

# Is there a Description-Experience Gap in Loss Aversion? A Meta-Analysis with Cumulative Prospect Theory

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## INTRODUCTION

- ❖ When making decisions under risk, people cannot always count on summary descriptions of outcome probabilities – oftentimes, we have to rely on information drawn from previous experiences (DFE; Fig. 1).
- ❖ Yet, studies on the concept of loss aversion - considered by some „the most significant contribution of psychology to behavioral economics“ (Kahneman, 2011) – have focused mainly on decisions from description (DFD).

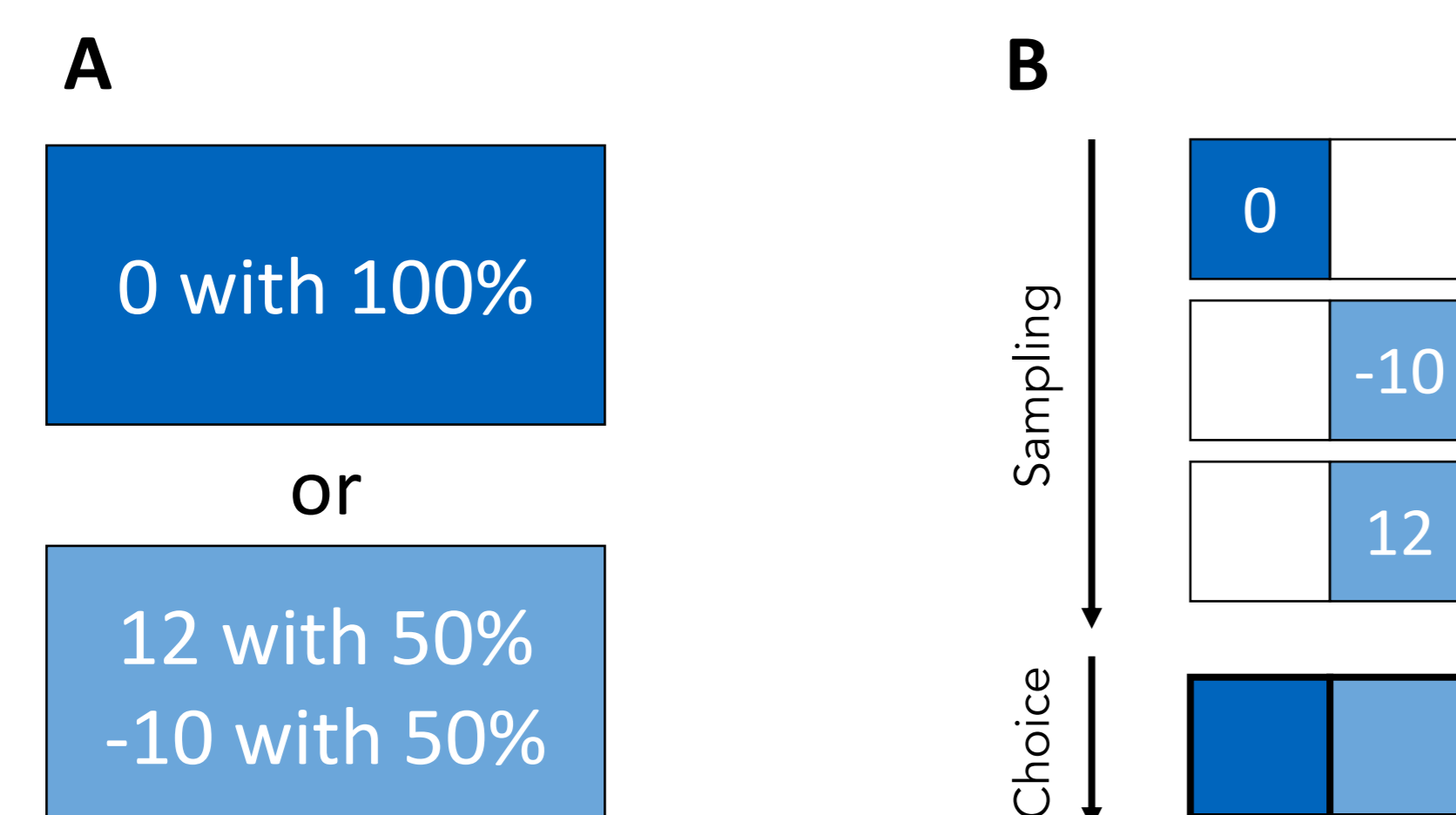


Figure 1. A) In risky decisions from description, (DFD), options' outcomes and their probabilities are explicitly stated. B) In contrast, decisions from experience (DFE) are based on initial uncertainty about the option's payoff distributions. In the sampling paradigm, decision-makers need to infer the occurrence rates of outcomes during a phase of free sampling before making a final consequential choice.

- ❖ Previous research points to substantial differences in choice behavior between DFD and DFE – for instance with respect to the weighting of rare events (Wulff et al., 2018).
