

Multialternative Decision by Sampling

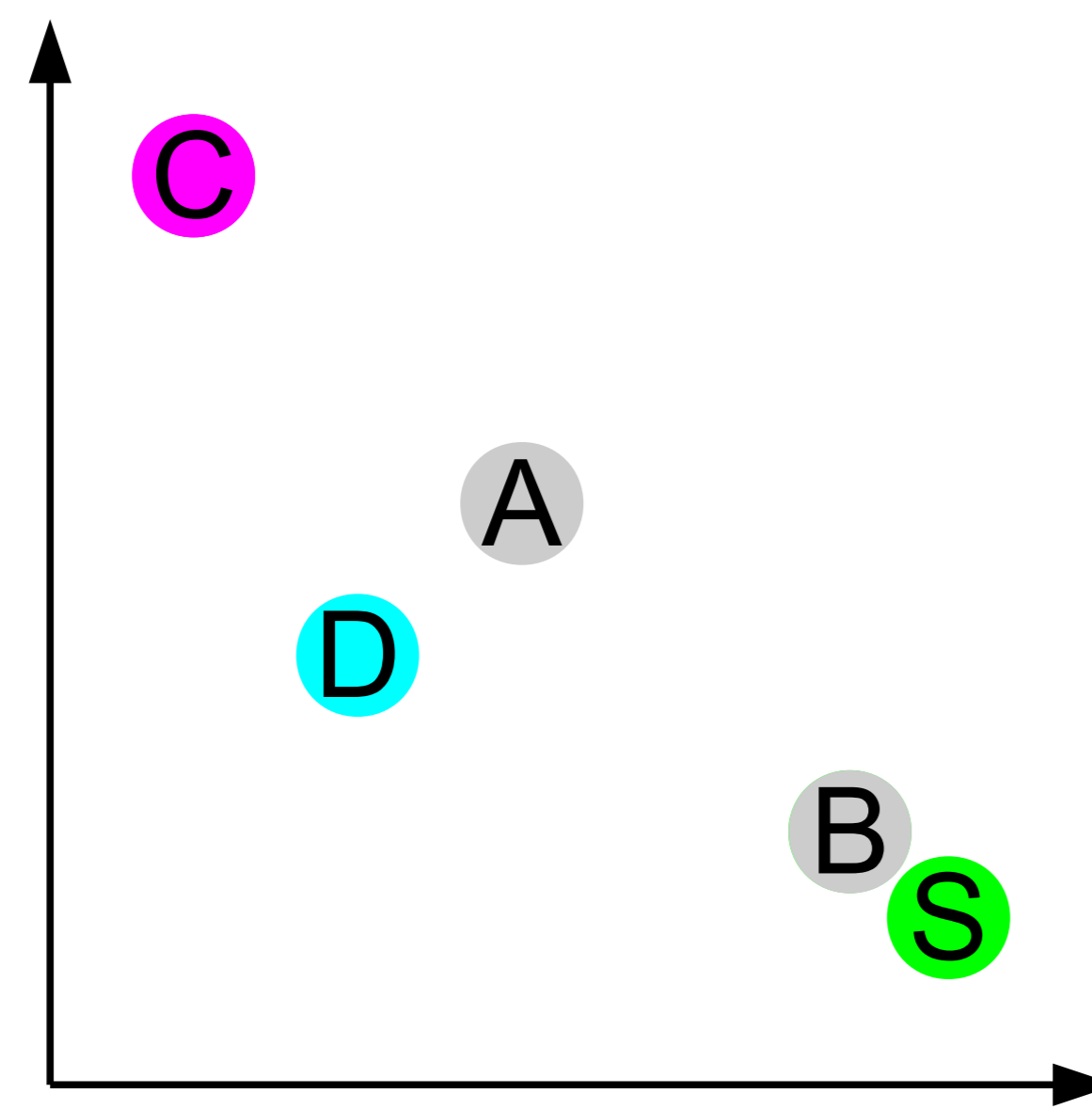


Full references,
e poster, and
working paper

www.stewart.warwick.ac.uk/MDbS

Explaining the Big Three Context Effects

In the **compromise**, **similarity**, and **attraction** effects, adding options **C**, **D**, or **S** to the choice set {A, B} favors A



This matters, because adding options should not change the preference ordering (independence from irrelevant alternatives) or increase an option's choice share (regularity)

MDbS, with Cake



In MDbS, alternatives are compared on single dimensions in a series of binary comparisons. Accumulators count wins



First the strawberry cupcake beats the blueberry muffin on icing, resulting in one point for the strawberry cupcake



Then, the chocolate brownie beats the blueberry muffin on flavor, resulting in one point for for the chocolate brownie

