Discussion and Opposition: Subjective Value and Preference by Mattias Forsgren

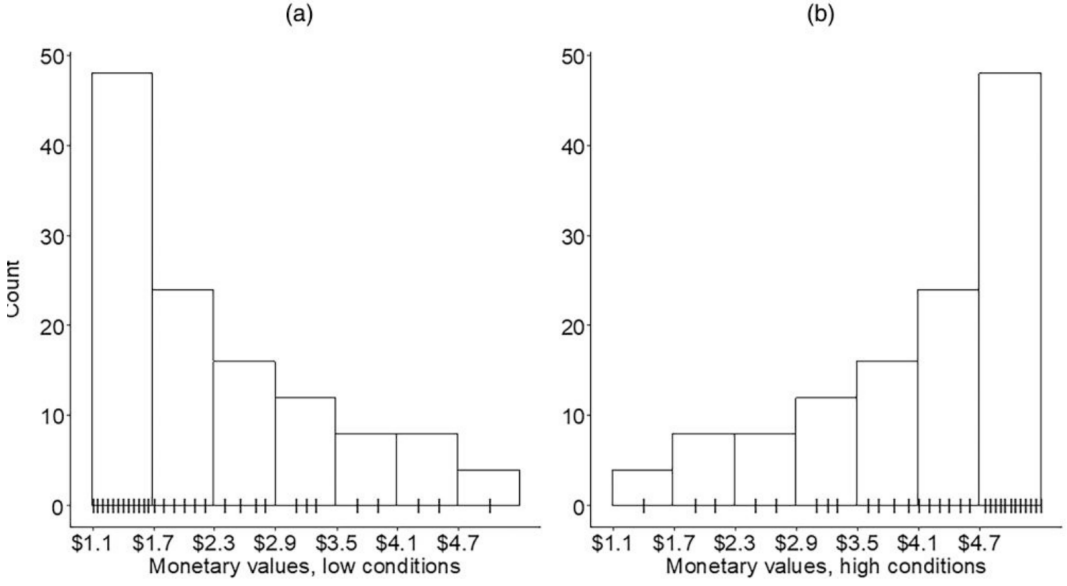
Neil Stewart

June 9, 2026

Study 1: Falsification test of the decision by sampling model


28k 33k 37k **42k** 61k


28k **42k** 53k 57k 61k


(a)
(b)
Count
50
40
30
20
10
0
$1.1
$1.7
$2.3
$2.9
$3.5
$4.1
$4.7
Monetary values, low conditions
Monetary values, high conditions

	Safe option	Risky option
Test trial 1	$1.1 × 100%	$1.7 × 90%
Test trial 2	$1.7 × 100%	$2.3 × 90%
Test trial 3	$2.3 × 100%	$2.9 × 90%
Test trial 4	$2.9 × 100%	$3.5 × 90%
Test trial 5	$3.5 × 100%	$4.1 × 90%
Test trial 6	$4.1 × 100%	$4.7 × 90%

(a)

Which HIT would you prefer to perform?

Option 1	**Option 2**
Reward: $2.90	Reward: $3.50
Approval rate: 100%	Approval rate: 90%

(b)

In the previous question, you selected **Option 1.**

Option 1	**Option 2**
Reward: $2.90	Reward: $3.50
Approval rate: 100%	Approval rate: 90%

How much do you prefer this option over the alternative you did not select?

50% (Completely indifferent)	60%	70%	80%	90%	100% (Perfectly clear preference)