- ❖ Do the (cognitive) mechanisms involved in the experiential sampling process (e.g., attentional biases, learning & memory) also lead to a description-experience gap in loss aversion?

## REFERENCES

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## DATA

- ❖ We identified and re-analyzed all available datasets that directly compared description- and experience-based choices utilizing mixed gambles (i.e., options could lead to both a gain or a loss).

Dataset	Design	Participants		Gamble Problems <sub>exp</sub>			Samples /trial (M)
		n <sub>exp</sub>	n <sub>des</sub>	n <sub>gain</sub>	n <sub>loss</sub>	n <sub>mixed</sub>	
Erev et al. (2010)	Between	79	40	10	10	10	13.20
Glöckner et al. (2016, Exp. 3)	Between	38	36	36	16	19	51.71
Kellen et al. (2016)	Within	104		42	38	34	20.86
Linzer et al. (unpublished)	Within	101		42	38	34	44.83
Tiede et al. (2024, Exp. 1)	Between	78	73	56	39	33	32.69
Tiede et al. (2024, Exp. 2)	Between	85	85	60	40	33	26.48

## COMPUTATIONAL MODEL

- ❖ Cumulative prospect theory (CPT; Kahneman and Tversky, 1992) provides an elegant description of how humans seemingly distort objective outcomes and probabilities in risky choices (Fig. 2).
- ❖ Fitting CPT to the data allows to measure the degree of loss aversion via the parameter lambda ( $\lambda$ ).

