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Another look at reasons for choosing and rejecting

DOUGLAS H. WEDELL
University of South Carolina, Columbia, South Carolina

Students indicated which of two options they would choose or reject in a between-subjects task-frame manipulation. Alternatives had either high or low variability of feature values, corresponding to enriched and impoverished alternatives, respectively. Previous research has yielded mixed results of task framing, with Shafir (1993) demonstrating greater preference for the enriched alternative in choice than rejection but Ganzach (1995) demonstrating the opposite result. An accentuation model explained these differences by postulating that the greater demands for justification in the choice task lead to accentuation of differences between alternatives in choice. The accentuation model was tested against weight-change models in two experiments, one using various decision scenarios and the other using four-trait adjective descriptions of potential roommates. Results were consistent with accentuation theory and inconsistent with a systematic change in weighting of positive and negative attributes across choice and rejection tasks.

Research in decision making has provided extensive support for the idea that preferences are not stable, but rather are contingent on problem wording (Tversky & Kahneman, 1986), response task (Goldstein & Einhorn, 1987; Slovic & Lichtenstein, 1983), and context (Huber, Payne, & Puto, 1982; Wedell, 1991). The focus of the present research was on how the manipulation of task frame affects preference. A binary decision task can be framed in terms of which option one would choose to accept or, alternatively, to reject. Assuming the principle of task invariance (Tversky, Sattath, & Slovic, 1988), the alternative that is chosen should not be rejected. However, researchers have recently demonstrated that preference ordering is not always the same under choice and rejection frames (Ganzach, 1995; Shafir, 1993). These researchers used different theoretical bases for predicting effects of manipulating task frame, and they demonstrated opposite effects of the manipulation. The present research proposes a third theoretical explanation that resolves some of the apparent inconsistency of the task framing results by predicting under which conditions one result or the other should occur.

Shafir's (1993) manipulation of task frame was motivated by a reason-based approach to understanding decision making (Shafir, Simonson, & Tversky, 1993; Tversky & Shafir, 1992). In Shafir's (1993) study, one group of students had to choose between two alternatives and another group had to reject one of the two alternatives. Sets consisted of an enriched alternative, comprising both good and bad features, and an impoverished alternative, comprising moderately valued features. For example, consider the two potential vacation spots described below in a slight modification of materials used by Shafir.

> Vacation Spot A has lots of sunshine, gorgeous beaches and coral reefs, an ultramodern hotel, cold water, and limited night life.

> Vacation Spot B has average weather, average beaches, a medium-quality hotel, medium-temperature water, and an average night life.

In this example, Spot A is the enriched alternative, and Spot B is the impoverished alternative. Logic and common sense dictate that one should not prefer Spot A to Spot B in a choice situation yet prefer Spot B to Spot A in a situation that calls for rejecting one of the two vacation packages. However, Shafir's (1993) results implied just such a pattern. Specifically, choice proportions for the enriched alternative were significantly greater than (1 − rejection) proportions for the impoverished alternative. Shafir explained this pattern of preferences by combining a justification principle, which asserts that people seek reasons to justify their decisions, with the compatibility principle, which asserts that greater weight is given to features that are more compatible with the response mode (Tversky et al., 1988). Following the compatibility principle, it may be easier to answer the question, "Why did you choose this alternative?" by focusing on the positive features of the chosen alternative. On the other hand, it may be easier to answer the question, "Why did you reject this alternative?" by focusing on the negative features of the rejected alternative. Thus, Shafir reasoned that greater relative weight is given to positive features in a choice task and that greater relative weight is given to negative features in a rejection task.

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Table 1
Comparison of Preference Proportion Results as a Function of Frame from Shafir (1993) and Ganzach (Experiment 2, 1995)

Shafir (1993) Data					Ganzach (1995) Data				
	Frame					Frame			
Problem	Choose	Reject	*M*	Diff.	Profile	Accept	Reject	*M*	Diff.
1	.64	.45	.55	.19	1	.21	.36	.29	−.15
2	.67	.52	.60	.15	2	.09	.17	.13	−.08
3	.75	.65	.70	.10	3	.07	.10	.09	−.03
4	.75	.50	.63	.25	4	.17	.21	.19	−.04
5	.77	.60	.68	.17	5	.25	.28	.27	−.03
6	.72	.55	.64	.17	6	.13	.20	.33	−.07
7	.21	.08	.15	.13	7	.22	.20	.42	.02
					8	.51	.52	.52	−.01
					9	.36	.52	.44	−.16

Note—Shafir's results represent the proportion preferring the enriched alternative in binary choice with frame manipulated between subjects. Ganzach's results represent the proportion preferring the high-scatter alternative to the low-scatter alternative inferred from trinary choice with frame manipulated within subjects. Diff. = Difference.

Recently, Ganzach (1995) reported results that appeared inconsistent with the compatibility explanation of task framing proposed by Shafir. In one experiment (Ganzach, 1995, Experiment 2), participants chose which of three alternatives they would accept or which of three alternatives they would reject. In the *accept* conditions, the alternatives consisted of a high-scatter (HS) option, a low-scatter (LS) option similar in mean value, and a clearly inferior alternative. In the present context, the HS option is like an enriched option because it has extreme high and low values, and the LS option is like the impoverished alternative because it has more moderate values. In the *reject* conditions, the alternatives consisted of the HS, LS, and a clearly superior option. Relative preference for the HS or enriched alternatives was greater in rejection than in choice [$p_R(E,I) = .31$, $p_C(E,I) = .22$].[1]

Ganzach (1995) explained these results by arguing that a decision to accept is likely to entail more commitment than a decision to reject. He further argued that this greater commitment would lead to a tendency to follow a conjunctive strategy in which alternatives with low values on attributes are avoided. Anderson (1981) has demonstrated that a conjunctive strategy can be modeled as a multiplicative integration rule, which effectively gives greater weight to negative information. Although the enriched alternative has higher values than the corresponding impoverished alternative has, it also has lower values. Thus, Ganzach argued that because lower values received greater weight in choice than in rejection, the impoverished alternative was preferred more in choice than in rejection.

Although Ganzach (1995) and Shafir (1993) each demonstrated significant effects of task framing, their results appear contradictory. Table 1 summarizes the results from these experiments. In agreement with the compatibility hypothesis, Shafir found that enriched alternatives were preferred more in choice than in rejection. In agreement with the greater use of a conjunctive strategy in choice, Ganzach found that the enriched alternatives were preferred more to the impoverished alternatives in rejection than in choice.

One way to resolve the apparent discrepancy between these results is to note that the overall attractiveness of the enriched alternative relative to the impoverished alternative appears to differ systematically between experiments. Overall relative attractiveness may be computed by averaging the proportions preferring the enriched alternative under choice and rejection. With only one exception, Shafir's (1993) problems reflect a higher relative attractiveness of the enriched alternative over the impoverished alternative, because the average proportions are greater than .5. The reverse is true of the Ganzach (1995) profiles, in which the average proportions are below .5. Thus, it is possible that the direction of the effect depends on whether the enriched alternative has greater or lesser overall attractiveness than the impoverished alternative.