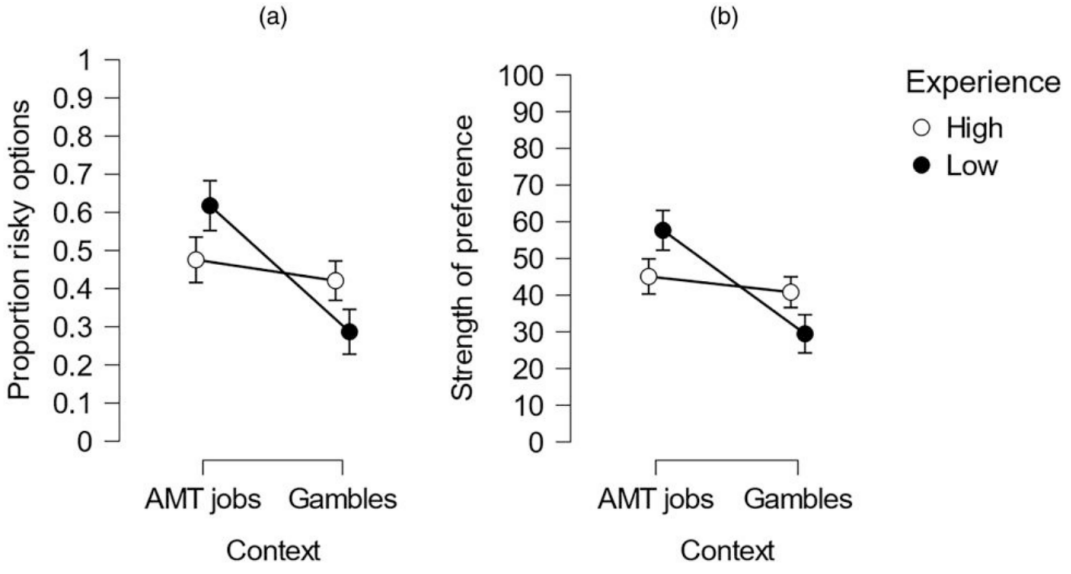
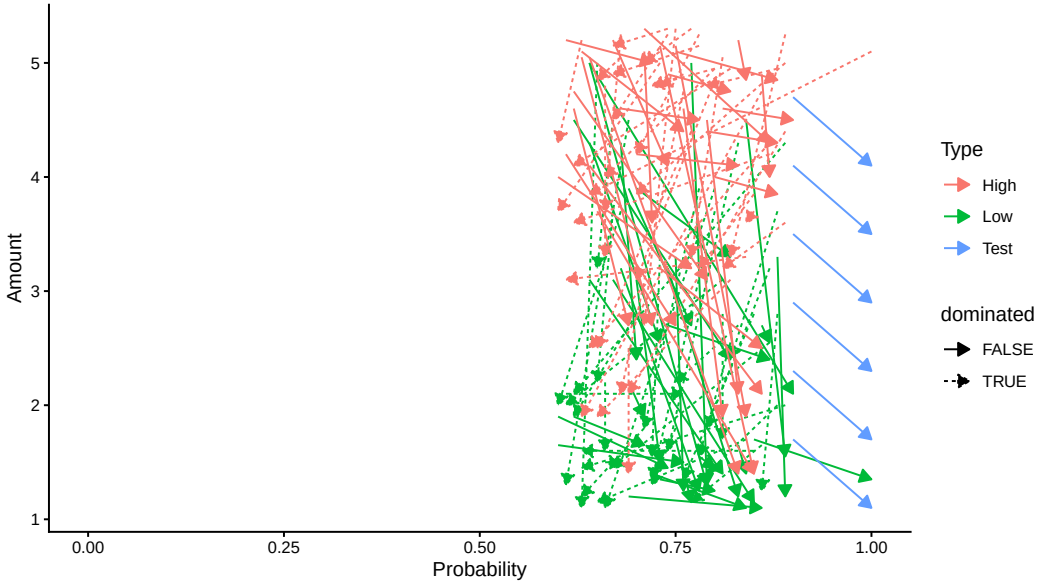

(a)
(b)
Proportion risky options
Strength of preference
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
100
90
80
70
60
50
40
30
20
10
0
AMT jobs
Gambles
Context
Experience
High
Low

