



Evaluating Metacognition in Subjective, Multi-attribute Choice

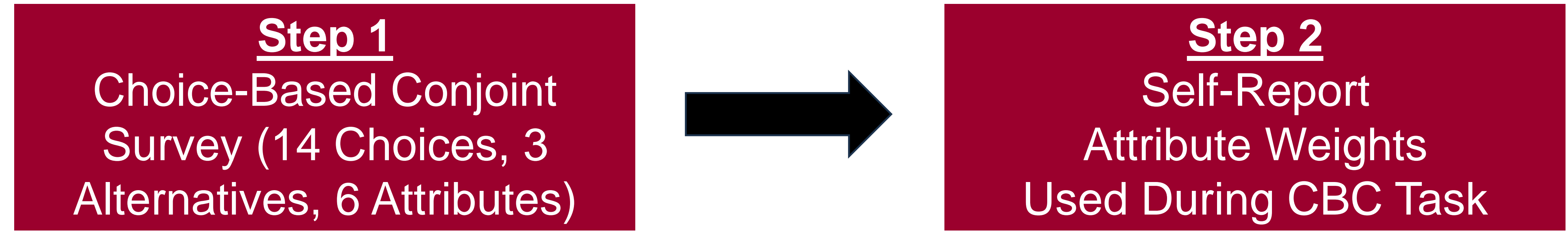
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Motivation and Abstract

- Current JDM methods allow us to assess metacognitive accuracy in objective domains (e.g., which city is largest) but not subjective domains (e.g., whom to marry, which house to buy).¹
- Subjective judgments and decisions are integral to well-being, but hard to evaluate because they lack objective standards of accuracy.²
- Across 3 studies, we introduce and validate the novel ***KnoW Me*** (*Knowledge of Weights acquired via Metacognition*) paradigm for studying metacognitive knowledge in subjective JDM domains.
- This paradigm opens the door for decision scientists to study a range of important real-world judgments that were previously inaccessible

KnoW Me Paradigm



3 Key Measures of Metacognitive Knowledge

- Average Correlation** between Revealed Weights (Hierarchical Bayes Estimation) and Stated Weights across attributes
- Average (Absolute) Difference** between Revealed Weights (RWs) and Stated Weights (SWs) across attributes
- Different Choice Predictions** when expected utilities are estimated using Revealed vs. Stated Weights (% of tasks)