In this article, I propose an accentuation explanation of the opposite effects of task frame observed by Shafir (1993) and Ganzach (1995). According to the accentuation hypothesis, differences are accentuated in choice relative to rejection. The theoretical underpinnings of the accentuation hypothesis have much in common with ideas proposed by Shafir and by Ganzach. Following Ganzach, it seems reasonable to assume that choice or acceptance involves greater commitment than rejection. Following Shafir, it also seems reasonable that decision makers are compelled to justify their choices. However, rather than assume that decision makers switch to a conjunctive strategy in choice or that a compatibility principle operates to increase the weight of positive over negative reasons for choosing, the accentuation hypothesis simply argues that greater commitment or need for justification in choice leads to greater weighting of attribute differences. In other words, people are more discriminating when choosing than when rejecting. If the overall relative attractiveness of the enriched alternative is greater than that of the impoverished alternative, positive attribute differences will be greater than negative attribute differ-

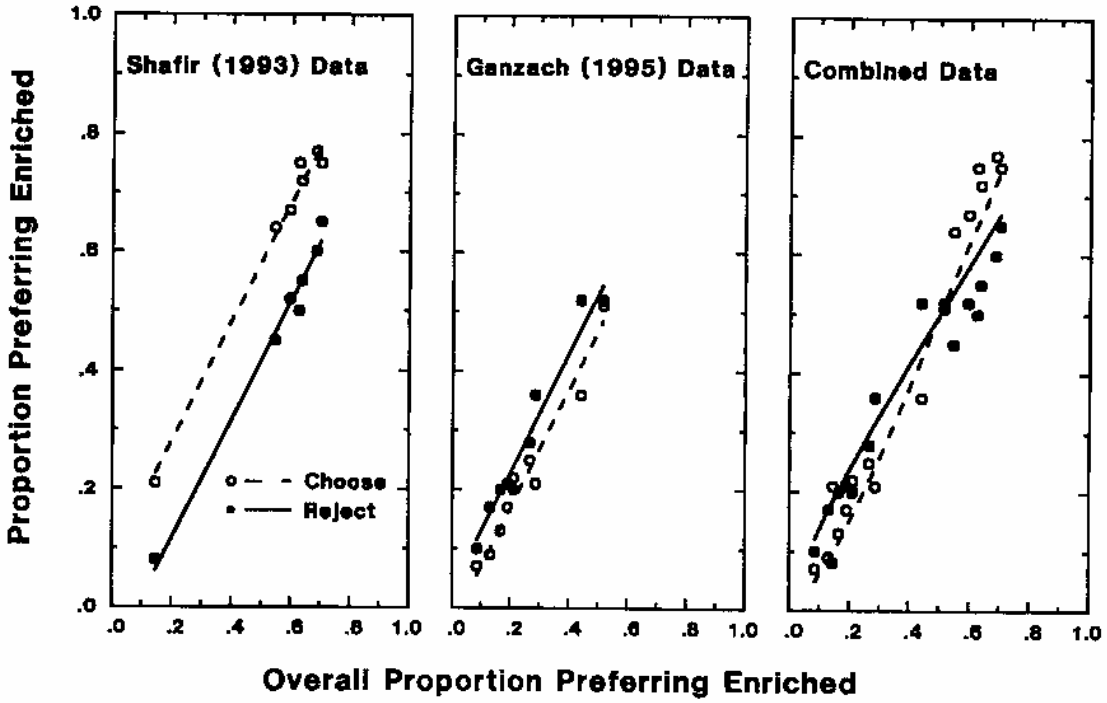

Figure 1. Fit of models to data from Shafir (1993), Ganzach (1995), and the combined data sets. The data in the left panel are consistent with the compatibility hypothesis. The data in the middle panel are consistent with the conjunctive strategy hypothesis. The combined data are consistent with the accentuation hypothesis.

ences and the enriched alternative will be preferred more in choice. If the opposite relationship between overall attractiveness of the two alternatives is true, the opposite result will occur.

The simple logistic choice rule (Luce, 1959) can be used to illustrate how the accentuation hypothesis might be instantiated in a model of choice. According to this rule, the proportion of times that alternative i is preferred to alternative j in response mode k is a logistic function of the difference in values for i and j:

$$p_k(i,j) = \frac{1}{1 + \exp[-b_k(v_i - v_j)]}, \qquad (1)$$

where b_k represents the discriminability parameter associated with response mode k, and v_i and v_j are the summed attractiveness of alternatives i and j, respectively. The difference in attractiveness of i and j is estimated by using the logit transformation (Luce, 1959) of choice proportions:

$$v_i - v_j = \log\left(\frac{p_{ij}}{1 - p_{ij}}\right). \qquad (2)$$

As b_k increases, discriminability increases, so that the same difference in value leads to a more extreme preference proportion. The accentuation hypothesis asserts that the discriminability parameter is greater in choice than in rejection; that is, $b_C > b_R$ (where b_C and b_R are the values of the discriminability parameter under choice and rejection, respectively). With multiattribute stimuli, b_k might conceptually correspond to the number of times that attribute values were sampled or resampled to reach a decision, with increased sampling leading to greater discrimination. Given greater commitment or need for justification in choice than in rejection tasks, people may pay more attention to or be more willing to repeatedly sample reasons supporting the different options so that they are less likely to make an error.

Differences in the predictions from the three models of choice/rejection framing effects are illustrated in Figure 1. In the left panel, the data from Shafir (1993) is fit by an unweighted least squares regression of preference proportion on average proportion and task frame. The effect of task frame is significant and is represented by the difference in the intercepts for choice and rejection. The higher intercept for the choice task is attributed to the greater weight given positive information in choice. The middle panel illustrates the regression fit to Ganzach's (1995) data. Once again, the effect of task frame is significant, but it is in the opposite direction. The lower intercept for the choice task is attributed to the greater weight given to negative information in choice, which is assumed to result from the greater use of a conjunctive strategy in choice than in rejection.

Neither the compatibility hypothesis nor the conjunctive hypothesis predicts that differences between choice and rejection depend on the relative preference for the enriched alternative. Accordingly, the model fits to the separate data sets capture the task framing effects by changes in the intercepts for the two functions rather than changes in their slopes. However, these types of intercept models cannot explain the combined pattern of

data. When preference proportion was regressed on overall proportion and frame for the combined data set, frame was not significant. Instead, the combined data reflected a frame × overall proportion interaction. This interaction is predicted by the accentuation hypothesis and is captured by a higher discriminability parameter corresponding to a steeper slope of the function for choice than for rejection. An iterated least squares nonlinear fit (Wilkinson, 1990) of the model described in Equations 1 and 2 to the combined data revealed a significantly better fit of the model with separate slopes for choice and rejection than with the single slope. As predicted by the accentuation hypothesis, the discriminability parameter was higher for choice ($b_C = 1.25$) than for rejection ($b_R = 0.83$).

Although the analyses illustrated in Figure 1 suggest some support for the accentuation hypothesis, caution must be used in combining the data from the two experiments. In addition to the difference in overall preference for the enriched alternative, the experiments differed in numerous other ways. For example, Shafir's (1993) materials were lengthy verbal descriptions, the task set included only two alternatives, and the manipulation was between subjects. On the other hand, Ganzach's (1995) materials were numerical, the task set included three alternatives, and the manipulation was within subjects. Alternative explanations of Ganzach's results are also possible. Because the third alternative in his rejection task tended to be dominated by the impoverished alternative but not the enriched alternative, asymmetric dominance effects might account for the result (Huber et al., 1982; Wedell, 1991). Thus, the accentuation hypothesis should be tested more directly.

The purpose of Experiment 1 was to observe whether the interaction pattern predicted by the accentuation hypothesis will occur once these other differences are eliminated. A large number of binary choice sets were constructed in a manner similar to that for those constructed by Shafir (1993). The study was designed to sample a large number of choice sets in which preference for the enriched alternative over the impoverished alternative would span a wide range. In this way, the predictions of the three models could be examined more carefully.

Experiment 2 was designed as a more rigorous test of differential predictions of accentuation and task contingent weighting models. Unlike in Experiment 1, trait adjective descriptions were used, for which the variability and mean of the values could be more precisely controlled. The combined results of Experiments 1 and 2 provide an examination of how well accentuation theory explains choice behavior across two rather different sets of stimulus materials.

EXPERIMENT 1

Method

Subjects and Design. The subjects were 225 undergraduates (67 male and 158 female) at the University of South Carolina who participated for course credit. The students were randomly assigned to one of four between-subjects conditions generated by the factorial combination of response task (choice or rejection) and arrangement set (two sets). Each arrangement set was constructed so that the first alternative, listed and designated as "A," was the enriched alternative for half the problems and the impoverished alternative for the other half. Arrangement sets were complementary, so that each decision problem occurred equally often with the enriched and impoverished alternatives listed first, counterbalancing effects of order of alternatives.

The dependent variable was a designation of which alternative was preferred for each of 26 preference scenarios. The preference score was coded a "1" if the enriched alternative was chosen (or not rejected) and a "0" if it was not chosen (or was rejected). The order of presentation of the scenarios was randomized for each individual.