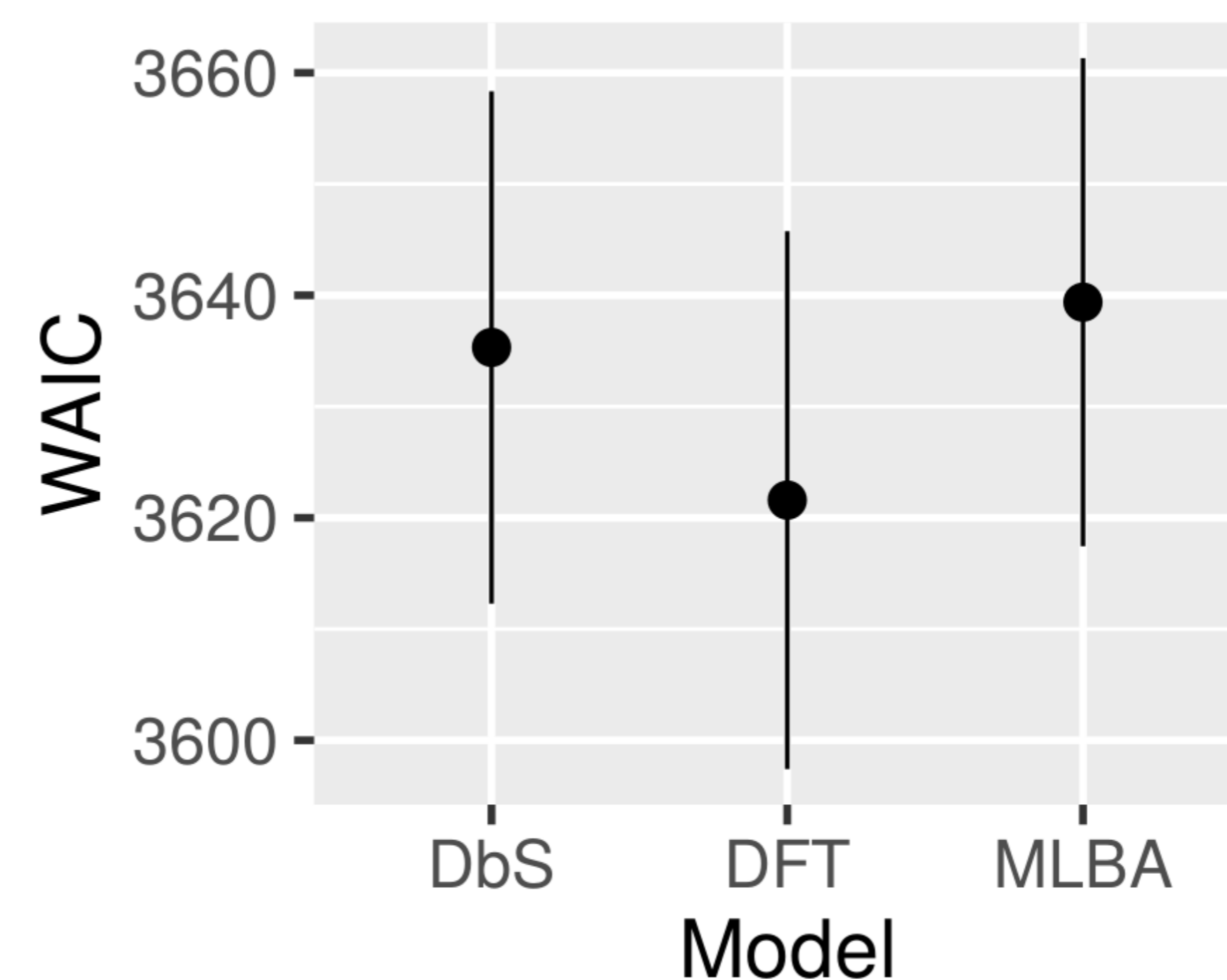
And so on...

MDbS Assumptions Constrained by Process Data

Mullett and Stewart (2016) show that only models with a relative stopping rule produce both positively skewed distributions of RTs and the gaze cascade effect

Noguchi and Stewart (2014) used eye tracking to show that alternatives are repeatedly compared in pairs on single dimensions, with more similar pairs viewed more often

MDbS Matches on Fit



503 participants made 8 decisions, each with a different scenario, including attraction, similarity, and compromise questions

Closed form solution allows Bayesian comparison

Comparison with decision field theory (Roe, Busemeyer & Townsend, 2001) and multialternative linear ballistic accumulators (Trueblood, Brown, & Heathcote, 2014)

MDbS Captures Many Phenomena

All phenomena across all papers mentioning two or more of the big three:

Phenomena	CCM	MDFT	MLBA	MDbS
Incidental value	—	—	—	✓
Attribute distribution	—	—	—	✓
Loss aversion	—	—	—	✓
Attraction	✓	✓	✓	✓
...Location of decoy	✓	✓	✓	✓
...Distance to decoy	✓	✓	✓	✓
...Time pressure	—	✓	✓	✓
...Familiarity	—	—	—	✓
Compromise	✓	✓	✓	✓
...Time pressure	—	✓	✓	✓
...Familiarity	—	—	—	✓
Similarity	—	✓	✓	✓
...Time pressure	—	—	✓	✓
Alignability	—	—	—	✓
Attribute balance	—	—	—	✓
Attribute range	—	—	—	✓
Attribute spacing	—	—	—	✓
Background contrast	✓	—	—	✓
Centrality	—	2	—	✓
Endowment	—	—	—	—
Less is more	—	2	—	✓
Perceptual focus	—	✓	✓	✓
Phantom decoy	—	2	3	3
Polarization	1	—	—	—

Conclusion

The big three context effects in multialternative choice arise because people make a series of ordinal comparisons between pairs of alternatives on single attribute values