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Thorndike's Valuations Revisited

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In the early 1930s, Thorndike asked a variety of participants to estimate how much money (paid in cash) they would require to suffer a variety of pains (e.g., the worst headache or toothache you have ever had), deprivations (e.g., have all your teeth pulled out), frustrations (e.g., have to live all the rest of your life in Iceland), and repulsive acts (e.g., eat a quarter pound of cooked human flesh). The present study was performed to determine if and how the relative importance of these valuations has changed since Thorndike's original work. Although a few curious differences obtain, the general pattern of results is largely consistent with Thorndike's findings — people report they would require outlandish compensation.

Keywords: Thorndike, historical replication, judgment

In 1934, the noted psychologist Edward Lee Thorndike (1874–1949) asked 60 students and teachers of psychology at Columbia, as well as 39 unemployed individuals, to estimate how much money they would require to suffer a variety of pains, deprivations, frustrations, and repulsive acts. Thorndike (1937/1949) provides little contextual background for this research or the participants involved, but conjectured that individuals would respond differently as a function of earning potential. Although some of our historically-knowledgeable colleagues have suggested that a politically conservative Thorndike likely had something of a "social agenda" in play here, we will hold such speculations in abeyance.

Despite finding differences in the amounts of money requested between the employed and unemployed (amounts requested by unemployed respondents tended to be much lower than from those employed), Thorndike focused his

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"discussion" on two other findings: (1) the *post-facto* question-groupings formed by examining which items resulted in similar monetary requests; and, (2) the gross magnitude of the amounts requested as being absurdly high regardless of employment status. Indeed, it is this finding — of seemingly absurd responses — that we found particularly intriguing and that led to the present work.

Additionally, in some questions strong sex differences appeared (e.g., women wanted more compensation for bodily disfigurements); with other items, many individuals simply refused to provide an answer (e.g., for the loss of a sensory ability). Thorndike viewed such patterns as reflecting basic human motivations; a "hedonic calculus" as he put it. Thus, rather than really focusing on differences in amounts between items, Thorndike was taken with the prospect that this economic value "method" allowed people to make judgments about things that are not clearly, or intuitively, comparable. As Thorndike (1937/1949) stated, "The very man who insists that one scale of value for literary delights and smoking is impossible will admit that he preferred to use sixpence for *Punch* rather than cigarettes, or vice versa" (p. 247).

At many levels, Thorndike's original work is simply fascinating. So fascinating, that we wanted to explore how the findings might have changed (or not) after 80 years. Indeed, the original work is perhaps best viewed as a methodological "proof of concept," even if the outrageousness of the results may well qualify to what degree the concept was proved. Although exploring the prospect of a hyper-pragmatic analysis of "cash value" (in the Jamesian sense) as a common ground for comparing disparate items remains conceptually interesting, it is not our purpose here. As noted above, for us, the most intriguing aspect was the outrageousness of the results themselves — the amounts of cash subjects reported they would require to "suffer" various acts. Were such absurdly large requests the result of a bygone era, or might they suggest something more enduring and universal about human nature?

Method

Our study used the exact questionnaire and instructions that appeared in Thorndike's original work. Our goal was to collect data from our volunteers that would have the best chance of replicating Thorndike's own efforts. Participants were 105 students solicited from psychology courses at a large, Southern, research university in the United States. There were 37 males and 68 females, aged 18 to 28, representing a variety of majors. This sample included 48% underclassmen (freshmen/sophomores), 25% upperclassmen (juniors/seniors), and 27% graduate students. Participants were 76% Caucasian and 24% African–American.

Participants were tested in group sessions, during weekday afternoons, using vacant classrooms. Each participant was given a packet containing an informed consent document, an instruction sheet, a general demographics measure that included a self-report of religiosity, and the two-page questionnaire containing

Thorndike's 51 hypothetical valuation items (see Table 1). Printed instructions and questions were taken verbatim from Thorndike (1937/1949). The instructions, which appear above the 51 questions, were "For how much money, paid in cash, would you do or suffer the following? Write the amounts on the dotted line. You must suppose that the money can be spent on yourself only and that whatever you buy with it is destroyed when you die. You cannot use any of it for your friends, relatives, or charity." Participants had as much time as they needed to complete the task.

