Department of Philosophy

University of Reading

Philosophical Perspectives on Framing: Investigating Inequivalence

South, West & Wales Doctoral Training Partnership

Sarah Fisher

Introduction

Framing effects have been the subject of sustained psychological research. Here I examine one attempt to explain them, positing inequivalence at the level of sentence meaning.

Framing Effects

Framing effects occur when people respond differently to the same information, just because it is presented in different terms. The paradigm example is the **Asian disease problem (ADP)**[1]:

Imagine the U.S. is preparing for the outbreak of an unusual Asian disease, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume the exact scientific estimates of the consequences are as follows:

Gain

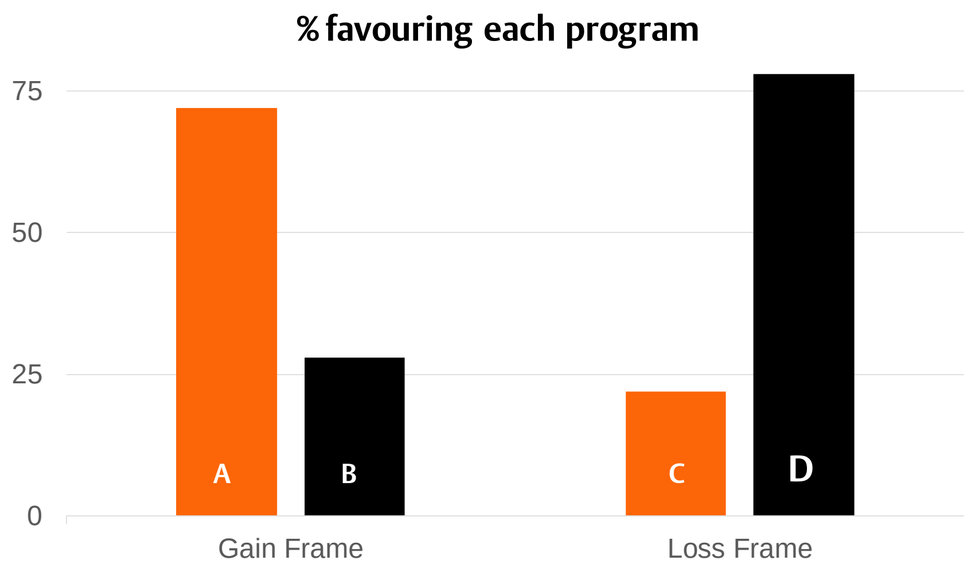
If Program A is adopted, 200 people will be saved.

If Program B is adopted, there is a one-third probability that 600 people will be saved and a two-thirds probability that no people will be saved.

Loss

If Program C is adopted, 400 people will die.

If Program D is adopted, there is a one-third probability that nobody will die and a two-thirds probability that 600 people will die.



One way to explain how frames affect the perception of outcomes is that sentences used in framing conditions may be **inequivalent** at some semantic or pragmatic level of meaning.

The hypothesis considered here is that the propositions encoded by the **sentences themselves** are inequivalent. This assumes that sentences are capable of encoding truth-evaluable 'minimal propositions'.[2]

Logical (In)equivalence

For the sentences in the framing conditions of the ADP to be **logically equivalent**, the expressions 'be saved' and 'die' would need to be **mutually exclusive and jointly exhaustive**. But they are **not jointly exhaustive**: someone can survive without being saved.

- Sentences are **logically equivalent** when they are true in the same conditions.
- Expressions are **mutually exclusive** when they map non-overlapping sets of objects to the value 'true'.
- Expressions are **jointly exhaustive** when together they map all objects in the domain to the value 'true'.

In the context of the ADP, this possibility is only eliminated if the following **optional assumptions** are made:

- other things equal, 600 people **will** die from the disease.
- there is **no other way** to be saved except via the programs.

For participants who don't make these assumptions, program A is **better** than program C because more than 200 people could still survive.

Surprisingly, this has received little attention in the framing literature, and the ADP has been used repeatedly in subsequent experiments.

Counterexamples

But framing effects are also observed with jointly exhaustive expressions:

- equivalent chances of **surviving**/ **dying** during an operation.[3]
- equivalent chances to **keep**/ **lose** amounts of money.[4]
- equivalent fractions of a cup being **full**/ **empty**.[5]

The sentences used in these studies seem to be logically equivalent.

Fine-Grained (In)equivalence

Even so, perhaps the sentences have different 'senses' – could 'Frege puzzles' be turning up in the lab?

Frege distinguished between an expression's reference (extension) and its 'sense'.[6] E.g. 'Clark Kent' and 'Superman' refer to the same individual, so share an extension. But they have different senses because someone could still believe they refer to different individuals.

Frege puzzles don't quite read across to framing studies: participants know the sentences are different ways of saying the same thing, so framing effects are not driven by **epistemological** obstacles to equivalence.

But they could be driven by **pragmatic** obstacles: extra information might implicitly be communicated by the choice of different expressions.

Conclusion

Looking for inequivalence at the level of sentence meaning proves surprisingly fruitful but can't be the whole story. Investigating pragmatic factors could help explain framing effects – and provide a fresh perspective on the nature of the semantics-pragmatics divide.

References

1. Tversky, A., & Kahneman, D. (1981). The Framing of Decisions and the Psychology of Choice. *Science, 211*(4481), 453-458.
2. Borg, E. (2012) *Pursuing Meaning*. Oxford: Oxford University Press.
3. Wilson, D. K., Kaplan, R. M., & Schneiderman, L. J. (1987). Framing of Decisions and Selections of Alternatives in Health Care. *Social Behaviour, 2*(1), 51-59.
4. De Martino, B., Kumaran, D., Seymour, B., & Dolan, R. J. (2006). Frames, Biases, and Rational Decision-Making in the Human Brain. *Science, 313*(5787), 684-687.
5. Sher, S., & McKenzie, C. R. M. (2006). Information leakage from logically equivalent frames. *Cognition, 101*(3), 467-494.
6. Frege, G. (1948). Sense and Reference. *The Philosophical Review, 57*(3), 209-230.

Acknowledgements

- This work was supported by the Arts and Humanities Research Council funded South West and Wales Doctoral Training Partnership [grant number AH\L503939\1]

Contact information

- Department of Philosophy, University of Reading, Whiteknights, Reading, Berkshire RG6 6AH
- Email: s.fisher@pgr.reading.ac.uk