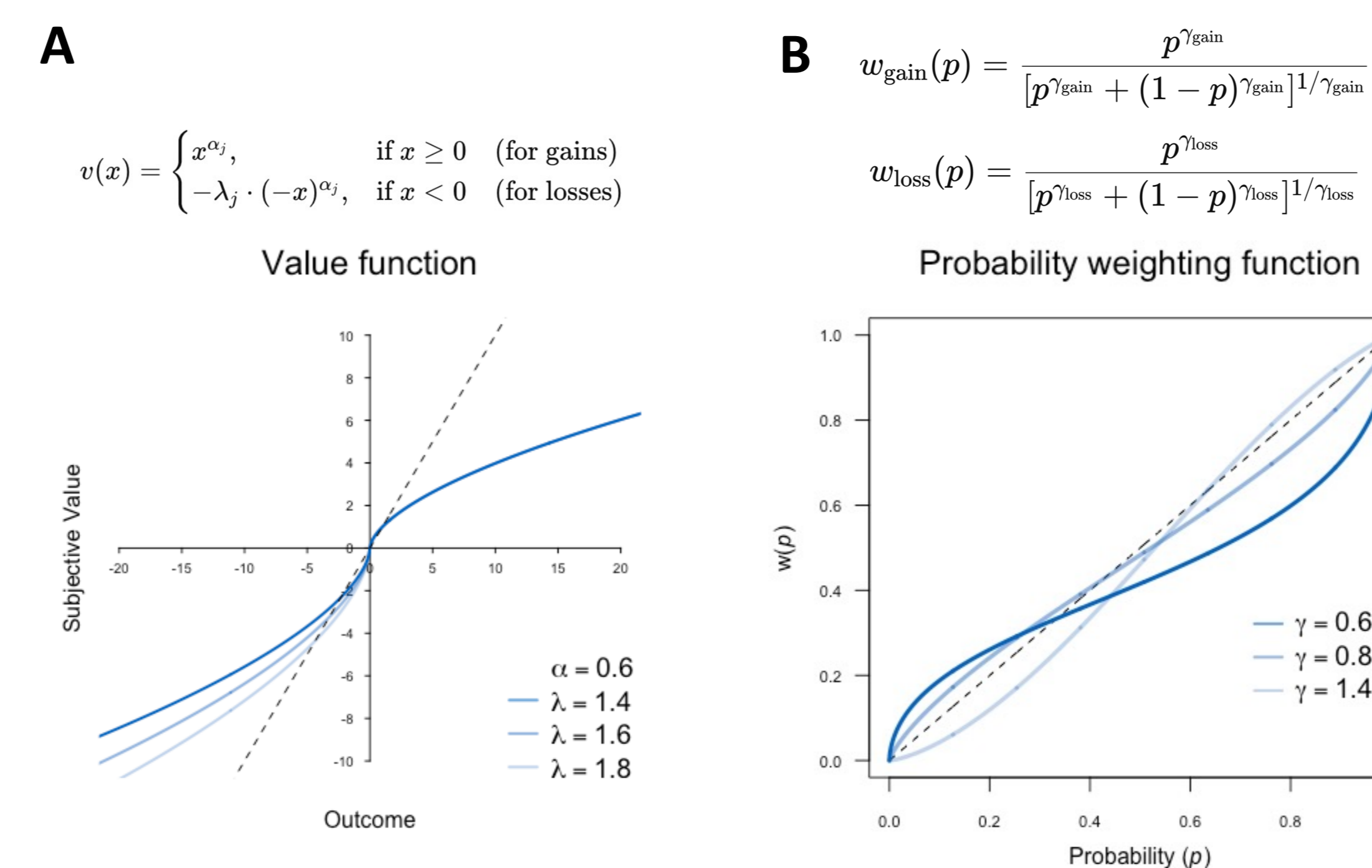


Figure 2. The formalization of CPT applied in our model (Tversky & Kahneman, 1992). A) The  $\lambda$  parameter controls the steepness of CPT's value function in the loss domain, thus indicating how strongly „losses loom larger than gains“. B) CPT's probability weighting function is governed by a curvature (gamma) parameter that reflects the over- and underweighting of objective probabilities.

## RESULTS

- ❖ Across studies, most datasets generally indicate overweighting of losses compared to gains in both description and experience, as measured in our model parameter  $\lambda$ .
- ❖ Using Bayesian model-averaging, we find a small difference in loss aversion between DFD and DFE (Cohen's  $d = .14$ ), that is, however, not credible based on the available data.