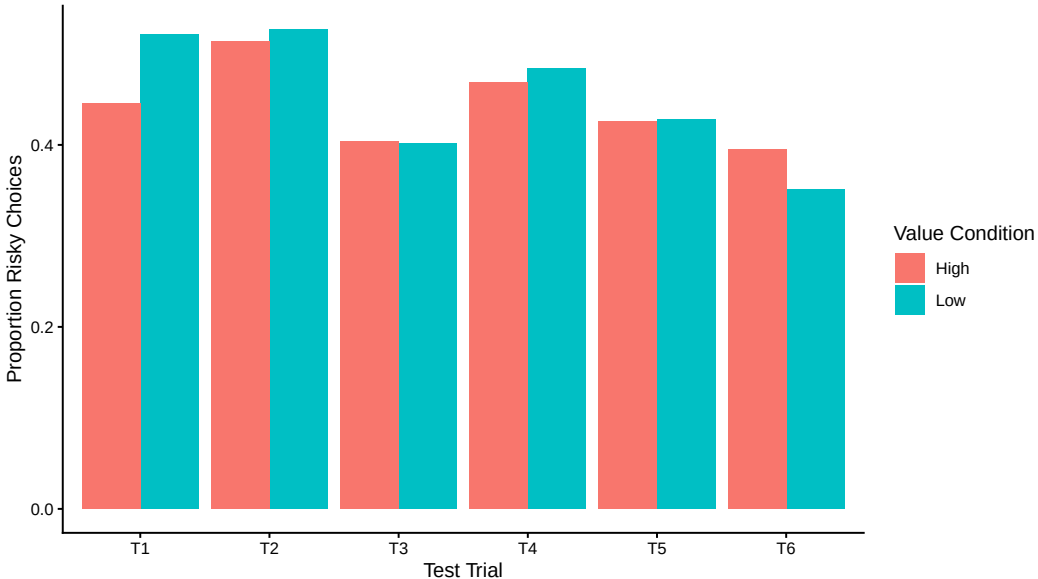
Table 2. Bayesian Three-Way ANOVAs on the Two Dependent Measures

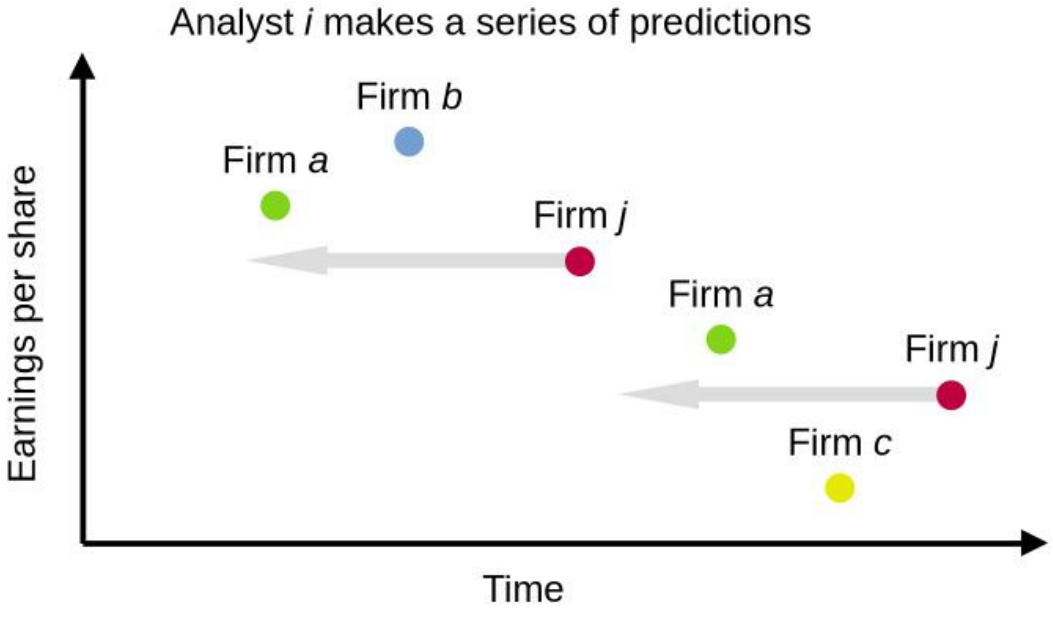
Independent variable	P(incl)	P(excl)	P(incl | data)	P(excl | data)	Incl. BF	Partial η^2
Proportion of risky options selected						
Training	0.263	0.263	0.073	0.892	0.082	<0.001
Context	0.263	0.263	0.005	1.832 e-8	287,899.499	0.052
Training × *Context*	0.263	0.263	0.023	0.084	0.270	0.002
Experience	0.263	0.263	3.923 e-4	0.005	0.079	<0.001
Training × *Experience*	0.263	0.263	0.014	0.092	0.156	<0.001
Context × *Experience*	0.263	0.263	0.994	3.981 e-4	2,497.010	0.028
Training × *Context* × *Experience*	0.053	0.053	5.221 e-4	0.003	0.177	<0.001
Strength of preference for risky options						
Training	0.263	0.263	0.067	0.845	0.079	<0.001
Context	0.263	0.263	0.002	4.201 e-9	448,009.512	0.054
Training × *Context*	0.263	0.263	0.074	0.077	0.956	0.005
Experience	0.263	0.263	1.796 e-4	0.002	0.099	<0.001
Training × *Experience*	0.263	0.263	0.020	0.131	0.152	<0.001
Context × *Experience*	0.263	0.263	0.995	1.828 e-4	5,441.252	0.032
Training × *Context* × *Experience*	0.053	0.053	0.003	0.009	0.363	0.001

