PSPB, 1977, 3, 213-218

Effect of Number of Options on Recall of Information Supporting Different Decision Strategies

Judson Mills, Richard Meltzer and Margaret Clark
University of Maryland, College Park

Abstract. The tendency to use an optimizing decision strategy (try to choose the best option) was hypothesized to be stronger when there is a small number of options and the tendency to use a satisficing strategy (try to choose a good option) to be stronger when there is a large number of options. The tendency to think about aspects of the options on which the chosen option is the best was hypothesized to be stronger when an optimizing strategy was used and the tendency to think about aspects on which the chosen option is satisfactory to be stronger when a satisficing strategy was used. From these hypotheses it was predicted that recall of information about aspects on which the chosen option was the best but not good will be greater following a choice from a small number of options and recall of information about aspects on which the chosen option was good but not the best will be greater following a choice from a large number of options. An experiment confirmed these predictions.

When trying to choose from among possible courses of action, a person is likely to use one of two implicit decision strategies. The person may try to choose the best option of those which are available or may try to choose a good option. Attempting to choose the best option has been called optimizing, while attempting to choose a good option has been called satisficing (March and Simon, 1958, p. 140). An optimizing strategy involves comparing all of the options with one another, on whatever aspects are relevant, to find the best one. A satisficing strategy involves comparing the options with the person's criterion or standard, on whatever aspects are relevant, to find one that is satisfactory.

Whether an optimizing or satisficing strategy is used in making a decision should depend on the perceived feasibility and ease of employing the strategy. When there is a large number of options, the task of comparing each one with all of the others, which is required by an optimizing strategy, may be expected to be very arduous or possibly to exceed the limits of information-processing and thus the feasibility and ease of employing that strategy may be expected to be very low. In such a case, there should be a tendency to use a satisficing strategy, which is easier to employ since it only requires comparing one option at a time against the standard until an acceptable one is found. When there is a small number of options, an optimizing strategy does not pose excessive difficulty and is likely to be used. One hypothesis of the present research was that the tendency to use an optimizing strategy will be stronger when there is a small number of options and the tendency to use a satisficing strategy will be stronger when there is a large number of options.

The decision strategy which is used should influence the way in which the person thinks about information concerning the options and attempts to support the choice. If persons use an optimizing strategy, they should try to convince themselves that the chosen option is better than the alternatives. However, if they use a satisficing strategy, they should try to convince themselves that the chosen option is satisfactory.

One way persons can convince themselves that the chosen option is the best one is by thinking about aspects of the options on which the chosen option is better than the alternatives. Similarly, thinking about aspects on which the chosen option is satisfactory will help persons convince themselves that the chosen option is a good one. In terms of post-decisional processes, a person using an optimizing strategy should tend to think about aspects of the alternatives on which the chosen option is the best and a person using a satisficing strategy should tend to think about aspects on which the chosen option is satisfactory.

If the hypotheses about the effect of the number of options upon decision strategy and the effect of decision strategy on thinking about aspects of the options are correct, then when the number of options is small, there should be a tendency to retrieve from memory and think about aspects on which the chosen option is the best, although not necessarily good. When the number of options is large, there should be a tendency to retrieve and think about aspects on which the chosen option is good, although not necessarily the best.

Since retrieving and thinking about information tends to improve later recall of that information (c.f., Horton and Turnage, 1976, Chap. 8; Neisser, 1967, Chap. 11), recall of information about aspects on which the chosen option was the best but not good should be greater following a choice from a small number of options than a choice from a large number of options. Recall of information about aspects on which the chosen option was good but not the best should be greater following a choice from a large number of options than a small number of options. An experiment was conducted to test these predictions.

Method

Under the guise of assisting the experimenter tabulate data, male college students were given information about ratings of six films supposedly made by students at 15 different colleges. For the first five colleges, the film labeled B had ratings which were good and the best of any film. For five of the other colleges the ratings for B were the best of any film but were not good. For the remaining five colleges, B had ratings which were good but not the best. When the subject's tabulation of the ratings had been removed, he was given a choice of viewing one film from all six films or from two films including B. Shortly after the subject chose B, he was asked to remember the names of the colleges. Recall of colleges where B was best but not good and of colleges where B was good but not best was compared for those who had chosen from two options and those who had chosen from six options.

The subjects were thirty-eight male students in introductory psychology who received extra credit toward their course grade for their participation. They were randomly assigned to the two experimental conditions: six options or two options.

The subjects signed up for an experiment whose stated purpose was to get reactions to various slides. When the subject arrived he was told that the bulb in the slide projector had burned out and that it could not be replaced in time for that session. The experimenter asked the subject if he would mind helping her with another project. All subjects agreed.

