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Acceptance and Elimination Procedures in Choice: Noncomplementarity and the Role of Implied Status quo

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The present research contrasts two seemingly complementary decision strategies: acceptance and elimination. In acceptance, a choice set is created by including suitable alternatives from an initial set of alternatives, whereas in elimination it is created by removing inappropriate alternatives from that same initial set. The research used realistic career decision-making scenarios and presented to respondents sets of alternatives that varied in their preexperimental strength values. Whereas complementarity of acceptance and elimination is implied by three standard (normative) assumptions of decision theory, we find a systematic discrepancy between the outcomes of these procedures: choice sets were larger in elimination than in acceptance. This acceptance–elimination discrepancy is directly tied to subcomplementarity. The central tenet of the theoretical framework developed here is that acceptance and elimination procedures imply different types of status quo for the alternatives, thereby invoking a different selection criterion for each procedure. A central prediction of the dual-criterion framework is that middling alternatives should be most susceptible to the type of procedure used. The present studies focus on this prediction which is substantiated by the results showing that middling alternatives yield the greatest discrepancy between acceptance and elimination. The implications of this model and findings for various research domains are discussed.

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Certain realistic decision situations require the reduction of a large set of alternatives to a smaller one. Consider a recent opinion poll of faculty members in various departments which was triggered by a shortage in the university library budget. The members' opinions were solicited regarding the journals that the library should subscribe to. Thus, psychology faculty members were instructed to screen a fairly long list of psychology journals (well over a hundred items), marking only those journals that they thought were needed in the library. Suppose, for instance, that faculty members had been asked instead to eliminate from the same long list those journals that they thought were *not* needed in the library. Would the outcome have been the same? In general, a subset could be generated by including preferred alternatives from an initial set (acceptance process) or by eliminating the less preferable ones from that initial set (elimination process). A central issue is thus whether acceptance and elimination processes yield equivalent final selections.

In this article we focus on the logical as well as behavioral consequences of these two selection procedures in decisions that involve numerous alternatives. In the studies reported here respondents are instructed to use either an acceptance or an elimination procedure in realistic scenarios involving career decision making. The materials were based on current research on vocational counseling and computer-assisted career decision making. Respondents were presented with vignettes of target individuals (describing their aptitudes, traits, etc.) together with a large list of occupations. They were asked either to include occupations that fit the target persons or to exclude from the list occupations that do not fit these individuals. The studies establish the noncomplementarity of acceptance and elimination procedures, namely, a discrepancy between the outcomes of acceptance and elimination processes. Moreover, the results show that noncomplementarity is primarily due to the middling alternatives, rather than the clear-cut ones. To explain this pattern of findings, the theoretical framework proposed below suggests that acceptance and elimination procedures create different perceptions of the status quo (default state) of the alternatives, thereby setting different criteria for taking action. The procedure-dependent criteria are shown to lead to noncomplementarity and a discrepancy between the outcomes of acceptance and elimination processes.

Theoretical Perspectives

Let us contrast two perspectives. According to one perspective, acceptance and elimination are invariant procedures and their outcomes ought to be the same. The rationale for this perspective relies on three basic assumptions. The first assumption, a common one in normative theories of choice, is that an option's attractiveness can be represented in a single value (e.g., the value of a particular journal for the library). Second, an option's overall evaluation is made independent of context (Luce & Raiffa, 1957/1988). Third, it is assumed that the value of an option is compared with some cutoff point to determine whether or not it is good enough to be retained in the final selection (e.g., a

journal is retained in the library if its value exceeds a criterion of usefulness to the readership). Because evaluation of an option is made in the same fashion under both procedures and vis à vis the same criterion, acceptance and elimination are merely mirror-image (complementary) decisions of each other. The options accepted (in an acceptance process) would be exactly those that are not eliminated (by the elimination procedure) and therefore the resulting selections are the same under each procedure.

The second theoretical perspective is based on previous findings in the area of behavioral decision making showing that seemingly irrelevant alterations in response mode could have a profound impact on the decision process, resulting in incoherent choices and reversals of preference (Hsee, 1996; Payne, Bettman, & Johnson, 1993; Slovic, Fischhoff, & Lichtenstein, 1982; Shafir, 1993). Particularly relevant to our study of acceptance and elimination processes is the psychological distinction between omission (decision not to change the status quo) and commission (decision to change the status quo). Previous work suggests that inaction is easier to justify than action (Gilovich, Medvec, & Chen, 1995; Kahneman & Tversky, 1982). Ritov and Baron (1992; also Spranca, Minsk, & Baron, 1991) proposed that individuals hold themselves responsible for the negative consequences of commissions but not for those of omissions.

We suggest that acceptance and elimination create different perceptions of the status quo. Whereas the status quo is not stated explicitly in the task instructions, it is *implied* by acceptance and elimination instructions. In an acceptance process, options stay "*out* of the list," in their status quo position, unless they are actively accepted. In contrast, in an elimination process, options stay "in the list" by default unless they are eliminated. Therefore, a tendency to inaction (omission) implies keeping an option on the list in elimination but outside the list in acceptance. If there is a tendency toward status-quo maintenance (inaction), then acceptance and elimination would not necessarily be complementary. It is possible that a subset of options would be neither accepted nor eliminated. This immediately implies (as we shall see later) that the choice sets created by acceptance and elimination will not be the same.

These competing perspectives triggered our earlier research, in which we found a systematic discrepancy between the outcomes of acceptance and elimination procedures (Yaniv & Schul, 1997). Respondents were asked to consider general-knowledge questions on areas such as history and sports. Along with each question, 20 alternative choices were listed. For example, the question "Who said 'I think therefore I am'?" was presented along with the names of 20 philosophers, including the following alternatives: Berkeley, Confucius, Buddha, Pascal, Heidegger, Dewey, Spinoza, Russell, Kant, Hegel, Descartes, Luther, Leibniz, and others. Only one of the alternatives was correct (Descartes). The study involved two conditions: acceptance and elimination. Respondents in the acceptance condition were instructed to mark alternatives "that are likely to be the correct answer." Thus they could mark one or more alternatives as the correct answer to the question. Respondents in the elimination condition

were instructed to mark alternatives that "are likely not to be the correct answer."[1]

The difference between the outcomes of acceptance and elimination processes was dramatic. Respondents given acceptance instructions marked, on average, 18% of the alternatives, whereas those given the elimination instructions eliminated 51% of the alternatives, leaving the remaining ones in the choice set, by default. Thus the *choice set*—the final subset of included alternatives—consisted of 18% of the initial set in acceptance as compared with 49% in elimination. The discrepancy between the outcomes of the two processes was 31% in this study. Discrepancies of this sort have been reported by other investigators (Huber, Neale, & Northcraft, 1987; Levin, Jasper, & Forbes, 1998; Westenberg & Koele, 1992).[2] For example, in Huber et al.'s study respondents screened a sequence of files of job candidates. In one condition respondents recommended whom to invite for an interview whereas in another condition they recommended whom not to invite for an interview. Huber et al. found that the invitation list included more candidates when a rejection procedure was used.