Materials and Apparatus. All information was presented via computer. The 26 decision problems were similar in nature to those described by Shafir (1993) and are presented in the Appendix. The enriched alternative typically consisted of two or three features of high attractiveness and two or three features of low attractiveness. The impoverished alternative consisted of four to six features of moderate attractiveness. Nearly all of the alternatives had matching dimensions. Thus, if a description of starting salary was given for one job, it would be given for the other job being considered. Adjective descriptors such as *average*, *stable*, *adequate*, *standard*, *reasonable*, *moderate*, *suitable*, and *decent* were typical of the impoverished alternative. The adjective descriptors were much more extreme for the enriched alternatives. The problems covered a wide variety of topics, including choosing between jobs, vacation plans, cars to buy, cars to rent, teachers of a course, and gifts to buy. No particular formula was used to make the enriched alternatives more or less attractive than the impoverished alternatives. The feature lists shown in the Appendix include changes made after an initial pilot study, to ensure a wide variety of differences in preference for enriched versus impoverished alternatives.

Procedure. The instructions in the choice task informed the subjects that they would be presented with a variety of decision problems and be asked to choose the alternative that they most preferred, A or B. The instructions in the rejection task asked the subjects to reject the alternative that they least preferred. Scenarios were devised so that rejection of one alternative would result in an implicit choice of the other alternative. For example, one might have reservations for two ski resorts and have to cancel one of them. The relevant task, choice or rejection, was indicated several times in the instructions. In addition, the decision prompt for each problem in the choice task asked the subjects to choose the alternative that they preferred most, and in the rejection task it asked them to reject the alternative that they preferred least. The response, "A" or "B," was recorded on each trial.

Results

Figure 2 presents the proportions preferring the enriched alternative in the choice and rejection tasks as a function of the overall proportion preferring the enriched alternative across the two tasks. As shown, a wide sampling of overall preference proportions was obtained, with the enriched alternative being preferred from 30% to 70% of the time. The crossing over of the preference functions is inconsistent with the main effect of type of response mode (choice vs. rejection) predicted by the compatibility and conjunctive hypotheses (see the left and middle panels of Figure 1). The data are generally consistent with the accentuation hypothesis prediction that the enriched alternative will be preferred more in choice than in rejection when the overall preference pro-

portion is greater than .5 but that the opposite relation will occur when the preference proportion is less than .5.

Fit of the accentuation model. A series of nested models based on Equations 1 and 2 were fit to the data to test different interpretations of the pattern of results. The data were fit using an interative nonlinear regression procedure (Wilkinson, 1990) and a least squares loss function. The accentuation model predicted that different slope parameters are needed for choice and rejection. The two-slope parameter model ($R^2 = .909$) explained significantly more variance in preference proportions than did the one-slope parameter model [$R^2 = .871$; $F(1,50) = 20.9$, $p < .001$]. The obtained slope values were $b_C = 1.20$ and $b_R = 0.82$ for choice and rejection, respectively. The values of these slope parameters are nearly identical to those obtained in fitting the combined data from Shafir (1993) and Ganzach (1995). Both the compatibility and the conjunctive hypotheses predicted an overall effect of task framing. However, a regression analysis revealed no significant effect of task frame. To test a model that combined an overall effect of task frame with change in slopes, an additive constant parameter was included in the exponent of Equation 1 in addition to the two slope parameters. The change in R^2 associated with the inclusion of this parameter was not significant ($p > .05$). Thus, the data were consistent with the accentuation model. The fit of this model is shown in Figure 2.

Additional statistical tests. Analyses conducted on the preference scores supported the conclusions described above from the nonlinear regression analyses conducted on proportions. The data were subjected to a repeated measures analysis of variance (ANOVA), after first dividing the problems into five groups. The dependent variable was the mean preference score of the problems within each group. The five groups differed in the relative attractiveness of the enriched and impoverished alternatives, with Groups 1–5 defined in terms of the overall proportion preferring the enriched alternative as follows: .25–.35, .35–.45, .45–.55, .55–.65, and .65–.75. The number of problems making up Groups 1–5 were 8, 8, 7, 2, and 1, respectively. The main effect of task was not significant ($p > .05$), providing no support for an overall effect of response task on preference. The interaction of task and problem group was significant [$F(4,220) = 3.40$, $p < .01$]. In agreement with the accentuation hypothesis, the linear component of the interaction was the only significant polynomial trend [$F(1,223) = 9.0$, $p < .01$]. The same pattern of significance was obtained when the repeated measures ANOVA was conducted on the arc sine transformation of preference proportions.

Separate 2 × 2 chi-square tests of independence were conducted for each problem to determine whether preference proportions differed across response tasks. The preference for the enriched alternative was significantly greater in the choice task for one problem and significantly greater in the rejection task for three problems ($p < .05$). Four other problems produced marginally significant results ($p < .10$), two favoring the enriched alternative and two favoring the impoverished alternative in the choice task. Problems 1, 2, 3, 4, and 9 (see the Appendix) were closely modeled after problems from Shafir (1993). Of these, only Problem 2 resulted in a significant effect of task frame in the direction reported by Shafir. It should be noted that Problem 3, which was based on Problem 7 of Shafir, did not show the increased choice of the enriched alternative when the enriched alternative was clearly worse than the impoverished alternative. Thus, the extreme data points in the left panel of Figure 1 that appeared inconsistent with the accentuation hypothesis were not replicated in the present experiment.

Finally, even when the accentuation hypothesis is not tied to a specific model of choice, it makes a simple prediction about the ordering of preference proportions. When the enriched alternative is preferred overall to the impoverished alternative [$p(E,I) > .5$], preference should be greater in choice than in rejection [$p_C(E,I) > p_R(E,I)$]. When $p(E,I) < .5$, then $p_C(E,I) < p_R(E,I)$. The preference proportion for the enriched alternative was higher in choice than in rejection for 5 of 6 problems for which $p(E,I) > .5$. In contrast, the preference proportion for the enriched alternative was lower in choice than in rejection for 14 of 20 problems for which $p(E,I) < .5$. Thus, the accentuation hypothesis correctly predicted the ordering of proportions for 19 of 26 problems, which is significant by a binomial test of one proportion ($p < .05$).

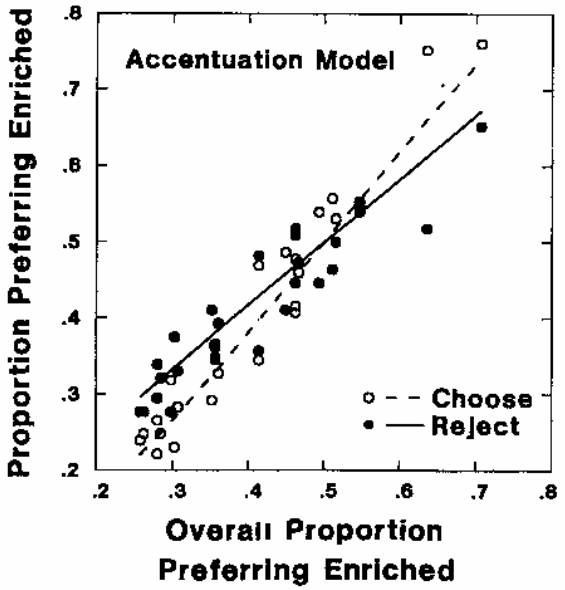

Figure 2. Proportion preferring the enriched alternative in choice (open circles) and rejection (filled circles) tasks as a function of overall preference for the enriched alternative in Experiment 1. Prediction lines represent the least squares fit of the accentuation model of Equation 1.

Discussion

Previous research into the effects of framing a task in terms of choice or rejection have yielded mixed results. Shafir (1993) found that enriched alternatives were preferred more than corresponding impoverished alternatives when the task focused on choice rather than rejec-

tion. He explained this result in terms of the compatibility principle (Tversky et al., 1988), arguing that greater relative weight should be given to positive attributes in choice than in rejection. Ganzach (1995), on the other hand, reported the opposite effect. He argued that because choice involved greater commitment, decision makers were more likely to use a conjunctive strategy in choice than in rejection. Because conjunctive strategies give greater weight to extreme negative information, the enriched alternative is less preferred in choice than in rejection.

