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Choosing to Suffer as a Consequence of Expecting to Suffer: An Unexpected Finding

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Subjects were randomly assigned to one of three conditions: Subjects in Condition 1 knew they would shortly be placed in a very *unpleasant* situation for a considerable length of time. In Condition 2 they knew they would shortly be placed in a very *pleasant* situation for a considerable length of time. In Condition 3, they did not yet know whether they would be in a very pleasant or a very unpleasant situation in the future. In the period which preceded the pleasurable or painful situations, subjects were allowed to administer as much shock to themselves "as they desired." Subjects took shock in private, with the amount taken purportedly unknown to anyone but themselves. A surprising finding emerged. Subjects who had been assigned to participate in an unpleasant situation in the future, voluntarily took a great deal of shock. Subjects in all other conditions took very little. In retrospect, three explanations for this unexpected result seem to exist: (1) Subjects assigned to experience future unpleasantness were practicing for the later unpleasantness. (2) Subjects assigned to the unpleasant conditions were reducing dissonance by convincing themselves that they did not mind pain or that the experiment was a very important one, deserving of sacrifice on their part. (3) Subjects' standards for judging the unpleasantness of a stimulus, in this case a shock, were altered by the salient knowledge of future unpleasantness.

This study was conducted to test the proposal that, in their assumptions about the determinants of future events, individuals tend to engage

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in magical thinking. We speculated that people somehow feel that "in the scheme of things" pleasure and pain are fairly and equitably distributed in the world. If one receives an overabundance of pain, he is somewhat confident that a little pleasure is bound to follow. If things go unusually well for too long a period, he becomes a little nervous that misfortune is on its way. We surmised further that perhaps individuals rely on such pleasure-pain equations to such an extent that if they are especially anxious to avoid a future catastrophe, they might willingly endure some discomfort in the present, in the hope of averting the future catastrophe. We, thus, proposed that individuals, worried about the future, would attempt to "appease the gods" in order to secure the future.

The following experimental design was chosen to test our speculations: Experimental subjects were led to believe that there was a *possibility* that a future catastrophe would occur. (Whether or not the future catastrophe occurred was totally out of the subject's control.) Two types of control conditions were run: (1) a control condition in which subjects knew the future catastrophe would inevitably occur, and (2) a control condition in which subjects knew this future catastrophe would definitely *not* occur.

All subjects were then given the opportunity to submit to some present discomfort if they wished. We predicted that experimental subjects (presumably anxious to ward off future catastrophes) would be more willing to expose themselves to present discomforts than would control subjects (who were certain of what the future held).

PROCEDURE

Subjects were 26 male and female student volunteers from an introductory psychology course at the University of Minnesota. The experiment was conducted in a medical laboratory at the Student Health Service.

The experimenter, who was dressed as a medical technician, explained that she was working for a physiological psychologist who was studying blood pressure reactions to painful and pleasurable stimuli. She then pointed to a table. On one side of the table were foods which were repulsive to all subjects: i.e., caterpillars, grasshoppers, and squid. On the other side were delicious foods: cream puffs, pie, cookies, and fruit. In the middle of the table was a plate and a knife. The experimenter further explained that she had chosen food as a source of pleasure and displeasure (or pleasure-pain) since reactions to these stimuli were extremely uniform; in our culture, everyone found the caterpillars to be disgusting, and found a small amount of the sweet food to be pleasurable.

The experimenter said the subject would be randomly assigned to either the pleasure or displeasure condition by tossing a coin. If he tossed heads, his reactions to the pleasurable stimuli would be assessed for approximately one-half hour. If tails came up his reactions to the disgusting food would be assessed for the same period.

Before tossing the coin, however, the experimenter asserted that she wanted to

explain a task that would precede the blood pressure assessment. This "task" was designed solely to give the subjects the chance to inflict pain on themselves. The rationale for this task was as follows: The experimenter said individuals' reactions to pleasure-pain stimuli varied and could conceivably be important in understanding the findings of the blood pressure study. She was interested in how subjects' psychological sensitivity to pain increased as the physical intensity of a pain stimulus increased. In this case, very brief electric shock was to be the scalable physical source of pain. The subject was shown several charts and was told that these were examples of different individuals' reactions to shock. From the charts, it was clear that several relationships between physical stimulus and psychological response were possible. Some charts displayed a linear relationship, several demonstrated various S-shaped functions, and one indicated that perceived pain was constant until an extreme point where it suddenly became exceedingly intense. The experimenter asked the subject to take only as many shocks as were necessary to make a good judgment, and to record how painful the shocks were on a dittoed chart she provided (the abscissa was labeled "Intensity of shock" and ran from 0 to 300; the ordinate ran from "Don't feel at all" to "Extremely painful").

The subject was then shown some shock equipment, and shown how to set it for a given shock level. The shock machine was constructed so that voltages set charged up a condenser. When a switch was pushed to the condenser, it was disconnected from the current and connected to an electrode attached to the inside of the subject's wrist. The set current, thus, passed through the electrode and through the subject's wrist.