A clue to the origins of this acceptance–elimination discrepancy may be found in a data analysis at the item level (Yaniv & Schul, 1997). For each alternative two probabilities were calculated: P_{acc}, the proportion of respondents who accepted it under acceptance instructions, and P_{elim}, the proportion of respondents who eliminated it under elimination instructions. If acceptance and elimination were complementary, then the sum of the two probabilities should have equaled 1. The average sum of the two probabilities was 0.69 (Study 1, Yaniv & Schul, 1997), indicating that acceptance and elimination departed greatly from complementarity. It is easy to see that noncomplementarity and the acceptance-elimination discrepancy are essentially two sides of the same coin—different manifestations of the same phenomenon. Formally, subcomplementarity could be defined by the inequality $P_{acc} + P_{elim} < 1$, whereas the acceptance–elimination discrepancy could be stated as $P_{acc} < 1 - P_{elim}$. The two inequalities are clearly the same. Our theoretical formulation builds on this equivalence.

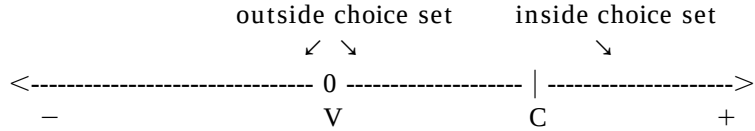
Consider the theoretical perspectives we introduced earlier. The decision maker is assumed to assign a value V to each alternative (e.g., Berkeley, Dewey, in the example above). The value V, a real number on a continuum, is positive for the alternatives that are considered strong and negative for those alternatives considered weak or nonviable. According to the first perspective there is a criterion C such that with an acceptance procedure, an alternative is included in the choice set if its value equals or exceeds the criterion, $V > C$. Analogously,

[1] In a third condition respondents were asked to mark alternatives "that are *not likely* to be the correct answer." The instructions for the two elimination conditions may be logically different, but the results were virtually identical across these two variations (see Yaniv & Schul, 1997, for details).

[2] In a different vein, psychometric test scores (for multiple-choice questions) obtained via acceptance are only moderately correlated with those obtained via elimination (Jaradat & Tollefson, 1988).

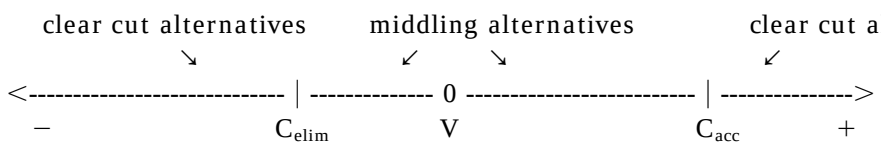
with elimination, an alternative is eliminated from the choice set if its value is below that criterion, $V < C$. Because a single criterion is used for both procedures, acceptance and elimination are complementary. An alternative that is removed in an elimination process would not be admitted in an acceptance process. Thus the two processes yield identical choice sets, thereby satisfying procedural invariance. If decisions are probabilistic, then the probability that an alternative will be included in the choice set in acceptance, and the probability that it will be removed in elimination, should sum up to 1. Clearly this model fails to explain the subcomplementarity observed in the earlier studies.

Single criterion for acceptance and elimination.



Our second theoretical perspective posits that acceptance and elimination decisions are made with respect to the perceived status-quo position of the alternatives. The burden of proof is associated with the decision to *alter* the status quo of an alternative. Thus, in an acceptance process, an alternative is admitted only to the extent that there are sufficiently strong reasons for doing so; that is, its value exceeds the acceptance criterion, $V > C_{\text{acc}}$. In an elimination process, in contrast, alternatives that fail to meet the acceptance criterion are not removed unless there are sufficiently strong reasons for doing so, that is $V < C_{\text{elim}}$ (the elimination criterion).

Different criteria for acceptance and elimination.



This theoretical perspective can account for the findings. Note first that some alternatives have sufficiently extreme value in one direction. Call these alternatives *clear-cut*. The fate of the clear-cut alternatives does not depend on the choice procedure. They are either placed inside the choice set by both procedures or left outside by both procedures. Other alternatives have V values falling between the two criteria, $C_{\text{elim}} < V < C_{\text{acc}}$. We shall call those *middling* because their value is neither large enough to exceed the acceptance criterion nor so low to warrant elimination. As a result, their fate (inside or outside the choice set) depends on the status quo implied by the decision procedure. In an elimination process the middling alternatives remain inside the choice set, whereas in acceptance they are left outside the set. This framework directly accounts for the acceptance–elimination discrepancy. Theoretically the choice

set obtained in an elimination procedure consists of alternatives that would have been accepted in an acceptance procedure plus the middling alternatives.[3]

The Present Studies

Our analysis suggests the acceptance–elimination discrepancy should be manifested most strongly for the middling alternatives because they are most susceptible to the procedure used. This hypothesis requires that we measure and control the strength of each alternative a priori. In the present set of studies we classify the viability of alternatives in advance into three strength levels: (1) strong alternatives, for which there is positive evidence for acceptance; (2) middling alternatives, for which there is little evidence one way or the other; and (3) weak alternatives, for which there is negative evidence, that is, evidence against their being viable. Our prediction is that those alternatives classified as middling should exhibit the greatest acceptance–elimination discrepancy, in other words, the greatest departure from complementarity.

One interesting area where the strength of various alternatives has been measured and defined is career decision making. Our materials were constructed on the basis of research by Gati and his colleagues (Gati, 1991; 1994; Gati, Osipow, & Givon, 1995; Gati, Fassa, & Mayer, 1998), who have developed a database and computer algorithm for matching occupations to a personal profile on the basis of the attributes of the occupations and the personality traits, inclinations, and skills of the person. Based on their work, we created a series of vignettes of target individuals, each described on a number of dimensions, including personality traits and abilities (see example in Table 1). The underlying dimensions of Gati's career decision-making system involve 17 aspects relevant to career choice, including 13 unidimensional aspects, such as income, length of training, amount of travel, working hours, social status of occupation, and four multidimensional aspects, such as abilities, aptitudes, and fields of interest. For simplicity, profiles in the present study were specified in terms of four to five of the above aspects.

