

# Psychology 237: Human Rationality

Winter 2024

Wednesdays, 9:00am – 11:50am, Crick Conference Room (3545 Mandler Hall)

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Syllabus: <https://pages.ucsd.edu/~mckenzie/Psychology%20237%20Winter%202024.pdf>

*Overview:* Rational explanations of behavior are common and useful in many areas of cognitive psychology (e.g., visual perception, category learning, memory, causal induction). However, rational explanations in the area of judgment and decision making (JDM) are few and far between. In fact, the mainstream view in JDM is that choice behavior departs systematically and routinely from rationality. Attempts to demonstrate and explain the gap between rationality and behavior describes most research in JDM *for over 50 years* (perhaps since Kahneman & Tversky claimed in 1972 that “man is apparently not a conservative Bayesian: he is not Bayesian at all”). Many of the readings in this seminar challenge the mainstream JDM view, arguing that rational analysis of JDM tasks often reveals that rationality and behavior converge rather than diverge. Rational explanation of JDM behavior that is otherwise considered irrational is not only interesting, it is also more parsimonious and connects JDM with other areas of cognitive psychology at a theoretical level.

*Requirements:*

1. Thoughtful reading *and discussion* are required. Participants must do the required reading each week and come to class prepared to discuss it.
2. Each participant must choose (at least) one required reading and lead the discussion for that reading.
3. Each week before our Wednesday meeting, each participant must post *by 6pm on Tuesday the day before* a potential question (or two) for discussion for *each* required reading. (Nothing needed for Week 1.) Here’s the link to the [Google Doc](#).

*Grades* will depend on how well the above requirements are met.

### **Week 1 (Jan 10): Rational analysis I**

Pennings, T. J. (2003). Do dogs know calculus? *College Mathematics Journal*, 34, 178-182.  
<https://pages.ucsd.edu/~mckenzie/Do Dogs Know Calculus.pdf>

Chater, N., Tenenbaum, J. T., & Yuille, A. (2006). Probabilistic models of cognition: Conceptual foundations. *Trends in Cognitive Science*, 10, 287-291.  
<https://pages.ucsd.edu/~mckenzie/Chateretal2006TiCS.pdf>

*Background reading, if needed:*

Shafir, E., & LeBoeuf, R. A. (2002). Rationality. *Annual Review of Psychology*, 53, 491-517.  
<https://pages.ucsd.edu/~mckenzie/ShafirAnnualReview.pdf>

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, 1974, 185, 1124-1131.  
<https://pages.ucsd.edu/~mckenzie/TverskyKahneman1974Science.pdf>

### **Week 2 (Jan 17): Rational analysis II**

Anderson. J. R. (1991). Is human cognition adaptive? *Behavioral and Brain Sciences*, 14, 471-514.

<https://pages.ucsd.edu/~mckenzie/AndersonBBS1991.pdf>

*You are responsible for reading only pp. 471-485. Look over the subsequent commentaries, though, to see if any seem interesting to you.*

Chater, N., & Oaksford, M. (1999). Ten years of the rational analysis of cognition. *Trends in Cognitive Sciences*, 3, 57-65.

<https://pages.ucsd.edu/~mckenzie/Chater&Oaksford1999TiCS.pdf>

### **Week 3 (Jan 24): Rational analysis of Wason's selection task**

Oaksford, M., & Chater, N. (1994). A rational analysis of the selection task as optimal data selection. *Psychological Review*, 101, 608-631.

<https://pages.ucsd.edu/~mckenzie/OaksfordChaterPsychReview1994.pdf>

Chater, N., Oaksford, M., Nakisa, R., & Redington, M. (2003). Fast, frugal, and rational: How rational norms explain behavior. *Organizational Behavior and Human Decision Processes*, 90, 63-86.

<https://pages.ucsd.edu/~mckenzie/Chateretal2003OBHDP.pdf>

*(The first 3 sections are most important; focus on pp. 63-74.)*

*Background reading, if needed:*

Wason, P. C. (1968). Reasoning about a rule. *Quarterly Journal of Experimental Psychology*, 20, 273-281.

<https://pages.ucsd.edu/~mckenzie/Wason1968QJEP.pdf>

#### **Week 4 (Jan 31): Hypothesis Testing (Confirmation Bias)**

Klayman, J., & Ha, Y.-W. (1987). Confirmation, disconfirmation, and information in hypothesis testing. *Psychological Review*, *94*, 211-228.

<https://pages.ucsd.edu/~mckenzie/KlaymanHaPsychReview1987.pdf>

#### **Week 5 (Feb 7): Covariation Assessment and Framing Effects**

McKenzie, C. R. M., & Mikkelsen, L. A. (2007). A Bayesian view of covariation assessment. *Cognitive Psychology*, *54*, 33-61.