It was stressed that regardless of his condition, whether the coin flip assigned him to the pain or pleasure condition, the graph had the same potential usefulness. The only fact of any importance to the experimenter was the kind of relationship physical pain (stimulus intensity) and psychological pain had for the subject. She explained that the absolute intensity of the shocks the subject took was not important to her. He was told that he need only take as many shocks as were necessary to give her the general idea of which curve was appropriate in his case.

To ensure that subjects were not taking shock to look good in the experimenter's eyes, the following precautions were taken: (1) The experimenter told the subject that after graphing the curve, he should copy it on a second graph with no numbers on the abscissa. This would provide her with a general idea of his pleasure-pain curve, she explained, while leaving her unaware of how many shocks he had taken. She reiterated that only a general rough curve was important to her; that the number or absolute intensity of the shocks he took was unimportant. (2) She said she would leave the room for 10 minutes while the subject shocked himself.

The experimenter then started to leave the room. As she proceeded to the door, she said, "Now, only take as much shock as you think is necessary to make a good judgment. Start at a low level and only go *as high as you want to.*"

Assignment of subjects to condition: The experimenter paused at the door and assigned the subject an experimental or control condition: To two-thirds of the subjects she said, "Oh, you might as well flip the coin now, so you can see what condition you're in. If it comes up heads, you'll be assigned to eat the disgusting food; if it comes up tails, you'll be assigned to eat the delicious food." On the basis of the coin flip, nine subjects were assigned to eat the disgusting food; ten to eat the delicious food.

For the remaining one-third of the subjects she said, "Oh, you can flip the coin to determine what condition you're in when I get back. If it comes up heads, you'll

be assigned to eat the disgusting food; if it comes up tails, you'll be assigned to eat the delicious food."

The experimenter then left the room so the subject could complete his pleasure-pain chart. Though she had claimed she would never know how much shock the subject took, she could record the exact amount he administered to himself simply by looking at a meter in an adjoining room. This meter was connected to the shock machine by concealed wires.

After ten minutes, the experimenter returned to the experimental room. She questioned the subject at length to see if he could guess what our true experimental interests were, and then she debriefed him.

RESULTS

From the data presented in Table 1, it is clear that subjects who were unsure about whether fate would assign them to future pleasure or displeasure did not choose to suffer more in the present than did those subjects whose future was determined.

TABLE 1

NUMBER AND INTENSITY OF SHOCKS TAKEN BY SUBJECTS IN VARIOUS CONDITIONS

Expectation Concerning future	N		Mild shocks: No. taken	Mild shocks: Total voltage	Severe shocks: No. taken	Severe shocks: Total voltage	Severe shocks: Highest shock taken
Unpleasantness will *definitely* follow	9	$\bar{M}$	15.7	687.8	5.4	1140.0	228.9
		S	(15.6)	(599.1)	(3.3)	(753.6)	(109.5)
Unpleasantness may or may not follow	7	$\bar{M}$	20.4	764.3	.4	58.6	107.1
		S	(34.5)	(1076.4)	(.8)	(111.3)	(29.3)
Unpleasantness will definitely *not* follow	10	$\bar{M}$	20.9	857.0	1.3	195.0	122.0
		S	(28.1)	(825.3)	(2.0)	(315.6)	(50.7)

Instead, we see quite clearly that it was those subjects who were sure that they would experience a great deal of unpleasantness in the immediate future who voluntarily took the most shock. Regardless of how we analyze the data, this finding is clear.

On the basis of pretests, the experimenter made the decision that 10 to 99 volts would be considered "mild shock"; 100 to 300 volts would be considered "painful shock."

From Table 1, we can see that in all conditions subjects take approximately the same number of *mild shocks*. Contrasts were run for Condition 1 vs. 2 and 3 and then for Condition 2 vs. 3. In both cases, these contrasts are insignificant. The preceding contrasts were $F = .21$ and .01, respectively.[2] When we add up the total mild shock subjects in various conditions tried, we see that the various conditions are very similar. The

[2] In every contrast reported in this paper the F has 1 and 23 df.

contrasts for Condition 1 vs. 2 and 3 is $F = .13$. The contrast for Condition 2 vs. 3 is .07.

When we consider the *severe shocks*, however, we see quite a different result. When we examine the number of severe shocks taken by the subjects, we see that the individuals who have been assigned to eat the disgusting food take *more* shocks in the severe range than do the subjects in the other conditions. ($F = 21.93$ with 1 and 23 df, $p < .001$). Subjects who are unsure of the future or who are certain that the future does not hold unpleasantness do not differ in the number of shocks they take ($F = .07$). When we add the total voltage of the painful shocks that a subject inflicted on himself, we see that on this index subjects assigned to definitely experience future pain take significantly more shock than do the subjects in the other groups. ($F = 24.93$ $p < .001$). There is *no* difference in the amount of shock taken by subjects who are unsure of the future and by the subjects definitely assigned *not* to experience subsequent unpleasantness. ($F = .00$). Subjects assigned to the unpleasant condition also take a much higher *maximum shock* than do subjects in the other conditions ($F = 14.04$, $p < .001$). Subjects unsure of the future or sure the future does not hold unpleasantness do not differ in the intensity of the maximum shock they take ($F = .01$).