As shown in the example in Table 1, the profiles were presented along with a set of alternative occupations that varied in their degree of fit to the profile (high, middling, and low). The occupations were selected from a set of 306 occupations created by Gati (1991, 1994) for the purpose of studying vocational decision making. We used the algorithms underlying Gati's computer-assisted decision making (Gati, 1994) to quantify the fit of each occupation to the personal profile. The fit was based on the degree of correspondence between the aspects described in the personal profile and the attributes of the occupation. For instance, with respect to the individual profile described in Table 1, social worker, probation officer, and organizational consultant obtained high fit; radio reporter, travel agent, and nurse obtained medium fit; and finally,

[3] Consider a model with $C_{acc} < C_{elim}$. Such a model cannot account for the data because it predicts that alternatives for which $C_{acc} < S < C_{elim}$ should be accepted in acceptance and eliminated in elimination, thereby giving rise to supercomplementarity. In other words, the sum of the acceptance and elimination probabilities should exceed 1, contrary to what we observe.

TABLE 1

Sample Career Decision-Making Question

"At school, I participated in many activities, was a counselor at a scout camp, and volunteered at a hospital. I have often organized parties and social events. I tend to be independent and make decisions by myself. People think I am a bit "bossy" because I like to take charge of things. But I work well with other people and am a good team worker. It is important for me to choose an occupation that combines independence and a degree of responsibility, and which involves work with other people."

school principal	geneticist	travel agent
diplomat	typesetter	fashion model
pharmacist	radio reporter	mathematician
social worker	painter	optometrist
nurse	probation officer	sports instructor
playwright	cosmetics consulting	organizational consultant
waitress	bank manager	human resource manager

typesetter, mathematician, and optometrist obtained low fit. High-fit occupations provided consistent positive evidence for a match between the attributes of the occupation and the inclinations of the target individual. In contrast, the low-fit alternatives suggest unfavorable evidence for the suitability of the occupation to the individual. The middling alternatives provide a mixture of positive and unfavorable evidence. This construction procedure ensured that all of the occupations listed as options were realistic and thus could be meaningfully considered (i.e., accepted or eliminated on the basis of their fit to the profile).

The following four studies were designed to investigate the descriptive adequacy of the dual criterion framework for understanding the outcomes of acceptance–elimination processes. Most importantly, we test the prediction that the acceptance–elimination discrepancy is largest for the middling alternatives (occupations with a medium degree of fit to the profile). This prediction implies that the middling alternatives are more vulnerable to the type of procedure used than are the strong and weak alternatives (low fit and high fit). Second, we explore the limiting conditions on the phenomenon as we investigate how the distribution of alternatives in the initial set influences the final choice sets produced by respondents. Thus the number of alternatives in the initial set is varied, as well as the proportion of each type of alternatives within that set.

STUDY 1

Method

In this first study, we presented respondents with four vignettes, each one together with 21 alternative occupations. There were two choice conditions. Respondents in the acceptance condition were instructed to "mark all the occupations that fit the person described and at the same time avoid marking those that do not." The instructions for the elimination procedure were to "mark

TABLE 2

Mean Number of Alternatives Included in the Choice Set (and Percentage of Full Set)

Study	Number of alternatives in full set	Acceptance	Elimination
1	21	5.7 (27%)	10.5 (50%)
2	12	3.7 (31%)	6.5 (54%)
3	36	8.3 (24%)	16.5 (46%)
4 (666)	18	5.7 (32%)	8.8 (49%)
4 (990)	18	7.2 (40%)	10.5 (58%)
4 (099)	18	3.6 (20%)	6.7 (37%)

all the alternatives that do not fit the person's description and to avoid marking those that do fit." Respondents were also told that they would be rewarded for good performance, that is, according to their success in complying with the instructions. In the acceptance condition the actual bonus in Israeli shekels ($1 = 3.5 IS at that time) equaled the number of high-fit alternatives that were marked minus the number of low-fit alternatives that were marked. The bonus in the elimination condition equaled the number of low-fit alternatives that were marked minus the number of high-fit alternatives that were marked.

The respondents were 42 undergraduate students at the Hebrew University of Jerusalem, half of whom were randomly assigned to the acceptance condition and half to the elimination condition.

Results

As shown in Table 2, respondents in the acceptance condition included an average of 27% of the alternatives in their choice sets, whereas those in the elimination condition rejected 50% of the alternatives. Thus, replicating the findings of Yaniv & Schul (1997), the choice sets were significantly larger in elimination (50%) than in acceptance (27%), $t(40) = 7.41$, $p < .001$.

We predicted that the acceptance–elimination discrepancy should be largest for the middling alternatives. Table 3 shows the probability of an alternative being included in the choice set as a function of its fit and the procedure used. An analysis of variance was conducted on these probabilities with procedure

TABLE 3

Proportion of Alternatives Included in the Choice Set: Study 1 (21 Alternatives)

Type of alternative	Choice procedure: Acceptance P_{acc}	Choice procedure: Elimination $1 - P_{elim}$	Discrepancy	Complementarity index $P_{acc} + P_{elim}$
High fit	.64	.89	.25	.75
Middling fit	.12	.38	.26	.74
Low fit	.05	.23	.17	.83

Note. Perfect complementarity occurs when the index equals 1.

(acceptance, elimination) as a between-subjects factor and fit (high, middle, low) as a within-subject factor. We found a significant effect of procedure, $F(1, 40) = 54.92$, $p < .001$, indicating that choice sets were larger in elimination than in acceptance. There was also a significant effect of fit, $F(2, 44) = 515.22$, $p < .001$, indicating that the chances of an occupation's being in the choice set depended on its fit to the profile. The size of the discrepancy was .25, .26, and .18, for the high-, middle-, and low-fit occupations, respectively. The interaction effect was not significant, $F(2, 80) = 2.32$, $p < .1$. A contrast analysis showed that the acceptance–elimination discrepancy was greater for the middling alternatives than for the low-fit alternatives, $F(1, 40) = 6.79$, $p < .05$, but not greater than for the high-fit alternatives. The respective complementarity indices are shown in Table 3 (.75, .74, and .82, for the high-, middle-, and low-fit occupations). As was shown earlier, the size of the discrepancy equals one minus complementarity index.