The subject was led to an office in another section of the building. The experimenter explained that she was trying to select films for use in introductory psychology classes. She had sent six films to various colleges across the country, asking psychology professors to have their students rate the films. The ratings had recently been returned and she would like the subject to help tabulate the data. The professors at each school had been asked to have their students rate the quality of the films on a scale from

zero to ten, with zero representing very poor quality and ten representing excellent quality.

The experimenter drew up a sheet for the subject to use in tabulating the data. The sheet had a column for the names of the colleges and columns labeled A through F for the ratings given to the six films. The experimenter told the subject that she would read off the name of a college and he was to write it in the appropriate column. Then she would read the ratings by the students at that college for each of the six films, which he was to enter in the appropriate columns. She mentioned that the ratings had been multiplied by ten and rounded off to the nearest five. After answering any questions, the experimenter read to the subject, one at a time, the names of 15 colleges, together with the ratings for each of the six films supposedly given by the students at the particular college.

The information which the experimenter read to the subject to be tabulated is presented in Table 1. For the first five colleges, which always had the same names, film B had ratings of 80 or above and the highest ratings of any film (in Table 1, labeled B Good and Best Colleges). For five of the other colleges film B had the highest ratings of any film but the ratings were all below 80 (labeled B Best Not Good Colleges). For the remaining five colleges, film B had ratings of 80 or above but they were not the highest ratings, which were those for film A (labeled B Good Not Best Colleges). The order in which the B Best Not Good Colleges and the B Good Not Best Colleges were presented was picked at random, and the specific names of the colleges associated with the two types of information were counterbalanced.

Table 1
Information Presented to the Subjects

School		Film					
College Type	Name	A	B	C	D	E	F
B Good and Best	Williams	80	90	75	75	70	70
	Bates	75	85	75	80	70	80
	Lehigh	70	95	85	90	80	75
	Emory	70	80	75	70	75	70
	Amherst	80	90	80	70	75	80
B Best Not Good	Gaston	20	50	35	45	45	35
	Curry	45	55	50	45	40	25
	Loras	45	50	25	30	30	40
	Hartwick	30	40	35	35	30	30
	Miles	45	50	35	30	45	40
B Good Not Best	Benner	85	80	75	75	80	75
	Dawson	90	85	70	80	75	85
	Sampson	95	90	80	90	75	90
	Adrian	90	85	70	55	60	85
	Sterling	85	80	80	70	70	75

Note: The material which is underlined is included for explanatory reasons and was not read to the subjects.

After the subject had recorded all of the ratings, the experimenter mentioned that there were two kinds of information she wanted to get from the data. To half of the subjects, she first said that she wanted to know which film was rated the highest at each college and asked the subject to circle the highest rating for each school with a purple pen. Then she said she would like to know which films were given good ratings and asked the subject to circle all the ratings 80 or above with a brown pen, even if they

had already been circled. To the other half of the subjects, the two circling tasks were requested in the opposite order; the subject first circled all of the ratings which were above 80 with a purple pen and then circled the highest rating for each college with a brown pen.

When the circling tasks were completed, the experimenter said that she would take the sheet to a secretary to type and left the room for about a minute. Upon returning she mentioned that since there was some time remaining she would have the subject view one of the films and get his reaction to it. To subjects in the two options condition, she said that only films A and B had been returned. To subjects in the six options condition she said that all of the films A through F had been returned. To subjects in both the two and six options conditions she said, "pick one, which on the basis of the ratings, you feel students at the schools liked." Four of the subjects run in the six options condition and two run in the two options condition did not choose film B. Since it was not possible to determine for them which information supported the use of an optimizing strategy and which supported a satisficing strategy, they were not included in the analysis of results, leaving 16 subjects in each condition.

The experimenter then took a film from a cabinet and began threading it into a projector. While doing so she casually mentioned that she had sent the films to many schools which were unfamiliar to her and when people asked her what the names of the schools were she had difficulty remembering them. She said that she didn't know whether it was just her bad memory or whether everyone was like that and that she would be interested in knowing how many college names the subject could recall. She asked the subject to write them down on a scrap of paper she handed him. After the projector had been slowly threaded, the experimenter asked if the subject had had enough time to recall the names. No subject indicated that he needed more time.

Next the experimenter casually said, "There is more to this than I've told you so far; I'm curious as to whether you have any idea what it might be." None of the responses of any of the subjects indicated doubt about the instructions or suspicion concerning the true purpose of the experiment. Finally, the actual purpose of the experiment was fully explained and the subject promised not to discuss it.

Results

The proportion of correct recall of colleges of each of the three types (B Good and Best, B Best Not Good, B Good Not Best) was computed by dividing the total number of correct mentions of colleges of that type by five. Mean proportion of correct recall of colleges of the three types for the two and six options conditions is presented in Table 2.

Table 2

Mean Proportion of Correct Recall of Colleges of Different Types

	Condition	
College Type	Two Options	Six Options
B Best and Good	.53	.55
B Best Not Good	.35	.16
B Good Not Best	.26	.34

Note: N=16 in each condition.

