt — even new dirt and new historical traces can make an object look old. Hence, this account may struggle to explain why our participants judged that cleaning recent dirt and traces does not reduce value, even though these things could also have helped objects look old. A Roman vest with recently acquired burned marks is unlikely to look newer than one burned in ancient times.

One could also posit that people view ancient objects as containing the essence of the society or time from which they originate. On this view, dirt and other historical traces contribute a valued essence to old objects, much as physical contact with a celebrity can. But this possibility is undermined the finding, from the final experiment, that people valued objects cleaned in ancient times. Work on essentialism suggests that people think that cleaning an object possessed by a celebrity removes the celebrity's essence (e.g., Newman & Bloom, 2014; Newman & Smith, 2016). When the object was cleaned in ancient times, this should have reduced its value. (Also, we know of no evidence that people conceive of societies or historical times as having essences that can be transmitted to objects).

Our findings may also have some further implications for interpreting people's valuations of objects previously used by celebrities and other famous individuals. As reviewed above, people often value these objects, but their valuations are reduced if these objects have been cleaned or sterilized. These valuations are thought to reflect beliefs that objects used by a celebrity possess the celebrity's essence (Gelman & Hirschfeld, 1999; Newman et al., 2011), and that cleaning removed this essence (Newman & Bloom, 2014; Newman & Smith, 2016). This interpretation is consistent with a broader literature which finds effects of contact and cleaning for objects handled by individuals other than celebrities, such as historical villains, and liked and disliked peers (e.g., Diesendruck & Perez, 2015; Nemeroff & Rozin, 1994; Uhlmann & Zhu, 2013).

Our findings raise the possibility that cleaning may also reduce the value of celebrity possessions for reasons not connected with essences. The "historic state" account may apply to celebrity possessions. Like ancient objects, they may be most valued when they remain in their historical state — an object once owned by a celebrity may be worth most if it remains as it was when owned by the celebrity. Cleaning could be viewed as changing objects from this state. But so might other actions, that are unlikely to be viewed as removing an object's essence. Consistent with the possibility, people's valuations of celebrity possessions are reduced if they objects are described as being disassembled and then reassembled (Marchak & Hall, 2017).

We close by considering a potential caveat. In our experiments, participants read descriptions of items, but did not see them. So our findings might not capture how people ascribe value to old objects they can actually see. If certain old objects look much more impressive when cleaned, we might even see our findings reverse — cleaning could increase valuations. Such findings would not necessarily undermine our results. People's valuations of objects are likely subject to conflicting influences. They may feel that old dirt and historic traces increase the value of old objects, but may typically prefer looking at old objects that have been cleaned. If such conflicts do exist, people might show the highest regard for old objects if they are unaware the objects have been cleaned.

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