The data were also analyzed at the occupation level. For each occupation two probabilities were calculated: P_{acc}, the proportion of respondents who included the alternative in acceptance, and P_{elim}, the proportion of respondents who rejected it in elimination. The occupations were plotted in Fig. 1 with P_{acc} and P_{elim} as the coordinates. For each occupation we defined a complementarity index $= P_{acc} + P_{elim}$. Perfect complementarity of acceptance and elimination means that this index should be 1 for each occupation; in other words, all alternatives should be on the diagonal of Fig. 1. In fact, 95% of the alternatives were subcomplementary, while the remaining 5% had a complementarity index of 1.0. Furthermore, about half of the alternatives had an index of .5 or lower. To summarize, almost all the alternative occupations showed a discrepancy effect.

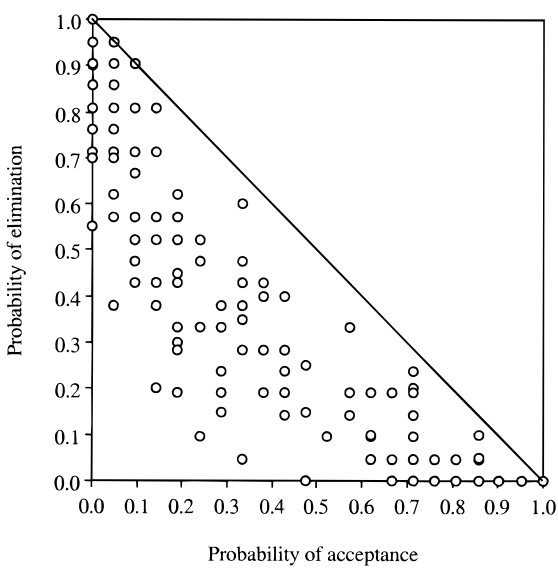


FIG. 1. The results for the 84 alternatives (4 × 21) used in Study 1 are plotted. The coordinates are the probability of acceptance (P_{acc}) and the probability of elimination (P_{elim}). (Alternatives with the same coordinates were overlaid.)

STUDIES 2 AND 3

Study 1 documents the acceptance–elimination discrepancy and provides some evidence for the hypothesis that the middling alternatives display the discrepancy to a greater extent. Studies 2 and 3 were designed to generalize and extend these results. The distribution of types of alternatives remained the same (one third of each type); only the size of the initial set of alternatives has changed. The notion that individuals use cut-off criteria for acceptance and elimination decisions implies that the proportions of occupations accepted (eliminated) should remain relatively constant even across variations in the number of alternatives in the original set. Similarly, the acceptance–elimination discrepancy should remain relatively unaffected across variations in the size of the original set.

Method

In Study 2, each profile was presented along with 12 alternative occupations, with one third of the alternatives at each level of fit. In Study 3 each profile was presented along with 36 alternative occupations, again with one third of the alternatives at each level of fit. The construction of materials and the procedure were otherwise identical to those of Study 1. Twenty-four respondents were recruited for each of the two studies. In each study half the respondents were assigned to each condition (acceptance and elimination). The results of the studies were similar and are described together.

Results

As shown in Table 2, the acceptance–elimination discrepancy was replicated in Studies 2 and 3. Table 4 shows, for each study, the probability of an occupation being included in the final choice set as a function of *choice procedure* (acceptance versus elimination) and *fit of the alternative* (high, middle, low). In Study

TABLE 4

Proportion of Alternatives Included in the Choice Set in Studies 2 and 3

Type of alternative	Choice Procedure: Acceptance P_{acc}	Choice Procedure: Elimination $1 - P_{elim}$	Discrepancy	Complementarity index $P_{acc} + P_{elim}$
		Study 2		
High fit	.70	.93	.23	.77
Middling fit	.14	.45	.31	.69
Low fit	.09	.24	.15	.85
		Study 3		
High fit	.51	.77	.26	.74
Middling fit	.12	.38	.26	.74
Low fit	.06	.22	.16	.84

Note. Perfect complementarity occurs when the index equals 1.

2 (12 alternatives), an analysis of variance with these two factors revealed effects of procedure, $F(1, 22) = 40.86$, $p < .001$, and fit, $F(2, 44) = 414.24$, $p < .001$. Most importantly, the significant interaction, $F(2, 44) = 5.36$, $p < .01$, indicates that the acceptance–elimination discrepancy depended on the level of fit. Contrast analyses showed that the acceptance–elimination discrepancy for the middling alternatives was significantly greater than that for the low-fit alternatives $F(1, 22) = 21.43$, $p < .01$, although not greater than that for the high-fit alternatives, $F(1, 22) = 1.91$.

In Study 3 (36 alternatives) the choice sets were larger in elimination than in acceptance (see Table 2). A two-way analysis of variance with procedure and fit as factors (see Table 4) showed significant effects of procedure, $F(1, 22) = 15.59$, $p < .001$, and fit, $F(2, 44) = 189.12$, $p < .001$. The interaction was not significant, $F(2, 44) = 2.23$, $p = .12$. However, in line with the results from Study 2, the acceptance–elimination discrepancy was greater for the middling alternatives than for the low-fit alternatives, $F(1, 22) = 8.79$, $p < .01$, indicating lower complementarity in decisions involving middling alternatives. The contrast between the middling and high-fit alternatives was not significant.

Conclusions

The alternative occupations were uniformly distributed across the various levels of fit in Studies 1–3, one third of the alternatives at each level. Therefore, if individuals set cut-off criteria to determine elimination and acceptance, then the proportion of alternatives exceeding a particular cut-off should be stable across the various sizes of the original set. This is indeed the pattern that we observed. The size of the choice set (measured as a proportion of the full set) was fairly stable across Studies 1–3 in acceptance (27, 31, 24%; see Table 2) and in elimination (50, 54, 46%). Consequently, the *number* of alternatives included in the final choice sets varied a great deal across studies. The acceptance–elimination discrepancy, which is a function of these proportions, was exhibited about equally in all studies. As the dual criterion framework predicts, the acceptance–elimination discrepancy was relatively greater for the middling alternatives than for the low-fit alternatives. Interestingly, the middling alternatives did not differ significantly from the high-fit ones. We will return to this result later.

STUDY 4

To what extent are the present findings dependent on the distribution of the attractiveness of the alternatives within the set? In Studies 1–3, one third of the alternatives were high fit. What would happen if this proportion were changed? For one thing, the size of the choice sets in acceptance as well as elimination ought to depend on the proportion of high-fit alternatives. But how might the acceptance–elimination discrepancy be affected then by these changes? Consider first the design of Study 4 and then our hypotheses.