<https://pages.ucsd.edu/~mckenzie/McKenzie&Mikkelsen2007CogPsych.pdf>

Sher, S., & McKenzie, C. R. M. (2006). Information leakage from logically equivalent frames. *Cognition*, *101*, 467-494.

<https://pages.ucsd.edu/~mckenzie/Sher&McKenzie2006Cognition.pdf>

*Background reading, if needed:*

Smedslund, J. (1963). The concept of correlation in adults. *Scandinavian Journal of Psychology*, *4*, 165-173.

<https://pages.ucsd.edu/~mckenzie/Smedslund1963.pdf>

Tversky, A., & Kahneman, D. (1986). Rational choice and the framing of decisions. *Journal of Business*, *59*, 251-278.

<https://pages.ucsd.edu/~mckenzie/TverskyKahnemanFramingDecisions1986.pdf>

#### **Week 6 (Feb 14): Joint-Separate Reversals and Violations of Dominance**

Sher, S., & McKenzie, C. R. M. (2014). Options as information: Rational reversals of evaluation and preference. *Journal of Experimental Psychology: General*, *143*, 1127-1143.

<https://pages.ucsd.edu/~mckenzie/Sher&McKenzie2014JEPGeneral.pdf>

McKenzie, C. R. M., & Sher, S. (2020). Gamble evaluation and evoked reference sets: Why adding a small loss to a gamble increases its attractiveness. *Cognition*, *194*.

<https://pages.ucsd.edu/~mckenzie/McKenzie&SherOnline2020Cognition.pdf>

*Background reading, if needed:*

Hsee, C. K. (2000). Attribute evaluability and its implications for joint-separate evaluation reversals and beyond. In D. Kahneman and A. Tversky (Eds.), *Choices, values, and frames* (pp. 543-563). Cambridge, England: Cambridge University Press.

<https://pages.ucsd.edu/~mckenzie/Hsee2000K&T.pdf>

Slovic, P., Finucane, M., Peters, E., & MacGregor, D. G. (2002). The affect heuristic. In T. Gilovich, D. Griffin, and D. Kahneman (Eds.), *Heuristics and biases: The psychology of intuitive judgment* (pp. 397-420). Cambridge: Cambridge University Press.

[https://pages.ucsd.edu/~mckenzie/GilovichGriffin\\_ch23\\_SlovicEtAl.pdf](https://pages.ucsd.edu/~mckenzie/GilovichGriffin_ch23_SlovicEtAl.pdf)

**Week 7 (Feb 21): Rational analysis of intransitive choice**

Müller-Trede, J., Sher, S., & McKenzie, C. R. M. (2015). Transitivity in context: A rational analysis of intransitive choice and context-sensitive preference. *Decision*, 2, 280-305.  
<https://pages.ucsd.edu/~mckenzie/MuellerTredeetal2015Decision.pdf>

*Background reading, if needed:*

Tversky, A. (1969). Intransitivity of preferences. *Psychological Review*, 76, 31-48.  
<https://pages.ucsd.edu/~mckenzie/Tversky1969PsychReview.pdf>

Regenwetter, M., Dana, J., & Davis-Stober, C. P. (2011). Transitivity of preferences. *Psychological Review*, 118, 42–56.

<https://pages.ucsd.edu/~mckenzie/Regenwetteretal2011PsychReview.pdf>

**Week 8 (Feb 28): Resource-rational analysis**

Lieder, F., & Griffiths, T. L. (2020). Resource-rational analysis: Understanding human cognition as the optimal use of limited computational resources. *Behavioral and Brain Sciences*, 43, 1-60.

<https://pages.ucsd.edu/~mckenzie/Lieder&Griffiths2020BBS.pdf>

*You are responsible for reading only pp. 1-16. Look over the subsequent commentaries, though, to see if any seem interesting to you.*

**Week 9 (Mar 6): Bayesian skeptics and a rational analysis of victim blaming**

Bowers, J. S., & Davis, C. J. (2012). Bayesian just-so stories in psychology and neuroscience. *Psychological Bulletin*, 138, 389-414.

<https://pages.ucsd.edu/~mckenzie/Bowers&Davis2012PsychBull.pdf>

McKenzie, C. R. M., & Erat, S. (in preparation). *A rational analysis of victim blaming*.

**Week 10 (Mar 13): Rationality with incomplete preferences**

Sher, S., Müller-Trede, J., & McKenzie, C. R. M. (2023). *Choices without preferences: Principles of rational arbitrariness*. Unpublished ms.