Table 1
A Comparison of Thorndike's Results with the Present Study

		Thorndike		Present Study		
	Question	**Compensation**	**Rank**	**Compensation**	**Rank**	**Omitted**
1	Have one upper front tooth pulled out.	$4,750	40	$20,042,429	48	22%
2	Have all your teeth pulled out.	$875,000	15	$1,804,447,782	25	39%
3	Have one ear cut off.	$1,500,000	12	$4,538,614,088	17	57%
4	Have your left arm cut off at the elbow. (right arm if you prefer)	$2,500,000	10.5	$1,732,884,880	26	60%
5	Have a little finger of one hand cut off.	$137,500	27	$210,885,333	39	47%
6	Have the little toe of one foot cut off.	$33,500	34	$2,209,093	50	42%
7	Become entirely bald.	$412,500	21	$101,373,000	42	31%
8	Have all the hair of your eyebrows fall out.	$62,500	30	$2,418,285	49	26%
9	Have one leg cut off at the knee.	$40,000,000	4.5	$15,623,007,500	7	56%
10	Have both legs paralyzed.	$40,000,000	4.5	$7,735,201,190	14	60%
11	Have small pox, recover perfectly except for about 20 large pock-marks on your cheeks and forehead.	$1,000,000	13.5	$1,943,266,074	23	45%
12	Become totally deaf.	$100,000,000	2	$5,645,223,205	16	63%
13	Become totally blind.	[No $]*	N/A	$807,466,571	37	67%
14	Become unable to chew, so that you can eat only liquid food.	$10,000,000	7	$9,495,074,371	12	47%
15	Become unable to speak, so that you can communicate only by writing, signs, etc.	$15,000,000	6	$16,713,474,510	6	53%
16	Become unable to taste.	$3,000,000	9	$308,542,125	38	47%
17	Become unable to smell.	$225,000	25	$136,588,853	41	45%
18	Require 25 per cent more sleep than now to produce the same degree of rest and recuperation.	$68,750	29	$10,732,439,667	9	19%
19	Fall into a trance or hibernating state throughout October of every year.	$312,500	23	$76,957,539	44	36%
20	Fall into a trance or hibernating state throughout March of every year.	$300,000	24	$184,022,128	40	34%
21	Be temporarily insane throughout July of every year (manic depression insanity, bad enough so that you would have to be put in an insane asylum, but with no permanent ill effects).	$2,500,000	10.5	$9,544,286,528	11	50%
22	Same as 21, but for two entire years now with no recurrence ever again.	$500,000,000	1	$26,398,268,324	4	49%
---	Have to live all the rest of your life:					
23	… outside of U.S.A.	$175,000	26	$1,385,153,821	28	16%
24	… in Iceland.	$1,000,000	13.5	$2,563,718,110	22	30%
25	… in Japan.	$750,000	16.5	$1,933,764,730	24	30%

(continued on next page)