Respondents in Study 4 reviewed eight profiles, each of which was presented

along with 18 alternative occupations. Respondents were assigned to one of three experimental conditions that differed in the distribution of alternatives. The *uniform* condition replicated Studies 1–3 in that there were equal numbers of high-fit, middling-fit, and low-fit alternatives (one third of each type). We call this condition "666" because there were six alternatives at each level of fit. The other two conditions involved skewed distributions of alternative types. In one condition, called "990," the distribution of alternatives was *skewed upward* with nine high-fit occupations, nine middling ones, and no low-fit alternatives. In the other condition, called "099," the distribution of alternatives was *skewed downward* with nine middling fit occupations, nine low fit occupations, and no high-fit occupations.

The dual-criterion framework we have suggested predicts that (a) the final choice set should increase in size as the proportion of attractive (high-fit) alternatives increases and (b) the acceptance–elimination discrepancy should be similar in the 990 and 099 conditions. Consider, for instance, the skewed-upward alternative set (990). A greater proportion of alternatives should be admitted into the choice set in acceptance because there is a high proportion of high-fit alternatives. Also, a smaller proportion of alternatives should be removed in elimination, thereby leaving an even higher proportion of alternatives in the choice set. The 099 condition should yield the opposite pattern, with few alternatives accepted and numerous alternatives eliminated. Since both sets (990 and 099) include middling alternatives, however, the acceptance–elimination discrepancy should be similar under both distributions of the alternatives.

Method

The materials were constructed as described above. The procedure was the same as in the previous studies. Ninety students participated in the study, 15 in each of the six (2 procedures $\times$ 3 distributions of alternatives) experimental conditions.

Results

Respondents' final sets were indeed sensitive to the distribution of alternatives. Thus, on the average, they accepted 20% of the alternatives in the 099 condition, 32% in the 666 condition, and 40% in the 990 condition (Table 2). In the same vein, in elimination they retained 37% of alternatives in the 099 condition, 49% in the 666 condition, and 58% in the 990 condition. This monotonic pattern is what we would expect if respondents use a cut-off criterion for acceptance (elimination) decisions in conditions involving increasing proportions of high-fit alternatives. The remarkable finding, however, is that the acceptance–elimination discrepancy was approximately the same across the three conditions, as inspection of Table 2 suggests. The mean discrepancy in conditions 666, 990, 099 was 17, 18, and 17%, respectively, $F(2, 84) < 1$.

Table 5 shows for each condition the probability that an alternative will be included in the choice set as a function of procedure and fit. An analysis of variance on the data from the uniform condition (666) revealed significant effects of the choice procedure, $F(1, 28) = 22.56$, $p < .01$ and of the level of fit, $F(2, 56) = 380.48$, $p < .01$. Most importantly, there was a significant interaction, $F(2, 56) = 7.29$, $p < .01$, indicating that the size of the discrepancy between acceptance and elimination depended on the level of fit. In particular, the acceptance–elimination discrepancy was greatest for the middling alternatives. As shown in Table 5, the discrepancy index for the middling alternatives (.27) was greater than for the high-fit alternatives (.16), $F(1, 28) = 4.84$, $p < .05$, and also lower than for the low-fit alternatives (.07), $F(1, 28) = 13.40$, $p < .01$.

The skewed conditions suggest the same pattern (Table 5). In condition 099 the discrepancy was greater for the middling alternatives than for the low-fit ones, $F(1,28) = 20.16$, $p < .01$. In condition 990, the discrepancy was greater for the middling than for the high-fit alternatives, though this difference failed to reach significance, $F(1, 28) = 1.22$, $p = .27$.

Discussion

As expected, the sizes of the choice sets were systematically affected by the distribution of alternative types—sizes increased as the proportion of high-fit alternatives increased—as predicted by models that assume the use of a decision criterion. The increase in size of the choice set, however, was not accompanied by changes in the size of the acceptance–elimination discrepancies. Discrepancies were just as large for skewed-upward distributions (990 condition)

TABLE 5

Proportion of Alternatives Included in the Choice Set in Study 4

Type of alternative	Choice Procedure: Acceptance P_{acc}	Choice Procedure: Elimination $1 - P_{elim}$	Discrepancy	Complementarity index $P_{acc} + P_{elim}$
		666 condition		
High fit	.67	.83	.16	.84
Middling fit	.25	.52	.27	.73
Low fit	.03	.10	.07	.93
		990 condition		
High fit	.60	.75	.15	.85
Medium fit	.20	.41	.21	.79
Low fit	—	—	—	—
		099 condition		
High fit	—	—	—	—
Medium fit	.36	.61	.25	.75
Low fit	.04	.13	.09	.91

Note. Perfect complementarity occurs when the index equals 1.

as they were for skewed-downward distributions (099 condition), consistent with the prediction of the dual-criterion framework.

This pattern of findings helps rule out trivial explanations of the acceptance–elimination discrepancy such that respondents understand the experimental situation as implying that they should mark only a small number of alternatives. Such an alternative explanation, we believe, does not hold up for several reasons. First, the instructions as well as the monetary incentive system used in Studies 1–4 (see method of Study 1) specifically encouraged respondents to mark as many alternatives as they deemed was appropriate and, at the same time, avoid marking the inappropriate ones. In particular, they were told that the bonus would increase as a function of the number of the marked alternatives that are appropriate and decrease as a function of the number of alternatives that are marked but are inappropriate. Second, such an alternative explanation does not account (a) for the finding of a systematic predictable patterns (e.g., variation in choice set sizes) that we observe in Study 4 based on distribution type or (b) for the finding that the middling alternatives are especially susceptible to the acceptance–elimination discrepancy. Third, the alternative explanation does not account for the finding that the discrepancy occurs even when respondents marked a majority of the items (63%), as was the case in the 099 elimination condition.

Finally, the results from Study 4 were also replicated in a fifth study whose results are reported here only briefly because they were fully consistent with those from Study 4. In Study 5, each vignette was presented along with 12 alternatives. There were two types of alternatives' distribution: 840 (eight high-fit, four middling-fit and zero low-fit) and 048. Ninety-six respondents were assigned randomly into one of four conditions (2 decision procedure $\times$ 2 distribution type). The findings indicate that the sizes of the choice sets were directly related to the distribution types, as they were in the present study. For example, under elimination the sizes of the choice set differed greatly—40 and 60% in conditions 048 and 840, respectively. Nevertheless, the size of the acceptance–elimination discrepancy remained similar, 15 and 17% in conditions 048 and 840, respectively. These results further strengthen the dual-criterion account of the findings over the alternative interpretation mentioned earlier.

