random effects are assumed to be normally distributed, with mean vector 0 and variance terms τ_{xy}.

Because the dependent measures, time and frequency, are skewed, they were log-transformed to make them more symmetrically distributed. We note that because of the discrete nature of the frequency data, a linear regression might not be an appropriate model. We therefore also estimated a nonlinear Poisson regression model. However, because using a Poisson specification yielded similar results to the ones obtained under the linear model of the log-transformed data, we do not discuss the results of this analysis in detail.

For transitions, we modeled the relevant transitions between the eight boxes using a similar model, which has 56 observations per gamble per participant due to two factors: a transition identifier (28 levels) and phase. Again, we used an intercept, phase and number of reasons as random factors. In addition, as described in the text, we estimated a model that allowed the impact of kind of transition to vary across respondents, which resulted in improved fit and substantively interesting interpretations. We used two-tailed tests throughout, both because this analysis has substantial power and because prior data suggests results that conflict with the predictions of the priority heuristic.

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Postscript: Rejoinder to Brandstätter, Gigerenzer, and Hertwig (2008)

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We appreciate that Brandstätter, Gigerenzer, and Hertwig (2008) agree that process models are indeed useful for advancing researchers' understanding of choice processes. Their statement that choices represent adaptive process is also welcome (see Payne, Bettman, & Johnson, 1993), as is the emphasis on multiple measures. However, we do disagree on two empirical matters:

Describing our research, Brandstätter et al. (2008) posit that most tests are either null or supportive of the priority heuristic (PH) and that only three of the tests were significant in the opposite direction. This "scorekeeping heuristic" implies that all tests are equally weighted in theory testing. However, we believe that, one, the presence of mostly probability-payoff transitions in the data is a critical test for any falsification of the PH. Although Brandstätter et al. consider the existing evidence on this point mixed, we do not. Table 1 contains the results from a series of studies, almost all conducted before Brandstätter et al. started their research and many of which are well-known in the literature. As can be seen from Table 1, the majority of observations show a predominance of probability-payoff transitions.

Brandstätter et al.'s (2008) effort to provide quantitative predictions is laudatory. However, these predictions are *very* sensitive to the assumptions that are made in the first, reading, phase postulated by Brandstätter et al. They originally suggested (Brandstätter, Gigerenzer, & Hertwig, 2006, p. 424) that all choice heuristics have a reading phase in which one looks for relevant information and a choice phase in which the relevant information is used. This means that the choice phase is useful for understanding heuristics, whereas the reading phase is more epiphenomenal. The purpose of their original reading phase was to find the larger payoffs. On the basis of adjacency (the idea that participants would inspect information when it is needed), we argued that this would naturally lead to comparisons between payoffs (see Figure 2 of Johnson, Schulte-Mecklenbeck, & Willemsen, 2008). Brandstätter et al. now assume that all the information is read first for Gamble A, then for Gamble B, replacing the vertical arrows in our Figure 2 in Johnson et al. (2008) with horizontal arrows. This new position represents a quite testable hypothesis because it suggests large changes in search patterns by phase and orientation.

The bigger point is that Brandstätter et al. (2008), in their new analysis, also ignore empirically their own distinction between reading and choice phase. By stating that their reading phase now consists mainly of probability-payoff transitions, and then combining the two phases, they use those transitions to compensate for their absence in the choice phase, making the PH look artificially good, and remove one of its clearest predictions.

In essence, we agree with the goals of the approach taken by Brandstätter et al. (2008) but argue that if process-tracing data is to inform the development of choice models, then it is important to listen what the data are saying.

Table 1
Ratio of Transitions Types: Between Probabilities and Payoffs/Within Probabilities and Payoffs, Prior Studies Using Gambles Compatible With the Priority Heuristic

Study	Condition/experiment	Method	Ratio
Brandstätter et al. (2008)		Mouselab	2.34
Johnson et al. (2008)	2 outcome	Mouselab	2.13
	5 outcome		0.56
Payne & Braunstein (1978)	2 outcome	Trackball	1.94
Rosen & Rosenkoetter (1978)		Eye tracking	1.63
Russo & Dosher (1983)	Experiment 3	Eye tracking	2.20[a]

[a] Weighted by number of fixations.

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