

Author of target article: José Luis Bermúdez

Word counts: Abstract: 60 words; Main text: 1000 words; References: 155 words; Total: 1215 words

Commentary title: Incomplete Preferences and Rational Framing Effects

Commentary authors: Shlomi Sher (Pomona College) and Craig R. M. McKenzie (UC San Diego)

Full institutional affiliations:

Shlomi Sher, Department of Psychological Science, Pomona College, Claremont, CA, 91711 USA

Craig R. M. McKenzie, Rady School of Management and Department of Psychology, UC San Diego, La Jolla, CA, 92093 USA

Email addresses and url's:

Shlomi.Sher@pomona.edu, <https://www.pomona.edu/directory/people/shlomi-sher>

cmckenzie@ucsd.edu, <https://pages.ucsd.edu/~mckenzie/>

Abstract

The normative principle of description invariance presupposes that rational preferences must be complete. The completeness axiom is normatively dubious, however, and its rejection opens the door to rational framing effects. In this commentary, we suggest that Bermúdez's insightful challenge to the standard normative view of framing can be clarified and extended by situating it within a broader critique of completeness.

Main text

Bermúdez raises an important challenge to the traditional view that rational choice must be invariant to framing. We are sympathetic to his primary conclusions – that framing effects need not be irrational, and in some cases rationality may require sensitivity to different frames. However, we believe that these conclusions can be put on a firmer foundation by deriving them from a more general critique of

completeness (defined below), a core axiom in traditional models of rational choice. This reformulation clarifies the scope of the analysis (i.e., regarding the conditions under which rational actors may exhibit framing effects) and sharpens its applications (e.g., regarding game-theoretic equilibria).

First, a terminological clarification: In relating normative principles to empirical findings, it is useful to distinguish between *descriptive frames* and *conceptual frames* (cf. Druckman, 2001). The former refers to the overt description of a choice problem that is given to an agent (e.g., beef described as “80% lean”). The latter refers to the agent’s internal representation of the problem – i.e., their conception of relevant options, values, and reasons. In framing experiments, the descriptive frame is manipulated. The conceptual frame is a theoretical construct, which is sometimes invoked by theorists in explaining the descriptive frame’s observed effects.

The normative principle of *description invariance* concerns descriptive frames. It says that equivalent descriptions should not lead to different decisions. However, the normative validity of description invariance depends on two critical implicit assumptions: (1) descriptive frames must not “leak” distinct, choice-relevant information; and (2) rational preferences must be complete (Sher & McKenzie, 2011).

In prior work (Sher & McKenzie, 2006), we have argued that some widely studied descriptive frames are not information-equivalent, violating (1). But for the purposes of this commentary, we assume that information is constant across descriptive frames, and examine the second implicit assumption.

The completeness axiom states that the normative ranking of alternatives is everywhere well-defined: For any options, a , b , either a is definitely better than b vis-à-vis the agent’s values ($a \succ b$), b is better than a ($b \succ a$), or the two options are precisely equivalent ($a \sim b$). Completeness has unreasonable

normative implications – e.g., monetary indifference points for all goods must be defined to infinite precision. Accordingly, some economists and philosophers have argued that, despite its mathematical convenience, the completeness axiom is not a plausible requirement of rationality (e.g., Aumann, 1962; Raz, 1985). In recent years, economists have developed increasingly sophisticated models of rational choice that allow for incomplete preferences (e.g., Mandler, 2005).

Rejecting the completeness requirement immediately opens the door to rationally permissible framing effects. In a finite choice menu, there may be distinct alternatives, a , b , unranked relative to one another, neither of which is outranked by any other option in the menu. If a is chosen under one descriptive frame and b under another, choices are frame-dependent but never suboptimal.

Why are rational preferences sometimes incomplete, and when may rational framing effects occur? Incomplete normative rankings may trace back to two distinct sources – value imprecision and value conflict. (Owing to space limitations, we omit Schick's (1997) value "ambiguity," which may be regarded as a third source of incompleteness.) In cases of *imprecision*, the agent's underlying values are coarse-grained (e.g., a mug worth between \$5 and \$10, with no well-defined indifference point). Framing effects in one-shot choice are then normatively neutral, neither good nor bad, provided that definitely outranked options are never chosen. (In *repeated* choice, however, subtler normative issues arise; Sher, Müller-Trede, & McKenzie, 2022.)