Table 1 (continued)
A Comparison of Thorndike's Results with the Present Study

		Thorndike		Present Study		
	Question	**Compensation**	**Rank**	**Compensation**	**Rank**	**Omitted**
26	… in Russia.	$575,000	19	$3,039,518,181	21	34%
27	… in Nicaragua.	$750,000	16.5	$4,095,928,783	19	34%
28	… in New York City.	$37,500	33	$1,292,001,804	29	13%
29	… in Boston, Mass.	$75,000	28	$1,115,736,226	33	11%
30	Live the rest of your life on a farm in Kansas, 10 miles from any town.	$650,000	18	$1,656,204,019	27	18%
31	Have to live the rest of your life shut up in an apartment in New York City. You can have friends come see you there, but cannot go out of the apartment.	$60,000,000	3	$6,673,326,413	15	56%
32	Eat a dead beetle one inch long.	$5,000	39	$45,138,991	47	30%
33	Eat a live beetle one inch long.	$375,000	22	$64,259,370	46	35%
34	Eat a dead earthworm 6 inches long.	$15,000	37	$73,501,058	45	30%
35	Eat a live earthworm 6 inches long.	$55,000	31	$78,623,241	43	34%
36	Eat ¼ pound of cooked human flesh (nobody but the person who pays you will ever know it).	$550,000	20	$9,783,545,165	10	59%
37	Same as 36 but supposing that the fact that you do so will appear next day on the front page of all the NY papers.	$7,500,000	8	$32,699,950,837	2	64%
38	Drink enough to become thoroughly intoxicated.	$75	48	$1,143,278,642	32	16%
39	Choke a stray cat to death.	$10,000	38	$4,105,616,627	18	52%
40	Let a harmless snake 5 feet long coil itself round your arms and head.	$300	45	$8,991,518,307	13	15%
41	Attend Sunday morning service in St. Patrick's Cathedral, and in the middle of the service run down the aisle to the alter, yelling "The time has come, the time has come" as loud as you can until you are dragged out.	$50,500	32	$11,962,795,006	8	36%
42	Cut a pig's throat with a sharp knife.	$750	43	$26,184,447,970	5	34%
43	Walk down Broadway from 120th Street to 80th Street at noon wearing evening clothes and no hat.	$150	47	$1,100,889,676	35	13%
44	Spit on a picture of Charles Darwin.	$15	50	$1,256,608	51	7%
45	Spit on a picture of George Washington.	$30	49	$1,064,409,012	36	10%
46	Spit on a picture of your mother.	$17,500	35.5	$3,340,298,342	20	41%
47	Spit on a crucifix.	$153	46	$29,803,182,165	3	67%
48	Suffer for 1-hour pain as severe as the worst headache/toothache you've ever had.	$375	44	$1,102,722,605	34	13%
49	Have nothing to eat but bread, milk, spinach and yeast cakes for a year.	$17,500	35.5	$1,241,712,947	30	23%
50	Go without sugar in all forms (including cake, etc.), tea, coffee, tobacco, and alcoholic drink, for a year.	$1,875	42	$1,236,511,400	31	22%
51	Lose all hope of life after death.	$3,275	41	$55,048,473,500	1	71%

*Note: Means shown for Thorndike were computed based on averaging the diferent samples he reported. He notes that for this item both the modal and median response in his samples was to leave the amount blank, and as such he did not provide a numerical value for this item in his original report.

Results and Discussion

Average monetary requests and the percentage of respondents *unwilling to provide* monetary estimates (of which, as Thorndike noted, there were many for certain questions, although he does not provide actual percentages) were calculated. Additionally, the data were examined for differences in valuations as a function of sex, race, and degree of self-reported religiosity. These results are juxtaposed with the mean of those obtained by Thorndike, although an obvious economic inflation confounds simple comparison. Likewise, with only Thorndike's summary findings available, statistical analyses were limited. As such, the comparison of Thorndike's original results was done by rank-order. The overall correlation between our ranks and Thorndike's was $r(48) = 0.363$, $p = 0.0096$ (two tailed).

In terms of relative values placed on the 51 questions, there were many interesting similarities as well as some curious differences between the reports of individuals from the 1930s and those of individuals from the present study. Of note were similarities between groups in ranking items 9 (loss of a leg), 15 (becoming mute), 21 and 22 (both involve hospitalization for insanity), and 37 (being known to have eaten human flesh) as among the most expensive valuations. Also, both groups ranked item 44 (spitting on a picture of Darwin) as the least expensive sufferance. A striking exception to the original rankings found by Thorndike was with regard to item 51 (lose all hope of life after death). Whereas the present study found this to be the most expensive sufferance, Thorndike's sample ranked this much lower (42nd).

Thorndike considered various sub-groups within his sample. In particular, he reported on a few sex differences, and speculated on some religion-based differences. We also looked at both sex and religion-based findings (as well as race). Overall, men tended to ask for smaller amounts (mean = $1,888,536) than women (mean = $9,535,293,561). Indeed, this was the case for all questions save three. Women were willing to endure having their little toe cut off (item 6), spitting on a picture of their mother (item 46), and spitting on a crucifix (item 47) for less money than men.