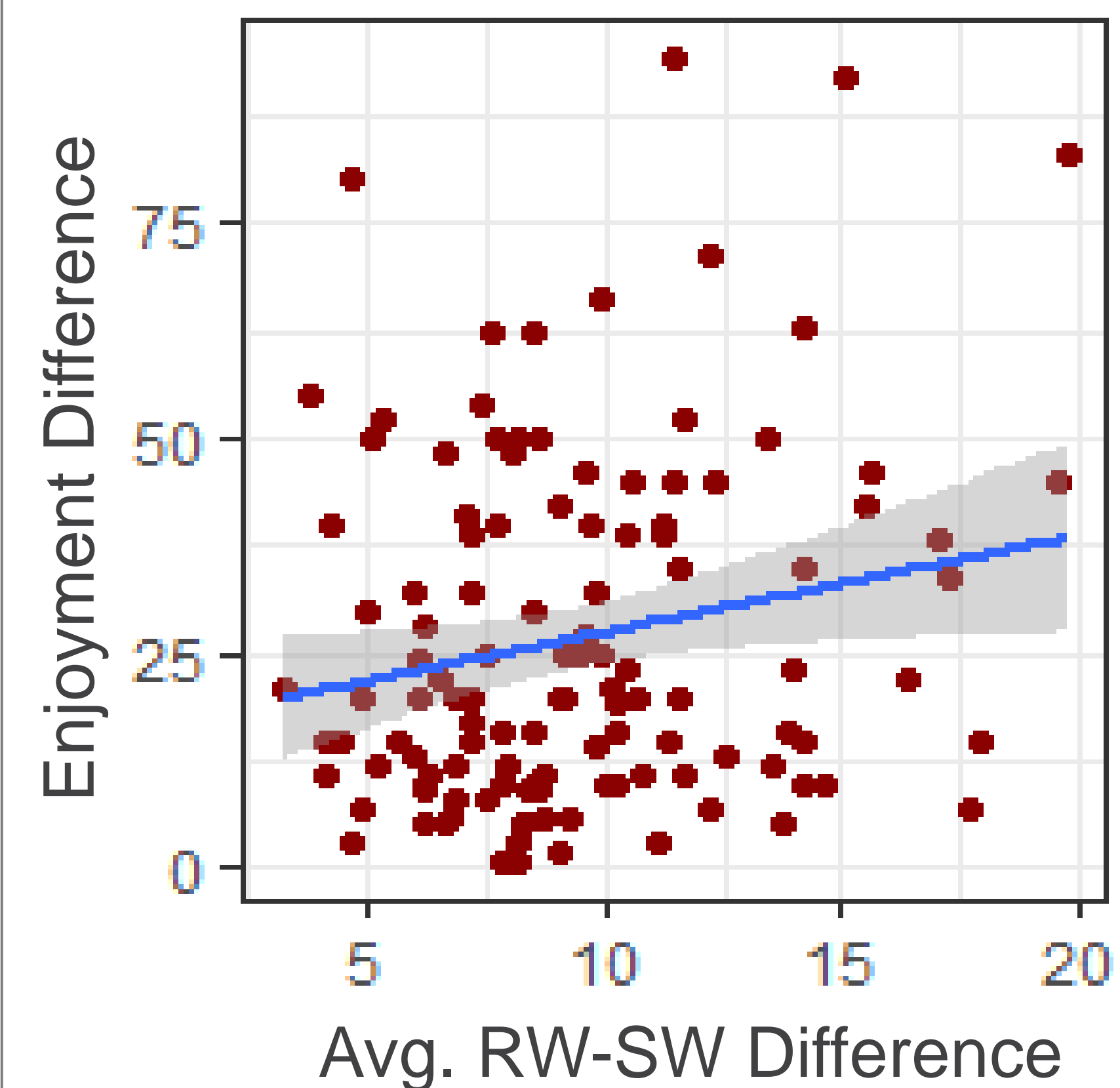
Study 1: Test-Retest Reliability

- 272 Prolific Participants completed *KnoW Me* paradigm, making choices between homes.
- 239 repeated the paradigm the next day, allowing us to assess test-retest reliability.

Sample-Level Metrics	T1	T2
Avg. RW-SW Correlation	$r = .65$	$r = .68$
Different Choice Predictions	15.33%	15.78%
Avg. RW-SW Difference	8.38	8.68
Participant-Level Metrics	r across T1/T2	
Stated Weights (SWs)	.80	
Revealed Weights (RWs)	.60	
Avg. RW-SW Difference	.51	

Study 2: Predictive Validity

- 220 Prolific Participants completed *KnoW Me* paradigm, making choices between songs.
- Afterwards, listened to the 3 songs from the final CBC task and rated enjoyment of each



- The enjoyment difference (error) between a p's most enjoyed song and the song they chose during CBC survey correlated with Average RW-SW Difference ($r = .20, p = .02$)

Hear the songs: <https://bit.ly/SJDMSongs>

Study 3: Domain Consistency

- 825 Prolific Ps completed the *KnoW Me* paradigm in 1 of 4 domains: Homes, Colleges, Jobs, Dates
- **Average RW-SW Correlations:** No differences across domains ($ps > .39$; r -to- z tests)
- **Average RW-SW Differences.** Jobs < Homes and Dates ($ps = .02, .03$). No other differences ($ps > .16$; ANOVA & pairwise t -tests)
- **Different Choice Predictions.** No significant differences ($p = .10$; 4-proportion test of equality)

Overall Discussion

- The *KnoW Me* paradigm is reliable (Study 1), valid (Study 2), and produces consistent results across domains (Study 3).
- The *KnoW Me* paradigm can be used to explore previously intractable questions about the role of metacognition in subjective JDM domains.

References

¹Ackerman, R., & Thompson, V. A. (2017). Meta-reasoning: Monitoring and control of thinking and reasoning. *Trends in Cognitive Sciences*, 21(8), 607-617.
²Slovic, P., & Lichtenstein, S. (1971). Comparison of Bayesian and regression approaches to the study of information processing in judgment. *Organizational Behavior and Human Performance*, 6(6), 649-744.