How can we explain this unexpected finding? In retrospect, several alternatives seem plausible.

(1) *A practice explanation.* Perhaps subjects who knew they would soon be experiencing unpleasantness became very concerned about their ability to endure the unpleasantness with good grace. They may have taken additional shock either simply to practice taking pain, to gain information about their probable subsequent conduct, or simply to reassure themselves that they could in fact behave bravely and gracefully.

(2) *A dissonance reduction explanation.* Subjects committed themselves to participate in the experiment for two credit points. Perhaps those subjects assigned to eat the unpleasant food experienced a great deal of dissonance from committing themselves to such an unpleasant future for such a small reward. One way subjects could reduce this dissonance was to convince themselves that their decision to participate was not really such a bad one as they had initially thought. These subjects could convince themselves that they were unusually brave, insensitive to pain, or that the experiment was an extremely important one. These same techniques would tend to reduce a subject's anxiety about the forthcoming experience as well as to reduce his dissonance. In any case, all these modes of dissonance and anxiety reduction would predispose a subject to administer an unusual amount of shock to himself.

Subjects who were assigned to the pleasant conditions would not have

experienced such dissonance. Though subjects whose fortune was unknown probably would have experienced some dissonance because it was *possible* that they would be assigned to eat the disgusting food, since the outcome was unknown, they were not yet in a position to begin to reduce dissonance (Festinger, 1964).

The reader will recall that as part of our experimental rationale we asked subjects to rate the painfulness of the shocks they administered to themselves. Then they drew the resulting curve of their reactions on a graph which they turned in to the experimenter.

If the experimenter had retained subjects' initial data sheets, data somewhat more relevant to this last alternative could be examined. We could compare individuals' reactions to the low-level shocks which everyone took. If our speculations are true, we would expect Condition 1 subjects to indicate that these shocks are less unpleasant than do subjects in the other conditions. Unfortunately, subjects were allowed to keep these original data sheets, and were asked to turn in only their general graphs of unpleasantness. When we look at these curves we see that they are very similar across conditions. For example, the maximum unpleasantness that individuals report having experienced from the shock they took is identical in all three conditions, in spite of the fact that individuals in the various conditions took quite different maximum shocks. With only the smoothed-out curves to analyze, however, it is impossible to know how to interpret such data.

(3) *Change in frame-of-reference explanations.* Perhaps subjects who anticipate future suffering take more shock because their attitude toward the unpleasant shock changes. In their discussion of interpersonal relationships, Thibaut and Kelley (1959) proposed some rules by which one can state how pleasant or unpleasant a given outcome should seem to an individual.

According to Thibaut and Kelley, through experience individuals develop a *comparison level* (CL) to which specific, subsequent outcomes are compared. If a specific outcome falls above an individual's CL, the alternative will be satisfying and attractive to him. If the specific outcome falls below his CL, it will be unsatisfactory and unattractive. This comparison level is said to be made up of an average of all of the outcomes known to the individual, each outcome weighted by its salience. It would seem reasonable to argue that subjects who know that they will soon be experiencing great unpleasantness, will have a lower CL than subjects who are either unsure of what the future holds or who are expecting future benefit. The knowledge that one is soon going to have to eat disgusting food is certainly a salient and unpleasant outcome.

Given that subjects who anticipate future unpleasantness have lower

CL's than other subjects, it follows that any given magnitude of shock should seem less unpleasant to these low CL subjects than to the others.

But why should subjects who find shocks moderately unpleasant administer more shocks to themselves than subjects who find the same shocks to be extremely unpleasant? One does not usually hurry to do things that are moderately unpleasant. The answer would seem to be that the subject has two opposing motives in taking shocks: (1) He wants to help science. The more shocks the subject takes, the more accurate his curve will be. (2) He doesn't want to suffer. We would therefore expect the subjects for whom the shocks are not so painful to take more shocks than the other subjects.

The above experiment provides no method for choosing among the three alternative explanations we have proposed. Worse than that, the reader who is in a speculative mood will discover that, with a little effort, he can come up with many variations of the above explanations, some different enough to be considered additional and separate interpretations. For example, various readers have suggested: Perhaps the individuals in the critical groups were shocking themselves into insensitivity in order to avoid the unpleasantness of the food; perhaps subjects were *consciously* lowering their *CL*'s in order to reduce their anxiety about the future; etc.

The striking and surprising finding that subjects' anticipation of exposure to unpleasantness in the future caused them to voluntarily administer an excessive amount of pain to themselves must go unexplained for the present. Attempts to question the subjects after the fact suggest that they are unable to tell us what elicited their response. Great variability was found in the reasons subjects provided for taking severe shock.

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