Results and Conclusion

- **Methodological Realignment:** Addressed flaws in previous work by isolating the rank-order effect from range, enforcing strict measurement invariance, and separating training from tests
- **Falsification of DbS Prediction:** Found strong evidence against Decision by Sampling; manipulating recent attribute distributions did not alter subsequent binary choices or stated preference strengths
- **Contextualization Effect:** Revealed extreme evidence that participants value formally identical choices differently depending on whether they cue a real-world setting or an abstract lottery
- **Experience Interaction:** Real-world framing (e.g., cued as prospective online platform tasks) significantly altered choice distributions for novices, whereas experts remained highly stable across domains


Amount
5
4
3
2
1
0.00
0.25
0.50
0.75
1.00
Probability
Type
High
Low
Test
dominated
FALSE
TRUE


Proportion Risky Choices
0.0
0.2
0.4
T1
T2
T3
T4
T5
T6
Test Trial
Value Condition
High
Low


Analyst *i* makes a series of predictions
Firm *b*
Firm *a*
Firm *j*
Firm *a*
Firm *j*
Firm *c*
Earnings per share
Time

Dependent Variable:	Forecast Error		
Model:	(1)	(2)	(3)
Variables			
Relative Rank Forecast EPS	0.7080***	0.6205***	0.7395***
	(0.0063)	(0.0035)	(0.0085)
Days Elapsed	0.0002***	0.0003***	0.0002***
	(2.34×10^{-5})	(1.29×10^{-5})	(3.31×10^{-5})
Forecast Horizon	0.0187***	0.0135***	0.0192***
	(0.0006)	(0.0004)	(0.0009)
Forecast Revision	-0.0059***		-0.0054***
	(0.0007)		(0.0009)
LAFE		-0.0192***	-0.0304***
		(0.0036)	(0.0077)
Fixed-effects			
ANALYS-FPEDATS	Yes	Yes	Yes
TICKER-FPEDATS	Yes	Yes	Yes
ANALYS-TICKER	Yes	Yes	Yes
Fit statistics			
Observations	866,237	1,591,548	544,925
R^2	0.88726	0.86070	0.89123
Within R^2	0.23231	0.21718	0.23454

Clustered (ANALYS-FPEDATS) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Study 2: Preceding options affect subsequent listwise but not pairwise choice, even for experts