Experiment 1 demonstrated both types of effects. The direction of the effect depended on whether or not the overall preference for the enriched alternative was greater than .5. This pattern of results was consistent with the accentuation hypothesis, according to which people show greater discrimination between alternatives in a choice task than in a rejection task. When the enriched alternative is more attractive, this positive difference will be accentuated in the choice task so that the proportion favoring the enriched alternative increases. When the enriched alternative is less attractive, this negative difference will be accentuated in the choice task so that the proportion favoring the enriched alternative is decreased. According to the accentuation hypothesis, changes in preference proportions do not depend on the enrichment or impoverishment of an alternative, but rather on the relative attractiveness of the two alternatives.

Because the fit of the accentuation model to both the combined data sets from Shafir (1993) and Ganzach (1995) yielded nearly identical values of the discriminability parameters as in Experiment 1, the most parsimonious explanation of the full pattern of results is given by the accentuation model. Minimally, additional tests of the compatibility and conjunctive explanations of the effects of manipulating task frame should determine whether these models explain variance additional to that explained by the accentuation model.

EXPERIMENT 2
A Parametric Manipulation

The accentuation model provides an explanation of the results of Experiment 1, along with a way to reconcile different effects of task framing observed in previous research. It postulates that the major determinant of differences in the effects of task framing is the difference in attractiveness of the two alternatives being evaluated. Differences in attractiveness in Experiment 1 were measured by simply averaging preference proportions across the two task frames. Thus, these differences were not directly under experimental control. In Experiment 2, the differences in alternative values were manipulated directly, so that the influence of this variable could be tested experimentally.

The tasks and materials used in Experiment 2 were modeled after those used by Ganzach and Schul (1995) in a recent set of studies. The subjects in those studies were presented with trait adjective descriptions of pairs of potential roommates and asked to choose or reject one of them as a roommate. Ganzach and Schul also used a judgment task in which subjects were presented with the trait descriptions one at a time and made judgments either of their likelihood of accepting the person as a roommate or their likelihood of rejecting the person as a roommate.

Unlike in the previously cited research, Ganzach and Schul (1995) did not manipulate the variability of values in these descriptions, but rather they manipulated the number of extremely high or low traits describing an individual. Thus, for example, subjects chose between a person described by six evaluatively high (H) and six evaluatively low (L) trait adjectives and a person described by only three H and three L traits. The subjects tended to choose the person described with the higher number of traits significantly more than they rejected the other person. The researchers argued that these results were consistent with Shafir's (1993) model of greater weighting of positive features in choice than in rejection. Specifically, they argued that the 6H–6L description gave subjects more reasons to choose that person as a roommate (three more H traits) and more reasons to reject that person as a roommate (three more L traits). In their Experiment 1, they found that the proportion preferring 6H–6L to 3H–3L descriptions was .52 in choice and .34 in rejection. Similarly, in their Experiment 3, they found that the proportion preferring 4H–4L to 1H–1L descriptions were .49 to .32.

The Ganzach and Schul (1995) results are not predicted by the accentuation hypothesis. Because the person described by fewer traits was preferred overall, the accentuation hypothesis predicts greater preference for that person in choice than in rejection, which is the opposite of the obtained result. However, it is important to remember that the manipulation of number of traits is rather different from the manipulation of extremity of values described in Experiment 1 and in previous research (Ganzach, 1995; Shafir, 1993). Therefore, the results may not reflect a process of differential weighting of positive and negative features.

An alternative explanation of the Ganzach and Schul (1995) result is that it had nothing to do with differential weighting of values but rather was the result of how people dealt with missing information. Consider that there were six more pieces of information about the 6H–6L person than there were about the 3H–3L person. This additional information should make the subject more certain of the value for the 6H–6L person than for the 3H–3L person. Greater certainty is due to the fact that an additional six descriptors for the latter person could be all H traits, all L traits, or anything in between. From this perspective, the choice of the 3H–3L person is more risky, because less is known about this person. If we equate the rejection task with adopting a losses frame and the choice task with adopting a gains frame, the Ganzach and Schul (1995) results can be explained in terms of the well-supported assertion that people are more

risk seeking in the domain of losses than in the domain of gains (Kahneman & Tversky, 1979; Tversky & Kahneman, 1986).

Experiment 2 differed from the Ganzach and Schul (1995) experiment in several important ways. First, extremity of trait descriptors was manipulated rather than number of traits. This manipulation maps more cleanly onto that of Experiment 1 and of previous research (Ganzach, 1995; Shafir, 1993). Low-variability descriptions, similar to the LS alternatives of Ganzach (1995), were created by using trait adjectives that successively differed in rated likability by .6 points on a 9-point likability scale (e.g., traits with values 4.1, 4.7, 5.3, 5.9). High-variability descriptions paralleling HS alternatives were created by using trait adjectives that successively differed by 1.2 points on a 9-point scale (e.g., traits with values 3.2, 4.4, 5.6, 6.8).

A second way in which Experiment 2 differed from previous research was that the difference in mean likability of LS and HS sets was manipulated. In the examples described above, the mean of the individual adjective components for both LS and HS was 5.0. Experiment 2 manipulated mean level of adjectives at six levels, from 4.0 to 6.5 in .5 increments. The HS descriptions were combined with LS descriptions at the same level or at one step lower. If positive information receives greater weight in choice than in rejection, the HS alternative should be preferred more in choice for both the zero and one step comparisons.[2] In contrast, accentuation theory predicts that the greater preference for the HS alternative in choice than in rejection should only occur for the pairs in which the HS alternative is one step higher than the LS alternative.

A third facet of Experiment 2 was that it paired LS sets with LS sets one step lower and it paired HS sets with HS sets one step lower. Accentuation theory predicts that these pairings will produce effects similar to those found when the HS set is paired with the LS set one step lower. Weight compatibility models predict no effect of this manipulation.[3]

Finally, the subjects in Experiment 2 also made judgments of the sets presented in isolation. Those in the choice condition rated their likelihood of accepting the person as a roommate, and those in the rejection condition rated their likelihood of rejecting the person as a roommate. If negative information receives greater weight in rejection, the LS sets should be rated more favorably than the HS sets when judging likelihood of rejection. Similarly, if positive information receives greater weight in choice and acceptance, the LS sets should be rated less favorably than the HS sets when judging likelihood of acceptance. Thus, the weight compatibility hypothesis predicts an interaction of stimulus type (LS or HS) × task (rejection or acceptance). Accentuation theory does not predict this interaction.

Table 2
Adjective Sets Used in Experiment 2

	Variability			
	Low		High	
Level	Adjective	Rating	Adjective	Rating
1	possessive	3.07	selfish	2.20
1	belligerent	3.78	loud-mouthed	3.39
1	insolent	4.29	restless	4.66
1	deliberate	4.90	tough	5.78
1	dissatisfied	3.15	spiteful	2.24
1	domineering	3.78	withdrawing	3.39
1	conforming	4.29	meek	4.61
1	jumpy	4.88	systematic	5.85
2	materialistic	3.61	scheming	2.73
2	self-possessing	4.17	cunning	3.93
2	unpopular	4.83	self-concerned	5.00
2	dependent	5.42	proud	6.34
2	profane	3.59	rude	2.10
2	overcautious	4.37	authoritarian	3.98
2	prudent	4.73	anxious	5.05
2	meticulous	5.32	decisive	6.37
3	inhibited	4.10	unemotional	3.00
3	argumentative	4.66	solemn	4.46
3	thrifty	5.42	righteous	5.59
3	nonconforming	5.90	composed	6.71
3	ungraceful	4.07	offensive	3.02
3	resigned	4.73	frivolous	4.46
3	subtle	5.44	obedient	5.66
3	objective	5.90	outspoken	6.71
4	stern	4.59	forgetful	3.85
4	radical	5.15	choosy	4.95
4	opinionated	5.78	fearless	6.05
4	individualistic	6.41	softhearted	7.41
4	passive	4.59	troubled	3.81
4	controlled	5.20	high-strung	4.93
4	theatrical	5.71	persistent	6.10
4	opportunistic	6.44	reasonable	7.39
5	aggressive	5.00	compulsive	4.02
5	radical	5.70	self-conscious	5.46
5	silly	6.34	daring	6.63
5	artistic	6.98	cheerful	7.88
5	old-fashioned	4.95	inhibited	4.10
5	controlled	5.70	reserved	5.56
5	eccentric	6.22	self-satisfied	6.63
5	excitable	6.98	honorable	7.83
6	impulsive	5.51	blunt	4.76
6	humble	6.20	crafty	5.90
6	opinionated	6.80	neat	7.00
6	efficient	7.51	reliable	8.24
6	unconventional	5.51	unsystematic	4.66
6	clownish	6.22	persuasive	5.90
6	theatrical	6.80	talkative	7.02
6	sensitive	7.51	truthful	8.22

Note—Ratings are mean ratings from a pilot study done with a 9-point liking scale.

