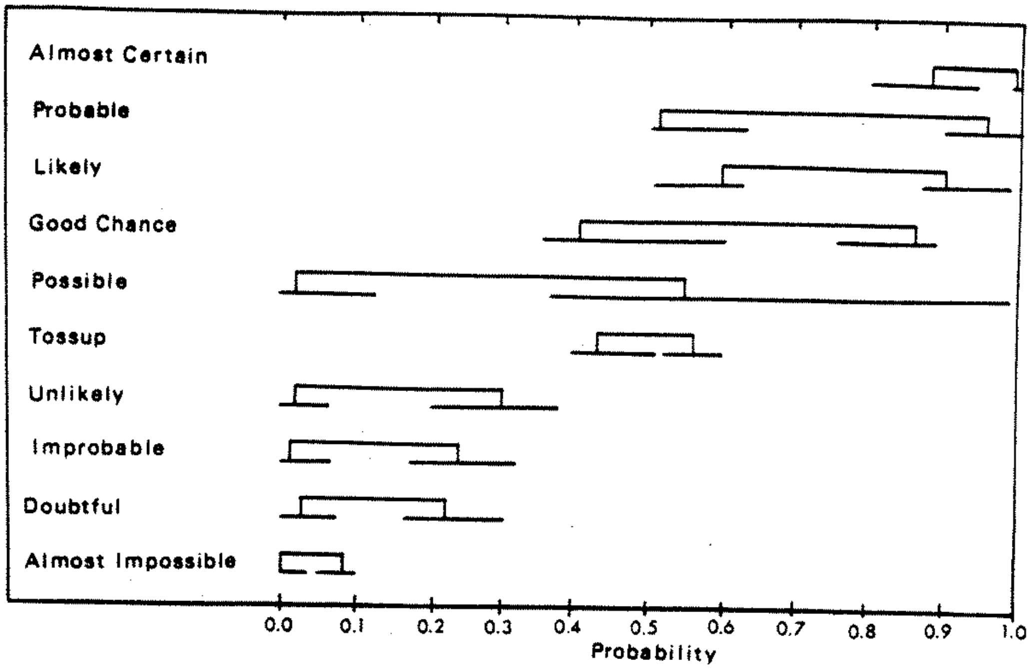

Figure 4. First, second, and third quartiles over subjects of the upper and lower probability limits for each phrase in Experiment 1.

satisfaction index, defined as the percentage of subsets satisfying the consequent condition that also satisfied the antecedent conditions, was determined for each phrase for which $n \geq 4$ for each subject.

The results of the weak monotonicity test are summarized in Table 1, as a function of matrix size. The table shows the three quartiles of the empirical distributions of the satisfaction indices. Because the distribution of this statistic is not known, 400 random matrices were generated for each matrix size encountered in our experiment, and the mean and variance of these null distributions were calculated. The last row in the table shows the percentage of matrices at each size that had satisfaction indices exceeding the mean value for random data by at least three standard deviations. It seems reasonable to conclude that weak monotonicity was well satisfied.

We now turn to the metric scaling. For this analysis the 17 equally spaced response locations were assigned values from left to right of 1, 0.9375, . . . , 0.0625, 0. Because subjects responded to only one member of each pair of reciprocal cells in a matrix, the complementary response was computed. That is, if $R_W(ij)$ was the response to p_ip_j for phrase W, $R_W(ji) = 1 - R_W(ij)$ was entered in cell p_jp_i.

Each matrix was scaled according to the models in Appendix A. Scale values from the difference models were obtained through application of Equations A1 and A3. In order to transform responses by Equation A4 for ratio scaling, responses, $R_W(ij)$, of 0 and 1 were first set equal to 0.0156 and 0.9844, respectively (i.e., one fourth of the distance between the most extreme and the immediately adjacent responses), to avoid division by 0. Then the geometric-mean ratio scaling was accomplished via Equation A6. Ratio-scaling solutions were also obtained by a right eigenvector–eigenvalue decomposition, a left eigenvector–eigenvalue decomposition, and by taking the geometric mean of the two eigenvectors.

The mean linear correlations between observed and predicted responses over all subjects and phrases were .75, .77, .75, .75, and .76 for the difference, geometric mean, right eigenvector, left eigenvector, and mean eigenvector models, respectively. Thus, all the models scaled the data about equally well, with a slight superiority for the geometric-mean model. Detailed results will be presented only for the geometric-mean model; the others show similar patterns.

Recall that on eight occasions, the upper and lower probability limits from Part 1 coincided so that the phrases did not ap-

Table 1
Summary of Satisfaction Indexes for Weak Monotonicity in Experiment 1

Index	Matrix size			
	4 or 5	6 or 7	8	Total
Number of matrices	9	14	144	167
25th percentile	80	77	75	75
50th percentile	87	83	82	82
75th percentile	92	91	89	89
% for which $z > 3.0$[a]	0	100	91	87

Note. The satisfaction index is the percentage of submatrices for which the antecedent conditions are met that also satisfy the consequent condition.
[a] This figure is based on simulated data.