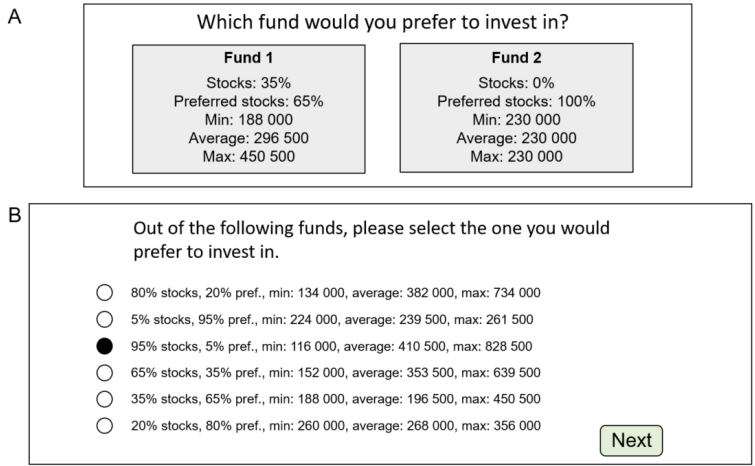
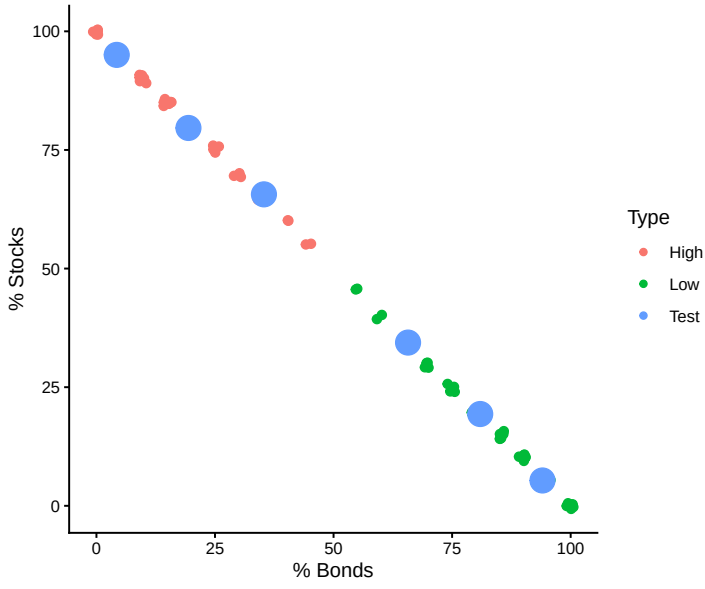
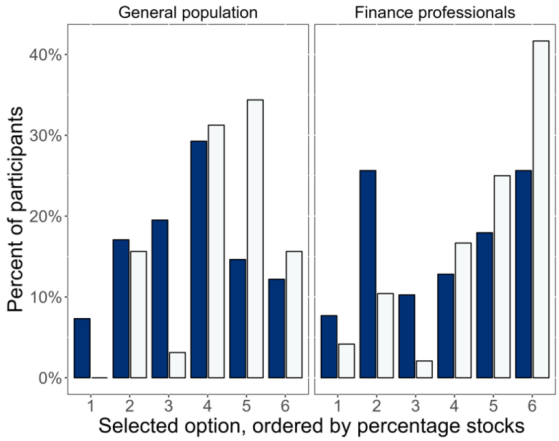


FIGURE 1 | Cartoons of task as it appeared to participants in Experiment 1. Other experiments had the same task with slight differences in graphical design. (A) A training phase trial. The participant makes repeated 2AFCs of which option they would prefer. Values of training option attributes are manipulated between conditions. For this participant, the attribute "stocks" takes low values. (Consequently, "preferred stocks" takes high values.) (B) The listwise test phase. The participant chooses the single option they would prefer out of all of the options in a list. This participant has chosen the third alternative, counting from above. The order the options are listed in is randomized for each participant individually.