Method

Subjects and Design. The subjects were 125 undergraduates who received course credit for participation. They were randomly assigned to one of two levels of the between-subjects variable, task frame (choose or reject). Within-subjects variables were tied to the stimulus materials and included description variability (low or high), description value (4.0, 4.5, 5.0, 5.5, 6.0, 6.5), and replication (two sets of equivalent value for each value × variability combination). The subjects in the pairwise task were presented with all zero-step comparisons except those that would combine an adjective set with itself. They were also presented with one-

step comparisons in which (1) an HS set was one step higher than an LS set, (2) an HS set was one step higher than another HS set, and (3) an LS set was one step higher than another LS set, for a total of 96 pairs. In the judgment task, each adjective set was rated once. The dependent variable in the pairwise task was the choice or rejection of the person described by the set as a potential roommate. The dependent variable in the judgment task was the rating of the likelihood of accepting or rejecting the person described by the set.

Materials and Apparatus. All information was presented via computer. Stimulus sets were constructed from mean ratings on a 9-point likableness scale of 164 trait adjectives by 41 participants in an initial scaling study. These rating were used to create 24 sets of unique adjectives resulting from the 6 × 2 × 2 factorial combination of value level, variability, and replication. Table 2 presents these adjective sets. The six value levels were 4.0, 4.5, 5.0, 5.5, 6.0, and 6.5, which represented the approximate mean of the ratings of the four adjectives in each set. The two levels of variability were derived from having increments in mean likableness ratings of adjectives in each set of .6 or 1.2, resulting in standard deviations of 0.775 and 1.549 in the LS and HS sets, respectively. No adjective was repeated across sets.

Procedure. The subjects were instructed to imagine that they were attending a week long summer camp and would be assigned a roommate. Trait adjective descriptions would tell them about prospective roommates, and their responses to them would be used in determining who would be their roommates. In the choice condition, they were told to indicate the person whom they would chose as a roommate from the pair of descriptions. In the rejection condition, they were told to indicate the person whom they would reject as a roommate from each pair of descriptions. The 96 pairs of trait descriptions were then presented on the screen in a different random order for each subject. The description on the left side of the screen was headed by the label "Person A" and included one adjective on each of four double-spaced lines. The description on the right side of the screen was headed by the label "Person B" and included one adjective on each of four double-spaced lines. On a given trial, one set was randomly assigned to be Person A and the other to be B. The order in which the adjectives from a set were arranged on the screen was randomized for each set on each trial. At the bottom of the screen, the subjects were prompted to type the letter (A or B) that corresponded to the person whom they would choose (or reject). After the response was entered, the screen was cleared and there was a 2-sec delay before the presentation of the next pair.

After the 96 pairwise presentations, the subjects rested for 1 min and then were presented with the 24 adjective sets in random order for judgment. Once again, the subjects were to consider each person described as a potential roommate. The judgment instructions for those in the choice condition asked the subjects to rate each trait description set on a 9-point likelihood of acceptance scale, with the verbal anchors 1 = *very low* and 9 = *very high*. The instructions for those in the rejection condition asked the subjects to rate each trait description set on a 9-point likelihood of rejection scale, with verbal anchors 1 = *very low* and 9 = *very high*.

Results

Rating data. Figure 3 presents the mean ratings of the adjective sets (combined across replications) as a function of value and variability. Mean ratings on the rejection scale have been reversed scored so that 9 represents the most positive response. The ratings data provide a strong test of the effects of task goal on weighting. If choice or acceptance leads to greater relative weighting of positive values than does rejection, the ratings of the high-variability sets relative to ratings of the low-variability sets should be higher in the acceptance condition than in the rejection condition. The data of Figure 3 do not conform to this predicted task × variability interaction. Differences in the ratings of high- and low-variability sets at the same value level were similar across task conditions. However, there is evidence of a strong interaction between value and variability within each task condition. In each case, the mean ratings for low-variability sets vary less with value level than do the mean ratings for the high-variability set, resulting in a crossing over of the two rating functions. This result is consistent with extreme information receiving relatively greater weight than moderate information. Extremity weighting is implicit in Bayesian updating, in which information at the midpoint of the scale [i.e., p(hypothesis|data) = .5] provides no diagnostic information and hence does not affect probability estimates.

The mean ratings shown in Figure 3 were subjected to a 2 × 2 × 6 repeated measures ANOVA in which task constituted the one between-subjects variable and variability and value level were within-subjects variables. A main effect of value level simply indicated that mean ratings increased with the value of the stimulus set [$F(5,615) = 365.2$, $MS_e = 1.741$, $p < .001$]. The interaction between variability and value level was also significant [$F(5,615) = 14.6$, $MS_e = 1.260$, $p < .001$], reflecting the crossing over of the rating functions for low and high variability. The three-way interaction including task was not significant, indicating that the cross-over interaction did not depend on task. The critical test of the weighting hypothesis is the task × variability interaction. If acceptance judgments were based on greater weighting of positive features, the ratings of the high-variability sets should be relatively higher than the ratings of the low-variability sets for judgments of acceptance versus judgments of rejection. This was not the case. The interaction did not approach significance [$F(1,123) = 1.1$, $MS_e = 1.397$, $p > .05$]. Thus there was no support for increased relative weighting of positive over negative attributes when the goal was to determine acceptance rather than rejection.

The only other significant effect was an interaction of task and value level [$F(5,615) = 3.3$, $MS_e = 1.741$, $p < .01$]. As can be seen in Figure 3, the ordering of means across value level is similar for acceptance and rejection judgments, except for the higher rating for the lowest value HS alternatives in the rejection task. The obtained interaction reflected this difference in preference ordering.

Choice data. Figure 4 presents the preference data from choice and rejection tasks for the four different types of comparison sets. The accentuation hypothesis and the weight compatibility hypothesis make different predictions for these data. According to the accentuation hypothesis, when mean overall preference proportions exceed .5 (the midline in the graphs), the more attractive alternative should be preferred more in choice than in rejection. This prediction applies to all four types of comparisons. When the preference proportion is close to .5, there should be no difference between choice and rejec-