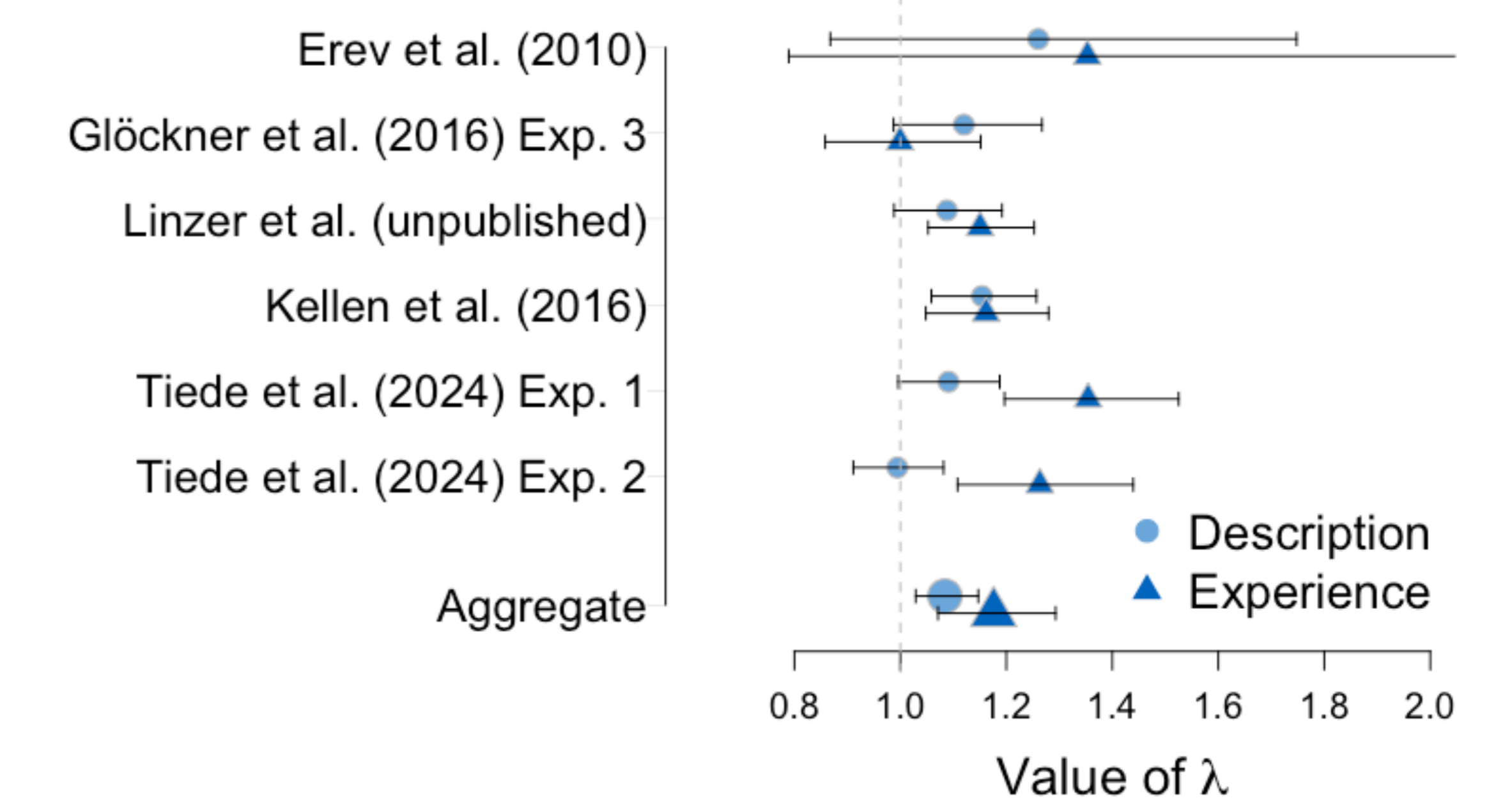


Figure 3. Plot of condition-specific group level estimates for parameter  $\lambda$  in each dataset, and their respective credibility intervals. Aggregate estimates were derived from Bayesian model-averaging meta-analyses over each condition. The results are robust to excluding the data from Erev et al. (2010) where relatively little sampling took place and people thus relied predominantly on (perceived) safe outcomes in few gambles.

## CONCLUSIONS

- ❖ Data from relevant studies on the description-experience gap are limited – few studies have yet utilized mixed gambles.
- ❖ There seems to be a tendency that how we learn outcome probabilities could impact our aversion to losses in risky choice, though no credible difference emerges based on the available data.
- ❖ Large-scale future studies should include mixed gambles in within-subject designs to enable more robust conclusions.