It may be notable that our finding of much more exaggerated values from women compared with men seems to contrast with findings by Plutchik, Conte, and Weiner (1973). In their study, Plutchik et al. found that greater compensatory values (for lost/damaged body parts) tended to be given by men rather than women. Similarly, Vaughan, Stabler, and Clance (1981) found that male children placed higher monetary significance to damaged body parts than female children. One possible explanation for the apparent reversal, and one that might be worth investigating further, has to do with societal shifts in sexist attitudes toward women over the past few decades. That is, perhaps women of the twentieth century were not empowered to value themselves as highly as are women of the twenty-first century.

In terms of the other comparisons of interest to us, those who rated themselves as very religious (on a single-item 7-point scale) requested larger sums of money (mean = $7,220,283,931) than those who did not (mean = $4,435,546,335). Exceptions to this were items 38 (become intoxicated), 45 (spit on a picture of George Washington), 48 (short term intense pain), and 49–50 (restricted diet, and related indulgences). It is not clear why those claiming stronger religious beliefs would be willing to become intoxicated for less money (by about $4,991,059,572). And curiously, both groups made nearly identical requests for item 51 (lose all hope of life after death).

Overall, Caucasians requested much larger sums (mean = $7,220,283,931) than African Americans (mean = $4,435,546,335). This was the case with almost all of the questions, with some conspicuous exceptions: specifically, items 13, 16, and 17 dealing with the total loss of vision, taste, and olfaction respectively. African Americans requested more money than did Caucasians for all these losses. Oddly, this was not the case for enduring the loss of hearing, where Caucasians requested more money than African Americans by about six-billion dollars.

In sum, our results were highly similar to Thorndike's, especially with respect to the matter of absurdly high estimates for seemingly small burdens — the finding that occupies much of his original discussion. Both studies appear to have exacted exaggerated, and intuitively unreasonable, dollar amounts needed for several questions (e.g., requiring over $1,000 to spit on a picture of Darwin). Likewise, in many questions (such as losing a toe, an ear, hair, etc.), participants required enormous sums of money, far larger, for example, than what a standard insurance policy would provide for such an injury.

Although he speculates about some possible explanations, Thorndike himself was baffled by the unreasonable amounts requested. Inspired by his ideas, our initial explanation for this finding was that if participants' exaggerated responses reflect a particular distaste for certain acts or actions, then part of the magnitude of effect may derive from a manifestation of the "just world" view (e.g., Lerner, 1980). Consider that, from the participants' point of view, the valuation suppositions can be seen as unjust punishments. With this in mind, it is not surprising that a large percentage of respondents declined to answer some of the questions (for both us and Thorndike). Of those that did answer, the unreasonably large estimates may reflect a "justification fee" aimed to compensate for what participants felt was an "unjust punishment." In other words, the large payment would comprise two components: (1) compensation for the injury (loss, hardship, etc.) as well as (2) a fee designed to make up for the injustice of the injury.

Interestingly, the "just world" hypothesis can first be seen in Piaget's (1932) concept of "immanent justice" and is contemporary with Thorndike's own research. Specifically, Piaget interviewed young children, whom he believed would be the most prone to such ideas, and determined that most believed that in cases where a

parent did not punish them for a wrongdoing, that nature itself would find some way to "get even."

Using Rubin and Peplau's (1975) classic 20-item Just World Inventory, we ran additional participants to see if belief in a just world could be a factor involved in the exorbitant values reported in the data. Our specific goal was to determine whether belief in a just world would positively correlate with desired compensations. In other words, persons with a high just world score might see the "unfairness" of certain items in Thorndike's inventory, and require a higher degree of compensation to suffer them. Participants with lower just world scores might not require as much compensation because they do not readily attribute a value to how "fair" a sufferance is. As it turned out, however, our results never came close to supporting the just world hypothesis (the correlation was both negative, and non-significant, $r[73] = -0.15$, $p = 0.199$). In conclusion, what we had first imagined as symptomatic of a bygone era associated with the Great Depression and on the cusp of a World War, may indeed speak to a deeper insight into human value judgments — but not one correlated with any belief in a "just world." And so, like Thorndike, we can only document but not readily explain the outlandish results obtained.

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