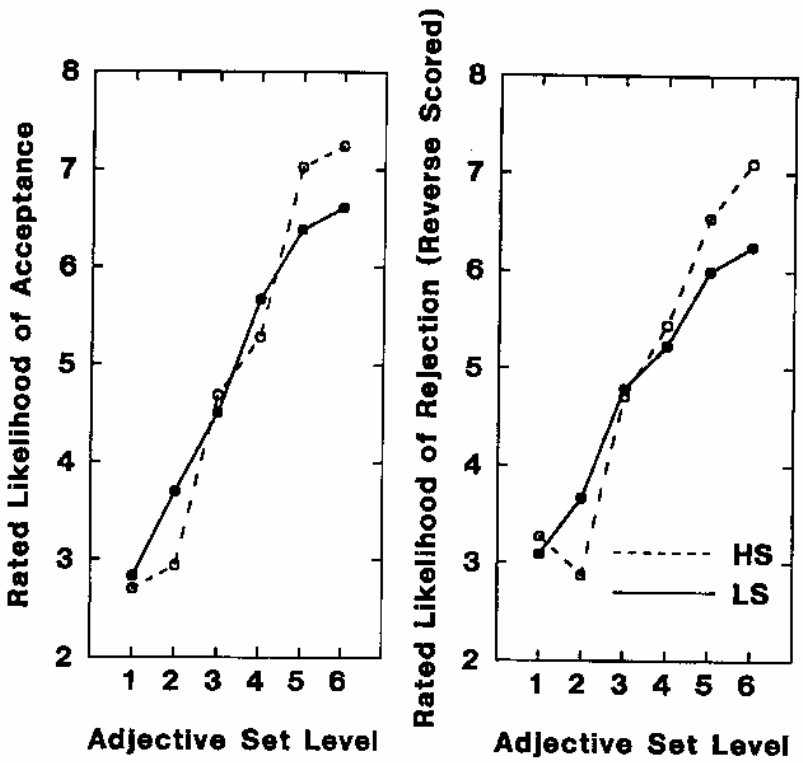

Figure 3. Mean ratings of likelihood of acceptance and rejection (reversed scored) as a function of scatter of adjective descriptors (HS, high scatter; LS, low scatter) and value level.

tion. Finally, when the overall preference is below .5, the relationship should be reversed. In general, the data shown in Figure 4 adhere to accentuation predictions quite well.

The weight compatibility hypothesis predicts a different pattern of results. The relative preference for the HS alternatives over the LS alternatives should be greater in choice than in rejection in both zero-step and one-step comparisons. On the other hand, there should be no differences in choice and rejection preferences for LS–LS and HS–HS pairings (computational examples describing these predictions are worked out in notes 2 and 3). The pattern of data is inconsistent with the weight compatibility predictions.

A repeated measures ANOVA was conducted to test specific contrasting predictions of the accentuation and compatibility hypotheses. The one between-subjects variable was task and the within-subjects variable was comparison set. The dependent variable was the proportion favoring the HS or the higher step alternative. Each model predicts a specific form of the task × set interaction. The weight compatibility hypothesis predicts that effects of task will be greater in the HS–LS comparisons than in the LS–LS or HS–HS comparisons. The interaction contrast testing this hypothesis was not significant [$F(1,123) = 0.6$, $MS_e = .062$, $p > .05$]. The accentuation hypothesis predicts task effects of similar magnitude for the three one-step comparisons, but no effect of task for the HS–LS zero-step comparison. The interaction contrast testing this hypothesis was statistically significant [$F(1,123) = 4.15$, $MS_e = .167$, $p < .05$].

Independent measures t tests were also carried out (at $p < .05$) on each set to test the effects of task in each panel of Figure 4. The proportion favoring the HS alternative in the HS–LS zero-step comparison set was .49 in both choice and rejection, a nonsignificant difference. For the three one-step comparison sets, the higher valued alternative was preferred significantly more in choice than in rejection for the HS–LS sets (.64–.59) and the HS–HS sets (.64–.59). Although the effect was in the correct direction for the LS–LS set (.63–.60), it failed to reach conventional levels of significance [$t(123) = 1.8$, $p < .08$]. Thus, the pattern of pairwise comparisons was consistent with accentuation predictions and inconsistent with weight compatibility predictions.

Discussion

Experiment 2 provided a more direct test of the accentuation and weight compatibility hypotheses. The results were consistent with accentuation model predictions. First, preferences for HS over LS alternatives did not differ significantly when alternatives were matched in value (zero-step comparisons). Second, regardless of the type of sets being compared (LS–HS, LS–LS, or HS–HS), the alternative that was constructed to have a higher value was preferred more in choice than in rejection.

The results were inconsistent with the weight compatibility model. First, the determinant of preference differences between choice and rejection was not whether sets were of high or low scatter but rather whether the sets dif-

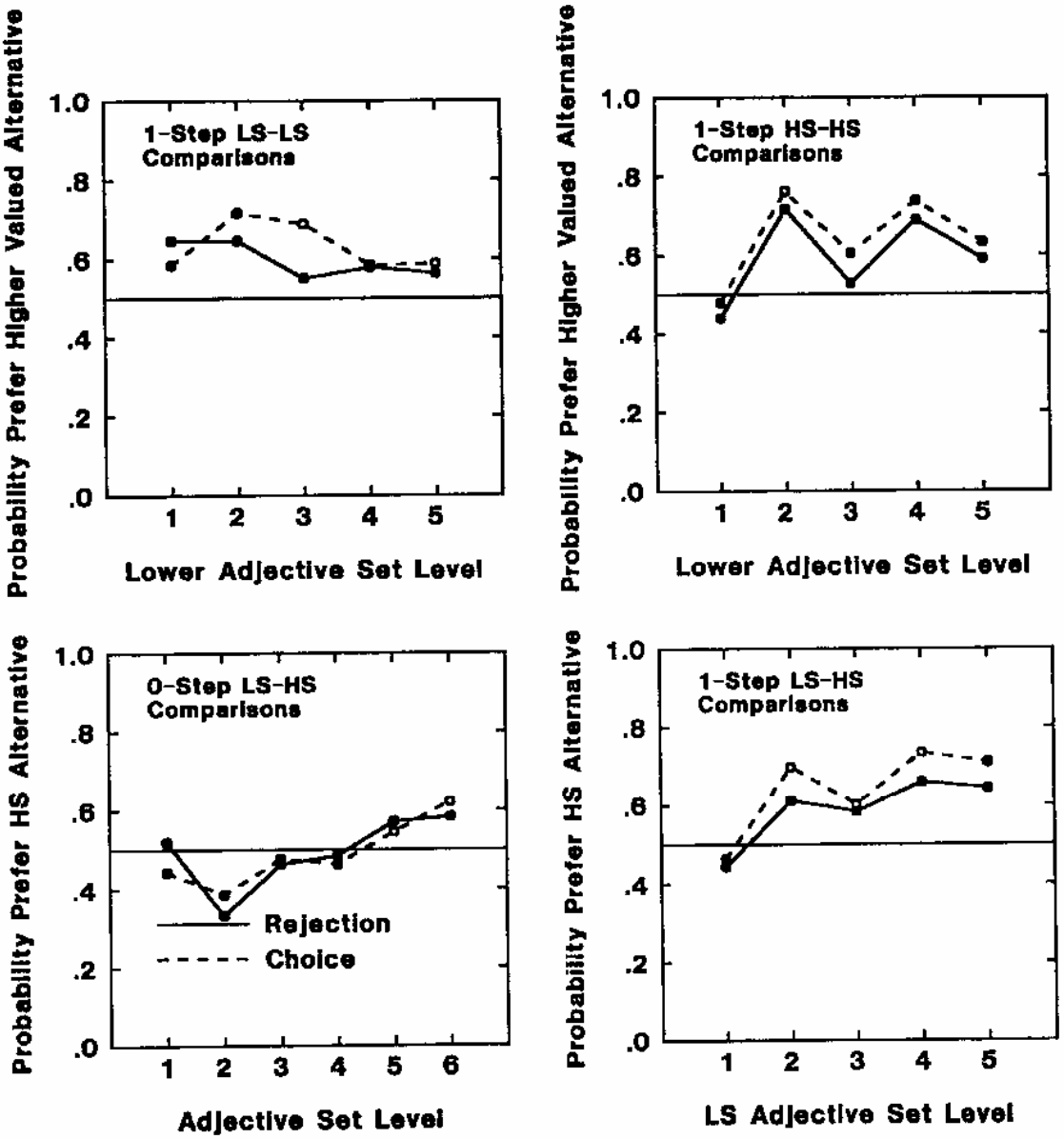

Figure 4. Choice proportions for comparisons in Experiment 2. Low-scatter (LS) and high-scatter (HS) adjective sets were compared with similar or different sets. The top panels describe the proportion preferring the higher valued alternative, and the bottom panels describe the proportion preferring the HS alternative. Predictions are generally consistent with the accentuation model and inconsistent with the weight compatibility model.

fered in overall preference value. Second, judgments of the likelihood of acceptance or rejection did not show evidence of task-dependent weighting.