There is an interesting pattern in the complementarity indices that occurred in all studies and deserves further attention in future research. The complementarity of the high-fit alternatives was not as high as that of the low-fit alternatives. It seems as if the low-fit alternatives were easily recognized as such—they were eliminated with high probability (.76 to .90 across studies) and hardly ever accepted. The high-fit alternatives were less easily recognized as such and were accepted with somewhat lower probabilities (0.51 to .70 across studies). Is this merely a function of the manner in which the alternative occupations were selected or is it due to some fundamental difference between good and poor alternatives that may be generalized across sets of alternatives? Is it the case that poor alternatives are readily identifiable whereas the better alternatives are identified with less certainty? It is worth noting that this pattern was

observed in recent studies involving decisions about perceptual stimuli (Schul & Yaniv, 1999) and therefore merits further investigation.

GENERAL DISCUSSION

The studies reported herein document the discrepancy between the choice sets produced by acceptance and elimination procedures and test predictions of a theoretical account that we offered for this discrepancy. The discrepancy between the choice sets produced by acceptance and elimination processes was 17 to 23% (see Table 2). The sets produced by elimination processes were larger than those produced by an acceptance process by a factor of almost 2 (see Table 2). This discrepancy was remarkably stable across various set sizes (Studies 1–3) and with different compositions of the alternative sets (Study 4). It was also documented in studies using general knowledge questions (Yaniv & Schul, 1997), perceptual judgments (Schul & Yaniv, 1999), and screening multiattribute choices such as job candidates, cars, and articles (Huber et al., 1987; Levin et al., 1998; Westenberg & Koele, 1992; see also Study 3 in Brenner & Rottenstreich, 1999, for a related finding).

The finding of a discrepancy between acceptance and elimination is contrary to the expectation of procedural invariance. Invariance of acceptance and elimination is predicted by normative models which assume that an option's overall evaluation (1) can be represented in a single value, (2) is made independent of context of the other alternatives and irrespective of the procedure, and (3) is compared against a single decision criterion to determine whether or not the option is good enough to be retained in the final selection.

Our proposed theoretical account differs from the above normative perspective in only one respect: Whereas the first and second assumptions remain identical, the third assumption is modified in that the criterion is procedure dependent. Thus, we assume that decision makers compute a value for each alternative and compare it against a relevant cut-off criterion. They use an acceptance criterion (C_{acc}) for admitting an alternative, but do not eliminate an alternative that fails to meet the acceptance criterion. Instead they eliminate it only if its value falls below an elimination criterion (C_{elim}).

The psychological basis underlying the use of two separate criteria (C_{elim} and C_{acc}) is that acceptance and elimination instructions invoke different perceptions of the status quo of the alternatives. Kahneman and Tversky (1982) suggested that decision makers feel more accountable for a decision to change the status quo than for a decision to maintain it. Ritov and Baron (1992) pointed out that omission (inaction) tends to cause less regret than commission (a decision to take action that changes the default option). In general, strong forces act to maintain the status quo in decision making (Kahneman, Knetsch, & Thaler, 1991; Samuelson & Zeckhauser, 1988). We conjectured that different procedures imply a different status quo. In an acceptance process, decision makers might feel more accountable for admitting an alternative (taking action) than for letting it stay outside the choice set (inaction); hence they set a stringent cut-off criterion for acceptance. In elimination, decision

makers feel more accountable for removing an alternative from the choice set (action) than for letting it stay in the choice set at its status quo. Hence the cut-off criterion for elimination is shifted so more extreme negative evidence is required.

A direct prediction of this theoretical account is that the middling alternatives, whose strength levels fall between C_{acc} and C_{elim}, are neither accepted (under acceptance instructions) nor eliminated (under elimination instructions). The fate of the middling alternatives therefore depends on the procedure used (Levin et al., 1998). They are included in the choice set if an elimination process is used, but they remain outside the choice set if an acceptance process is used.

The present studies used scenarios of career decision making to test the prediction that middling alternatives are particularly vulnerable to noncomplementarity. We classified the alternative occupations a priori according to their level of fit to the person's description and predicted greater departure from complementarity for the middling alternative (middle fit) than for either the high-fit or the low-fit alternatives. The results, averaged across all studies, supported the hypothesis. The average discrepancy was 25% for the middling alternatives compared with 20% for the high fit and 13% for low fit (middle versus low, $t_{112} = 6.58$, $p < .01$; middle versus high, $t_{112} = 1.79$, $p < .04$, one tail). The middling alternatives were therefore more prone to be procedure dependent. Levin and his colleagues (1998) recently reported a closely related result from a multiattribute-choice study that used an inclusion–exclusion paradigm similar to ours. They presented respondents with options described by several attributes (e.g., cars described by price, reliability, safety, and manufacturer). Their results also suggest that options about which the respondent is unsure are the ones most influenced by the inclusion–exclusion manipulation.

The role of the implied status quo in acceptance and elimination procedures brings to bear the idea that accountability or justifiability is a driving force in decision making (Lerner & Tetlock, 1999). In this respect our account of the results shares commonalities with recent theoretical approaches in behavioral decision making. In one stream of work, Simonson and Tversky (1992) and Shafir (1993) showed that the search for appropriate justification for making a choice could supercede considerations of utility maximization. Of even more interest here is Higgins' (1997) principle of regulatory focus and the related empirical demonstrations that prevention and promotion modes of thinking trigger different decision strategies and response patterns. In particular, decision makers' tolerance to various types of decision errors depends on whether they are under prevention or promotion focus (Crowe & Higgins, 1997). Our approach also suggests that decision makers' sense of accountability depends on the pragmatic task goal, that is, whether they are engaged in acceptance or in elimination. Errors are presumably more costly if they result from a change in the implied status quo. Future work could potentially further shed light on this link to Higgins' work.

Alternative Accounts of the Findings

Our account of the results is based on the assumption that two different criteria are used in acceptance and elimination rather than a single criterion for both (thereby modifying the third assumption of the normative perspective).

Compatibility-based valuation. An alternative route is to posit that a single criterion is used, but the processing of each alternative is systematically biased depending on the procedure used. Consider the nature of this bias. While it is impossible to specify all the various ways in which processing could be biased, it is worth examining one theoretical account made by Shafir (1993; also Ganzach & Schul, 1995) based on the age-old principle of stimulus–response compatibility (Fitts & Seeger, 1953; Slovic, Griffin, & Tversky, 1990). Studying pairwise choices, Shafir proposed that decision makers' weighting of the advantages and disadvantages of a given option is biased in a manner that is compatible with the instructions. When asked to choose between two options individuals give more weight to the advantages of each, whereas when they are asked to reject one of two options, they place more weight on the disadvantages of each option. Thus an option endowed with extreme advantages and disadvantages would be both chosen and rejected over an option that has more moderate attributes, thereby resulting in supercomplementarity of acceptance and rejection probabilities. Applying this line of reasoning to our choice setting implies that the probabilities of acceptance and elimination would be supercomplementary. Our results, however, are clearly at odds with such an account. For instance, none of the 84 options used in Study 1 (see Fig. 1) exhibited supercomplementarity. One possible reason for the difference between the findings of Shafir (1993) and Ganzach and Schul (1995) and ours is that a choice between a pair of options allows direct comparisons, whereas the need to screen numerous alternatives renders the pairwise comparison process impractical and promotes the use of a cutoff criterion or a comparison standard for evaluating the options.