As can be seen from Table 2, recall of B Good and Best Colleges, which were included so the subject would choose film B, was virtually the same in the two options condition and the six options conditions. Since the B Best and Good Colleges were selected to be more familiar and were always presented

first, the generally higher level of recall of those colleges than of the other types of colleges is not meaningful.

Recall of B Best Not Good Colleges was greater in the two options condition than in the six options condition. Recall of B Good Not Best Colleges was greater in the six options condition than in the two options condition. An analysis of variance of the recall scores was computed with two vs. six options as a between subject factor and B Best Not Good vs. B Good Not Best Colleges as a within subject factor. Neither of the main effects was significant, but the interaction was ($F=6.69$, $df=1,30$, $p<.05$).

Another way of analyzing the results is to determine whether the subject correctly recalled (1) more names of B Best Not Good Colleges than of B Good Not Best Colleges, (2) the same number of names of both types of colleges or (3) more names of B Good Not Best Colleges than of B Best Not Good Colleges. In the two options condition, there were eight subjects with greater recall of B Best Not Good Colleges than of B Good Not Best Colleges, five subjects with equal recall of both types of colleges and three subjects with greater recall of B Good Not Best Colleges. In the six options condition, there were two subjects with greater recall of B Good Not Best Colleges, three subjects with equal recall of both types of colleges and eleven subjects with greater recall of B Good Not Best Colleges. The relationship between condition and pattern of recall was significant ($X^2=8.67$, $df=2$, $p<.05$).

Discussion

The results support the predictions that recall of information about aspects on which the chosen option was the best but not good will be greater following a choice from a small number of options and recall of information about aspects on which the chosen option was good but not the best will be greater following a choice from a large number of options. The predictions were based on the hypotheses that (1) the tendency to use an optimizing strategy is stronger when there is a small number of options and the tendency to use a satisficing strategy is stronger when there is a large number of options and (2) a person using an optimizing strategy tends to think about aspects on which the chosen option is the best and a person using a satisficing strategy tends to think about aspects on which the chosen option is good. The support for the predictions provides evidence for the hypotheses.

It should be noted that the differences in recall cannot be attributed to differences in exposure to the information. The subjects in the two and six options conditions had exactly the same amount of exposure to the information. The difference between the conditions was not introduced until after the subject's tabulation of the ratings at the different colleges had been removed by the experimenter.

Previous research has shown that the way in which post decision dissonance (Festinger, 1957) is reduced depends on whether the particular mode of dissonance reduction is likely to be challenged by further information (Walster Berscheid and Barclay, 1967). The present study suggests that the way persons attempt to reduce dissonance depends on the decision strategy which was used in making the choice. The person who used an optimizing strategy will try to increase the attractiveness of the chosen option relative to the rejected alternatives, and the person who used a satisficing strategy will try to increase the absolute attractiveness of the chosen option.

The basic premise of choice certainty theory (Mills, 1968), that people want to be certain when they take an action that it is better than the alternatives, assumes the use of an optimizing strategy. The results of this

study imply that the premise of choice certainty theory is not appropriate when there is a large number of options. Perhaps it should be mentioned that such a conclusion is not inconsistent with the previous research supporting choice certainty theory. The most impressive evidence for the idea that people want to be certain when they take an action that it is better than the alternatives, i.e., the finding that people avoid information favoring an alternative which they are certain is not the best (Mills and Jellison, 1968), was obtained in a study in which subjects anticipated choosing from only two options.

Thibaut and Kelley's (1959) distinction between Comparison Level and Comparison Level for Alternatives is similar to the distinction between satisficing and optimizing. The evaluation of a relationship with the use of the Comparison Level is similar to the use of a satisficing strategy, while the use of the Comparison Level for Alternatives is similar to the use of an optimizing strategy. The present study suggests that when deciding to enter into a relationship, the Comparison Level will be used if there is a large number of potential partners, and the Comparison Level for Alternatives will be used if there is a small number of potential partners. Marriage provides an example of kind of decision for which a satisficing strategy is typically employed.

In addition to the number of options, whether an optimizing or satisficing decision strategy is used should also depend on other factors which influence the perceived feasibility and ease of employing an optimizing strategy. The greater the perceived complexity of the options, e.g., the greater the number of relevant aspects, the greater should be the tendency to use a satisficing strategy rather than an optimizing strategy. The more time and effort required in order to get information about the various aspects of the options, the greater the likelihood of a satisficing strategy. If the options are presented in a sequence and will be lost if not chosen before the next one appears, satisficing is the only feasible strategy.

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Footnote

This study was supported by a grant from the National Science Foundation. Requests for reprints may be sent to the authors at Department of Psychology, University of Maryland, College Park, Maryland 20742.