In cases of *conflict*, the agent accepts two "schemes of valuation," V_1 and V_2 , when all else is equal, yet is not committed to a superordinate principle that reconciles them when they come into conflict. E.g., in Sartre's (1946/2007) famous example of a young man torn between supporting his mother and taking up arms against the Nazis, V_1 may rank acts according to a son's duties, V_2 according to a citizen's.

V_1 and V_2 may be regarded as distinct *conceptual frames*, which, in isolation, generate distinct preference orders, $\succsim_1$ and $\succsim_2$. When $a \succ_1 b$ but $b \succ_2 a$, the normative ranking of alternatives may not be well-defined. As Bermúdez suggests, rationality then requires a kind of *joint frame-sensitivity*: To understand what is at stake in the problem, and what is required to solve it, the agent must be able to enter into both evaluative frames, identifying points of both contact and divergence (“perspectival flexibility”). Insofar as different descriptive frames make different conceptual frames salient, some behavioral framing effects may perhaps be regarded as manifestations of the requisite joint sensitivity.

Recast in these terms, some of Bermúdez’s applications come into clearer focus. For example, in game theory, the payoff matrix represents the agents’ subjective utilities, not objective material outcomes. When preferences are incomplete, a given objective outcome need not have a uniquely defined utility; hence a game need not have a unique payoff matrix. Different schemes of valuation (e.g., Bermúdez’s “I-frame” vs. “we-frame”) will be represented by different matrices; some may have pathological properties (e.g., an undesirable equilibrium), others not. In some cases, agents may then resolve their internal value conflict (that is, complete their incomplete preferences) in a way that makes the resulting game non-pathological.

Of course, a rational analysis of value conflict – and of the framing effects it may generate – must ultimately go further, and formulate normative principles of value integration. For Sartre’s pupil, which methods of reconciling conflicting values are rational, which are not, and why? Leading formal models in the decision sciences are silent on this question, because they assume that preferences are complete, and hence that choice-relevant values have already, *somehow*, been integrated. The problem of value integration thus remains in the misty pre-theoretical realm of “decision structuring,” where our

understanding of rationality is more art than science (von Winterfeldt, 1980). In accord with the target article, we suspect that the most complex and important framing effects reside in this normatively uncharted territory – where incomplete preferences, arising from value conflict, must be completed in the act of choice.

Funding statement

S.S. is supported by a Scholar Award from the James S. McDonnell Foundation. C.R.M.M. is supported by a National Science Foundation grant (SES-2049935).

Conflicts of interest

The authors have no conflicts to declare.

References

- Aumann, R. (1962). Utility theory without the completeness axiom. *Econometrica*, 30, 445-462.
- Druckman, J. N. (2001). The implications of framing effects for citizen competence. *Political Behavior*, 23, 225-256.
- Mandler, M. (2005). Incomplete preferences and rational intransitivity of choice. *Games and Economic Behavior*, 50, 255-277.
- Raz, J. (1985). Value incommensurability: Some preliminaries. *Proceedings of the Aristotelian Society*, 86, 117-134.
- Sartre, J.-P. (1946/2007). *Existentialism is a humanism*. New Haven: Yale University Press.
- Schick, F. (1997). *Making choices*. Cambridge: Cambridge University Press.
- Sher, S., & McKenzie, C. R. M. (2006). Information leakage from logically equivalent frames. *Cognition*, 101, 467-494.

Sher, S., & McKenzie, C. R. M. (2011). Levels of information: A framing hierarchy. In G. Keren (Ed.), *Perspectives on Framing* (pp. 35-63). New York: Psychology Press.

Sher, S., Müller-Trede, J., & McKenzie, C. R. M. (2022). *Choices without preferences: Principles of rational arbitrariness*. Manuscript in preparation.

von Winterfeldt, D. (1980). Structuring decision problems for decision analysis. *Acta Psychologica*, 45, 71-93.