Status-quo-dependent valuation. Consider another systematic bias in the evaluation of options. Assume the task instructions influence the status quo of alternatives as we had already suggested. Assume also that the tendency to maintain the status quo affects the perception of the alternatives under the two decision procedures. Under elimination alternatives are seen as stronger than they are, thereby allowing relatively more of them to remain in the choice set. Under acceptance, in contrast, alternatives are seen as weaker than they are, thereby letting more of them remain outside of the choice set. Call V_{acc} and V_{elim} the option's different valuations under acceptance and under elimination, respectively. Then the valuation of options is biased in the direction of the assumed status quo and thus tends to be lower in acceptance and higher in elimination (that is, for each option $V_{elim} > V_{acc}$). The important consequence is that middling alternatives fail to be accepted (because they are valued less in an acceptance process) and yet fail to be eliminated (because they are valued more in an elimination process).

This dual-value formulation is formally equivalent to our dual-criterion framework.[4] The dual-value formulation says that the value of an option is procedure dependent whereas the dual-criterion framework suggests that the decision criterion *C* is procedure dependent. Both formulations predict, in almost the same manner, subcomplementarity of acceptance and elimination.

From a descriptive point of view these two formulations differ, however. All along we have used the second formulation (procedure-dependent criteria). One reason for this preference is that the findings reported in Yaniv and Schul (1997, see General Discussion) are more easily described in terms of dual criteria than in terms of dual valuation. In a within-subject study respondents were requested to use both acceptance and elimination procedures simultaneously, marking accepted alternatives by a plus sign, and eliminated ones by a minus sign. Respondents accepted 23% of the alternatives and rejected 43%; the remaining 34% were neither accepted nor eliminated. Respondents presumably computed one value for each alternative and compared it against the acceptance and elimination criteria; it is less likely that they computed two different values for each. Although both theoretical formulations are formally equivalent and both subsume the psychological notion of the status quo effect, the idea that respondents set different criteria for acceptance and elimination fits the data more naturally and therefore seems preferable. Clearly, further investigation might provide more decisive answers on this issue.

Prescriptive Implications

What might be the prescriptive implications of the present findings? To answer this consider first a preliminary question. How might individuals decide which procedure—acceptance or elimination—to apply in naturalistic situations? The choice between the two procedures might be tied to one's perception of the status quo. In realistic situations, decision alternatives often maintain a particular status quo unless they are acted upon. In some cases the natural status quo is "staying in". For instance, in cleaning up one's office, old books remain on the shelves unless they are removed; similarly, graduate students remain in the program unless they are discontinued. Here the burden of proof is naturally associated with the decision to remove a book or a student from the set. In other situations the natural status quo is "staying out." For instance, when one is shopping for books, the status quo of the books in a store is outside one's shopping basket. Similarly, in recruiting students to a graduate program, the status quo is outside. Thus, in screening alternatives in these cases, the decision maker implicitly sets an acceptance criterion, thereby placing the burden of proof on the decision to add a book or a student.

But, the perception of the status quo is often malleable. In screening the program for a large conference, a participant might ask either "which talks should I go to" or "which talks could be skipped." The two frames presumably

[4] Formally the dual-value formulation is similar to the normative perspective except that the second assumption is modified to suggest that evaluation is context dependent.

reflect different views of the status quo (i.e., inside or outside the conference room) and will be associated with different attendance rates. Similarly, editorial decisions can also be framed in two ways. An elimination strategy implies that manuscripts are rejected only if they are clearly weak, otherwise they are accepted. An acceptance strategy implies that papers are accepted only if they are especially strong. The former approach is predicted to yield a higher acceptance rate.

A major implication is that in delegating selection decisions to others one should worry about the precise selection instructions that are being communicated. Other decision makers' interpretation of the instructions strongly affect the outcome of their decision procedures (Schwarz, 1998). Moreover, in social settings subcomplementarity might be readily employed at the service of a party that has a vested interest in placing certain alternatives on the final list. Suppose the size of the choice list is flexible rather than fixed (e.g., the number of doctoral students continued to the second year). Then an elimination procedure would increase the chances that average candidates will be retained in the final choice set since it places the burden of the proof on those seeking to reduce the final choice set. In contrast, the party interested in blocking the entry of average candidates might promote an acceptance procedure in order to shift the burden of the proof to those who seek to add to the final choice set.

An interesting counterpart of the acceptance–elimination discrepancy is discussed in the survey-methodology literature. A well-established finding is that the phrasing of a survey question influences the responses. In particular, different endorsement rates are obtained when people are asked whether a certain extreme form of behavior should be forbidden or, alternatively, whether it should be allowed (Schuman & Presser, 1981; Hippler & Schwarz, 1986). In one early experimental poll in the United States, 25% of the respondents said they would allow speeches against democracy. In a parallel poll, 54% said they would forbid speeches against democracy, which implies that 46% had no objections to allowing such speeches (Rugg, 1941). The 21% discrepancy in the level of support for free speech is analogous to the discrepancy we observed in our studies. Specifically, attitudes about social and moral issues may be viewed as alternatives to be endorsed or rejected. Suppose individuals set up an internal criterion for endorsing an issue and a different one for rejecting it. Controversial moral and social issues about which there are arguments both ways thus correspond to middling alternatives in our studies. In such cases "allow" and "forbid" judgments would be noncomplementary. The allow–forbid discrepancy therefore seems analogous to the acceptance–elimination discrepancy observed in our studies. (See Hippler and Schwarz (1986) for a related though different account of the allow–forbid phenomenon. See also Yaniv, Schul, Rafaeli-Hirsch, & Maoz (2000).)