GENERAL DISCUSSION

The support for the accentuation hypothesis in the present set of experiments calls into question the compatibility hypothesis proposed by Shafir (1993) and the strategy shift hypothesis described by Ganzach (1995) as explanations of the effects of task framing. Because these hypotheses do not explain the pattern of results in Experiments 1 and 2, they do not appear to be generally applicable. It may be that when the problem emphasizes a reason-based strategy for making a decision, compatibility processes are more likely to operate. Similarly, some stimulus conditions may be more likely to prompt a conjunctive strategy. For example, Ganzach's stimuli were all described in terms of rated values on dimensions (such as −7, −2, 4, etc.) rather than verbally. These types of materials may lend themselves to different integration strategies than do verbal descriptors. However, attempts to find evidence for these mechanisms should first rule out the possibility that the observed results reflect an accentuation mechanism. This would occur if preference proportions actually reversed, as when choice propor-

tions are significantly greater than .50 and 1 − rejection proportions are significantly less than .50. The accentuation mechanism is also ruled out whenever the results are in the opposite direction than the hypothesis predicts; that is, when preferences in choice are greater than in rejection for an alternative that is less preferred overall.

As a case in point, the Ganzach and Schul (1995) results concerning the effect of task frame for comparing alternatives that differ in number of features (12 trait sets vs. 6 trait sets) can clearly not be attributed to an accentuation effect. However, it is unclear whether these results were caused by differential weighting of features in choice and rejection. To conclude so, the alternative interpretation that the results were due to a tendency to be more risk seeking in the domains of losses should be ruled out. The differential weighting interpretation of these results seems less plausible in light of the evidence against that model in Experiment 2, in which similar stimulus materials and tasks were used.

Accentuation effects appear to be fairly general and have been demonstrated in a variety of social judgment tasks (Eiser, 1990). These include judgments of attitudes (Judd & Harackiewicz, 1980), traits (Lambert & Wedell, 1991), and outgroup members (Linville & Jones, 1980). Explanations of these effects have centered on the use of affective reactions to guide judgments and the moderating effects of schema complexity. The accentuation effects of the present study appear more consistent with the idea that people may need to provide greater justification for what they choose than what they reject, leading to greater discrimination in the choice task. In justifying a decision, the focus is presumably on the relative advantages of the chosen alternative over the other alternatives. In this sense, both the advantages associated with the chosen alternative and the disadvantages associated with remaining alternatives are important. In rejecting an alternative, one does not necessarily endorse the remaining alternatives. For example, if all the alternatives are unattractive, one may simply pick one at random to reject. In a sense, rejection is a passive form of expressing preferences. Choice, however, may be a more active form of expressing preferences. Because one makes a more positive statement in the choice task about which alternative is most preferred, one may feel a greater need to justify preferences.

If the accentuation interpretation of the results of Experiments 1 and 2 is correct, the case can be made that choice tasks are a better reflection of "true preferences" than rejection tasks are. This assertion simply reflects the empirical result that rejection proportions were less sensitive to stimulus differences, modeled as a reduction in the discriminability parameter within the accentuation model of Equation 1.

Finally, on a more general note, researchers who examine differences in choice proportions due to manipulation of a task variable should keep in mind the possibility that these differences may be caused by an accentuation process. For example, one would expect any manipulation that increased commitment or need for justification to result in greater discriminability of alternatives. If the relative attractiveness of alternatives is always in one direction (i.e., below .5 or above .5), the results may appear as a main effect of the task variable rather than as an interaction that depends on relative attractiveness. Given the pervasiveness of accentuation effects in judgment (Eiser, 1990), researchers investigating effects of task variables should include sets of alternatives that span the range of relative attractiveness in order to model or rule out possible accentuation effects.

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NOTES

1. In Ganzach's (1995) experiment, the third alternative was far inferior and virtually never chosen in the accept condition, and it was far superior and virtually never rejected in the reject condition. Therefore, the preference proportions can be interpreted as reflecting the pairwise relative preference of the HS alternative to the LS alternative, so that $p_R(E,I) = .31$ corresponds to $p_R(I,E) = .69$.

2. To see how the weighting models predict differences in values of low- and high-variability sets, consider the following two sets of val-

ues: LS = {4, 5, 6} and HS = {3, 5, 7}. A configural weighting model (Birnbaum, 1974) would determine weight by rank within the set. Greater weighting of positive information would correspond to weights increasing with rank, such as weights of .2, .3, and .5, respectively. This weighting scheme yields mean values of $M_{LS} = 5.3$ and $M_{HS} = 5.6$. The reverse weighting scheme yields mean values of $M_{LS} = 4.7$ and $M_{HS} = 4.4$. This task × alternative interaction is also predicted for one-step comparisons. If the HS set is now HS = {3.5, 5.5, 7.5}, the means for positive and negative weighting would be $M_{HS} = 6.1$ and $M_{HS} = 4.9$, respectively. If these values form the basis for selecting and judging alternatives, HS–LS comparisons should consistently result in a relative advantage for the HS alternative in choice (or acceptance ratings) as compared with rejection (or rejection ratings). The same basic pattern of predictions arises from differential weighting models, which tie weight directly to stimulus value.

3. Weighting models applied to same set comparisons do not predict differential effects of choice and rejection. Consider the following sets: LS1 = {4, 5, 6} and LS2 = {4.5, 5.5, 6.5}. Applying configural weights favoring positive information (i.e., .2, .3, and .5) yields the same difference in mean values as does applying the configural weights that favor negative information (i.e., .5, .3, and .2). For the positive weighting scheme, $M_{LS1} = 5.3$ and $M_{LS2} = 5.8$, and for the negative weighting scheme, $M_{LS1} = 4.7$ and $M_{LS2} = 5.2$. In both cases, the mean difference is the same, so preferences are predicted to be the same under choice or rejection. A similar pattern of predictions arises from differential weighting models.

APPENDIX

Descriptions for Enriched and Impoverished Alternatives and Preference Proportions as a Function of Task Frame

Stim Topic	Proportion	Alternative	Description
Child Custody	$p_C(E,I) = .49$ $p_R(E,I) = .41$	Enriched	Parent A has an above-average income, a very close relationship with the child, an extremely active social life, lots of work-related travel, and minor health problems.
		Impoverished	Parent B has an average income, average health, average working hours, a reasonable rapport with the child, and a relatively stable social life.
Vacation	$p_C(E,I) = .75$ $p_R(E,I) = .52$	Enriched	Spot A has lots of sunshine, gorgeous beaches and coral reefs, an ultra modern hotel, cold water, and limited nightlife.
		Impoverished	Spot B has average weather, average beaches, a medium-quality hotel, medium-temperature water, and an average nightlife.
Election	$p_C(E,I) = .28$ $p_R(E,I) = .33$	Enriched	Candidate A served honorably as the vice president of the council last term. He organized a fund raiser to support the local children's hospital. He was voted "Most Intelligent" in high school. He enrolled as an art student in college, but dropped out. He has been divorced once.
		Impoverished	Candidate B enjoys camping and other outdoor activities. He is a local business man. In high school, he was voted "most enthusiastic." He majored in history in college. He has two children enrolled in the local elementary school.
Course	$p_C(E,I) = .48$ $p_R(E,I) = .45$	Enriched	Professor A is very enthusiastic and really gets excited about the course, is often very humorous, has you write two papers a week, is a hard grader but gives lots of useful feedback.
		Impoverished	Professor B is fairly interesting, speaks clearly, requires that you write one paper a week, and provides reasonable feedback.
Jobs 1	$p_C(E,I) = .25$ $p_R(E,I) = .32$	Enriched	Company A has a high starting salary, full health insurance coverage, a good vacation plan, limited opportunity for quick advancement, and has recently laid off some staff.
		Impoverished	Company B has an average starting salary, an adequate health insurance plan, a reasonable number of paid holidays, some opportunity for advancement, and a stable work environment.
Road Trip	$p_C(E,I) = .33$ $p_R(E,I) = .39$	Enriched	Vehicle A has abundant seating space, an excellent road-side assistance plan, free insurance coverage, a beat-up interior, and fairly poor gas mileage.
		Impoverished	Vehicle B has adequate seating space, average interior condition, moderate cost daily insurance, average gas mileage, and a limited road-side assistance plan.