Finally, it appears that the use of different criteria for acceptance and elimination (and the ensuing noncomplementarity) is prescribed by the rules of evidence for assessing scientific theories. Consider scientific hypotheses as alternatives to be accepted or rejected. A hypothesis becomes viable if it is supported by sufficiently strong evidence that exceeds a certain acceptance

threshold, or it may be considered nonviable if the unfavorable evidence meets some rejection threshold. Acceptance and rejection of hypotheses are not complementary actions, since there are many undecided hypotheses that are neither accepted nor rejected.

REFERENCES

Brenner, L., & Rottenstreich, Y. (1999). Focus, repacking, and the judgment of grouped hypotheses. *Journal of Behavioral Decision Making*, **12,** 141–148.

Crowe, E., & Higgins, E. T. (1997). Regulatory focus and strategic inclinations: Promotion and prevention in decision-making. *Organizational Behavior and Human Decision Processes*, **69,** 117–132.

Fitts, P., & Seeger, C. M. (1953). S-R compatibility: Spatial characteristics of stimulus and response codes. *Journal of Experimental Psychology*, **46,** 199–210.

Ganzach, Y., & Schul, Y. (1995). The influence of information and goal framing on decision. *Acta Psychologica*, **89,** 23–36.

Gati, I. (1991). The structure of vocational interests. *Psychological Bulletin*, **109,** 309–324.

Gati, I. (1994). Computer-assisted career counseling: Dilemmas, problems, and possible solutions. *Journal of Counseling and Development*, **73,** 51–56.

Gati, I., Fassa, N., & Mayer, Y. (1998). An aspect-based approach to person-environment fit: A comparison between the aspect structure derived from characteristics of occupations and that derived from counselees' preferences. *Journal of Vocational Behavior*, **53,** 28–43.

Gati, I., Osipow, S. H., & Givon, M. (1995). Gender differences in career decision making: The content and structure of preferences. *Journal of Counseling Psychology*, **42,** 204–216.

Gilovich, T., Medvec, V. H., & Chen, S. (1995). Commission, omission, and dissonance reduction: Coping with regret in the "Monty Hall" problem. *Personality and Social Psychology Bulletin*, **21,** 182–189.

Higgins, E. T. (1997). Beyond pleasure and pain. *American Psychologist*, **52,** 1280–1300.

Hippler, H. J., & Schwarz, N. (1986). Not forbidding isn't allowing: The cognitive basis of the forbid/allow asymmetry. *Public Opinion Quarterly*, **50,** 87–96.

Hsee, C. K. (1996). The evaluability hypothesis: An explanation for preference reversals between joint and separate evaluations of alternatives. *Organizational Behavior and Human Decision Processes*, **67,** 247–257

Huber, V. L., Neale, M. A., & Northcraft, G. B. (1987). Decision bias and personnel selection strategies, *Organizational Behavior and Human Decision Processes*, **40,** 136–147.

Jaradat, D., & Tollefson, N. (1988). The impact of alternative scoring procedures for multiple-choice items on test reliability, validity, and grading. *Educational and Psychological Measurement*, **48,** 627–635.

Kahneman, D., Knetsch, J. L., & Thaler, R. H. (1991). The endowment effect, loss aversion, and status-quo bias. *Journal of Economic Perspectives*, **5,** 193–206.

Kahneman, D., & Tversky, A. (1982). The psychology of preferences. *Scientific American*, **246,** 160–173.

Lerner, J. S., & Tetlock, P. E. (1999). Accounting for the effects of accountability. *Psychological Bulletin*, **125,** 255–275.

Levin, I., Jasper, J. D., & Forbes, W. S. (1998). Choosing versus rejecting options at different stages of decision making. *Journal of Behavioral Decision Making*, **11,** 193–210.

Luce, D., & Raiffa, H. (1988). Individual decision making under uncertainty. In P. Gardenfors & N.-E. Sahlin (Eds.), *Decision, probability, and utility: Selected readings* (pp. 48–79). Cambridge, UK: Cambridge Univ. Press. [Reprinted from Luce, D., & Raiffa, H. (1957). *Games and decisions*. New York: Wiley.]

Payne, J. W., Bettman, J. R., & Johnson, E. J. (1993). *The adaptive decision maker*. Cambridge UK: Cambridge Univ. Press.

Ritov, I., & Baron, J. (1992). Status-quo and omission biases. *Journal of Risk and Uncertainty*, **5,** 49–61.

Rugg, D. (1941). Experiments in wording questions: II. *Public Opinion Quarterly*, **5,** 91–92.

Samuelson, W., & Zeckhauser, R. (1988). Status-quo bias in decision making. *Journal of Risk and Uncertainty*, **1,** 7–59.

Schul, Y., & Yaniv, I. (1999). Unpublished data.

Schuman, H., & Presser, S. (1981). *Questions and answers in attitude surveys: Experiments on question form, wording, and content*, New York: Academic Press.

Schwarz, N. (1998). Communication in standardized research situations: A Gricean perspective. In S. R. Fussel & R. J. Kreuz (Eds.), *Social and cognitive approaches to interpersonal communication* (pp. 39–66). Mahwah, NJ: Erlbaum.

Shafir, E. (1993). Choosing versus rejecting: Why some options are both better and worse than others. *Memory & Cognition*, **21,** 546–556.

Simonson, I., & Tversky, A. (1992). Choice in context: Tradeoff contrast and extremeness aversion. *Journal of Marketing Research*, **29,** 281–295.

Slovic, P., Fischhoff, B., & Lichtenstein, S. (1982). Response mode, framing, and information-processing effects in risk assessment. In R. M. Hogarth (Ed.), *New directions for methodology of social and behavioral sciences: The framing of questions and the consistency of responses* (pp. 21–36). San Francisco: Jossey-Bass.

Slovic, P., Griffin, D., & Tversky, A. (1990). Compatibility effects in judgment and choice. In R. M. Hogarth (Ed.), *Insights in decision making: A tribute to Hillel J. Einhorn* (pp. 5–27). Chicago: Univ. of Chicago Press.

Spranca, M., Minsk, E., & Baron, J. (1991). Omission and commission in judgment and choice. *Journal of Experimental Social Psychology*, **27,** 76–105.

Westenberg, M. R. M., & Koele, P. (1992). Response models, decision processes and decision outcomes. *Acta Psychologica*, **80,** 169–184.

Yaniv, I., Schul, Y., Rafaeli-Hirsch, R., & Maoz, I. (2000). *Forecasting the outcome of parliamentary elections: Vague options, ignorant respondents, and the inclusion-exclusion discrepancy*. Manuscript in preparation. Hebrew University of Jerusalem.

Yaniv, I., & Schul, Y. (1997). Elimination and inclusion procedures in judgment. *Journal of Behavioral Decision Making*, **10,** 211–220.

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