Note: $p_C(E,I)$ is the proportion preferring the enriched to the impoverished alternative for the choice task; $p_R(E,I)$ is the proportion preferring the enriched to the impoverished alternative for the rejection task.

APPENDIX (Continued)

Stim Topic	Proportion	Alternative	Description
Social Club	$p_C(E,I) = .27$ $p_R(E,I) = .30$	Enriched	Club A has a high rate of member participation, a variety of planned activities, requires only a small time commitment, has a low level of group cohesiveness, and participation in the different activities can get expensive.
		Impoverished	Club B has average member participation, average number of planned activities, moderate level of group cohesiveness, moderate amount of time commitment, and is affordable to join.
Apartment	$p_C(E,I) = .41$ $p_R(E,I) = .52$	Enriched	Apartment A has lower than average rent per month, located in a quiet community, all new, modern appliances, extended driving time to work due to traffic, and small bedrooms and closets.
		Impoverished	Apartment B has an average rent per month, moderate noise level from neighbors, adequate appliances, average driving time to work, and an adequate number of parking spaces available.
Ski Trip	$p_C(E,I) = .36$ $p_R(E,I) = .35$	Enriched	Ski resort A has fantastic powder snow, a free ski lesson, top quality rental skis, expensive lift tickets, and long lift lines.
		Impoverished	Ski spot B has average snow condition, average price lift ticket, rental skis of reasonable quality, average number of skiers, and moderate size ski slopes.
Restaurant	$p_C(E,I) = .55$ $p_R(E,I) = .55$	Enriched	Restaurant A has very exotic atmosphere, great tasting food, lots of different items on the menu, high prices, and long waits.
		Impoverished	Restaurant B has moderate atmosphere, ordinary food, average prices, fair service, and a variety of items on the menu.
Cars 1	$p_C(E,I) = .23$ $p_R(E,I) = .38$	Enriched	Car A has a 36,000-mile bumper-to-bumper inclusive warranty, a high-performance engine, full option package, high insurance costs, and poorer than average gas mileage.
		Impoverished	Car B has a 36,000-mile warranty on major engine components, a standard engine, a standard option package, average gas mileage, and average insurance premiums.
Video Club	$p_C(E,I) = .53$ $p_R(E,I) = .50$	Enriched	Club A has a very wide selection, covers all of your favorite titles, very quick response to the newly released videos, high rental prices, and no bonus coupons.
		Impoverished	Club B has moderate variety of selections, decent rental prices, some titles of interest to you, fairly fast rental of new movie releases, and some bonus coupons from time to time.
Day Care	$p_C(E,I) = .54$ $p_R(E,I) = .55$	Enriched	Center A is close to your home and work, has a highly qualified staff, large class sizes, a tiny playground, is expensive, and requires participation in activities that are expensive.
		Impoverished	Center B is a moderate distance from your home and work, is reasonably priced, has a teacher with average qualifications, has a medium-sized playground, average food at mealtime, and the usual toys.
Health Club	$p_C(E,I) = .35$ $p_R(E,I) = .37$	Enriched	Club A has many modern weight machines, is open extended hours, provides sauna/pool privileges, is expensive, the exercise classes are crowded, and there are few trainers available for assistance.
		Impoverished	Club B has a moderate number of exercise classes, is competitively priced, has an average number of weight machines, is in a fairly modern building, has an average number of trainers available to assist you, and is open during regular business hours.
Cars 2	$p_C(E,I) = .42$ $p_R(E,I) = .51$	Enriched	Car A has many safety features and is fully "loaded," is very fuel efficient, requires high insurance premiums, and has little trunk space.
		Impoverished	Car B has an average number of safety features, is moderately fuel efficient and equipped with standard features, is of average size, and requires average insurance premiums.

APPENDIX (Continued)

Stim Topic	Proportion	Alternative	Description
House	$p_C(E,I) = .22$ $p_R(E,I) = .34$	Enriched	House A is in a very good neighborhood, is very large, is close to work/schools, has high property taxes, a small yard, and is in need of numerous repairs.
		Impoverished	House B is in an average neighborhood, has a medium-sized yard, is fairly close to your place of work, is average in size, and has average utility bills.
Concert	$p_C(E,I) = .35$ $p_R(E,I) = .48$	Enriched	Concert A has front-row seats, has three top bands, there is a very long wait to get into the arena, it is a long drive to get to the concert, and none of your friends are going.
		Impoverished	Concert B has average seats, the arena is a moderate distance from your home, some of your friends are attending, there is an average wait to get into the area, and has one top band.
Doctors	$p_C(E,I) = .46$ $p_R(E,I) = .47$	Enriched	Doctor A is very experienced and extremely well respected in the community, has an excellent "bedside manner," there is often a long wait in the waiting room, and the office is not convenient to your home and work.
		Impoverished	Doctor B has an average wait in the office, a good reputation in the community, an average "bedside manner," is a moderate distance from your home and work, and has had seven years in practice.
Jobs 2	$p_C(E,I) = .76$ $p_R(E,I) = .65$	Enriched	Offer A has a high salary, offers a long paid vacation each year in addition to holidays, has a very good benefit package, requires some overtime work, and has a moderately high stress level.
		Impoverished	Offer B has an average salary and standard work week, as well as the usual paid holidays and an average benefit package. You will have an average commute and the job has a moderate stress level.
Colognes	$p_C(E,I) = .25$ $p_R(E,I) = .28$	Enriched	Brand A has a unique, exquisite scent, is contained in a large bottle, comes in a box with a complimentary gift, is high in price, and the scent can sometimes make people sneeze.
		Impoverished	Brand B has a nice scent, is contained in an average size bottle, comes in a box, is moderately priced, and you have a normal reaction to the scent.
Vacations	$p_C(E,I) = .54$ $p_R(E,I) = .45$	Enriched	Option A is almost always sunny, offers a lot of cultural diversity, is nestled between the beach and mountains, has several added expenses, and is prone to high humidity.
		Impoverished	Option B has a temperate climate, some culture diversity, average number of attractions, variety of overnight accommodations available, and is near a beach.
Dates	$p_C(E,I) = .24$ $p_R(E,I) = .28$	Enriched	Date A is honest, intelligent, seeks adventure, doesn't have much free time, and has a habit of being late.
		Impoverished	Date B has a nice personality, average sense of humor, is tall with brown hair, and has a college degree.
Universities	$p_C(E,I) = .29$ $p_R(E,I) = .41$	Enriched	University A has a beautiful campus, lower than average tuition, high job placement record, is located more than thirty miles from any substantial cities, has a reputation for difficult classes, and has a high first-year failure rate.
		Impoverished	University B has a reasonable tuition, average number of students per educator, offers a variety of degrees, and is a moderately sized campus that is located in a suitable area.
Shoes	$p_C(E,I) = .56$ $p_R(E,I) = .46$	Enriched	Pair A comes with a warrantee, they are highly stylish and match everything. However, they have a high price and they wear out quick.
		Impoverished	Pair B holds up okay, has an average price, no warrantee, they offer moderate support, and it appears as if everyone has a pair.

APPENDIX (Continued)

Stim Topic	Proportion	Alternative	Description
Toothpastes	$p_C(E,I) = .47$ $p_R(E,I) = .36$	Enriched	Brand A is tartar control formula, with baking soda and fluoride recommended by dentists. It comes in a no-mess stand-up tube, is expensive, and another customer tells you it doesn't have much flavor.
		Impoverished	Brand B has a mint flavor, an average price, contains fluoride, comes in a standard tube, and another customer claims to use it.
Computers	$p_C(E,I) = .32$ $p_R(E,I) = .28$	Enriched	Computer A has a 2-year warranty, extensive memory, is cheap, is rather slow in processing speed, and comes with almost no software.
		Impoverished	Computer A is moderately priced, has a 3-month warranty, reasonable memory, is midrange in speed, and comes with a standard package of software.

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