100
75
50
25
0
% Stocks
0
25
50
75
100
% Bonds
Type
High
Low
Test



		Training		
		Low	High	Main effect
Demographic	General	4 (2)	4.5 (1)	4 (2)
	Finance	4 (3.5)	5 (2)	5 (3)
	Main effect	4 (3)	5 (2)	

FIGURE 2 | Distribution of selected option in listwise test phase of Experiment 1 by condition. Figure displays distribution of listwise choices by condition. 1 is the fund option with the lowest percentage stocks (and thus highest percentage preferred stocks), and 6 is the fund option with the highest percentage stocks (and thus lowest percentage preferred stocks). Table displays median (IQR) choice by condition. Main effects are marginal medians (IQRs).

Results and Conclusion

- **Format Dependence Found:** Prior exposure shifted subsequent **listwise** choices, but had **no effect on pairwise (2AFC)** choices
- **Direction of Effect:** Training on higher attribute values significantly increased the odds of choosing larger attribute options from a vertical list
- **Impact of Expertise:** Substantial domain expertise (e.g., municipality accountants) **reduced but did not eliminate** this listwise context effect
- **Theoretical Challenge:** Format dependence directly challenges DbS, suggesting context alters numerical interpretation rather than core subjective values

Journal of Experimental Psychology: General
2003, Vol. 132, No. 1, 23–46

0096-3445/03/$12.00 DOI: 10.1037/0096-3445.132.1.23

Prospect Relativity: How Choice Options Influence Decision Under Risk

Neil Stewart, Nick Chater, Henry P. Stott, and Stian Reimers
University of Warwick

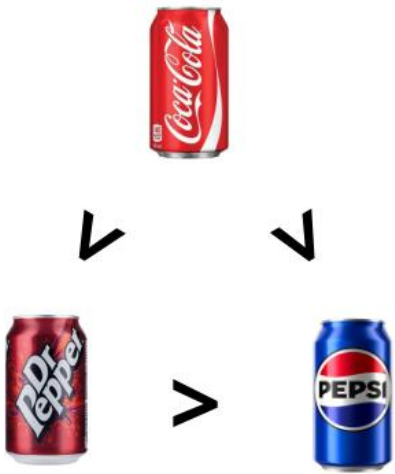
In many theories of decision under risk (e.g., expected utility theory, rank-dependent utility theory, and prospect theory), the utility of a prospect is independent of other options in the choice set. The experiments presented here show a large effect of the available options, suggesting instead that prospects are valued relative to one another. The judged certainty equivalent for a prospect is strongly influenced by the options available. Similarly, the selection of a preferred prospect is strongly influenced by the prospects available. Alternative theories of decision under risk (e.g., the stochastic difference model, multialternative decision field theory, and range frequency theory), where prospects are valued relative to one another, can provide an account of these context effects.

Table 1
Number of Participants Who Selected Each Prospect in Experiment 4

		Condition		
p	*x*	Free choice	More risky	Less risky
.50	50	8	10	
.55	45	0	3	
.60	40	0	9	
.65	35	3	4	
.70	30	3	5	
.75	25	6		8
.80	20	3		2
.85	15	1		8
.90	10	5		9
.95	5	1		3
Total		30	31	30

Note. Blank cells indicate that the prospect was not available for selection in that condition.

Study 3: Preferences for everyday objects are strongly stochastically transitive


Coca-Cola
Dr Pepper
PEPSI

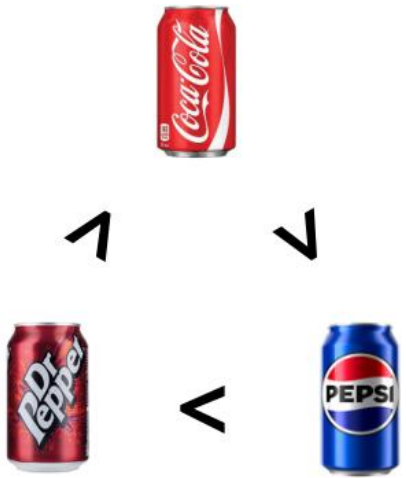

Coca-Cola
Dr Pepper
PEPSI

Figure 1. Print screen of the experiment task

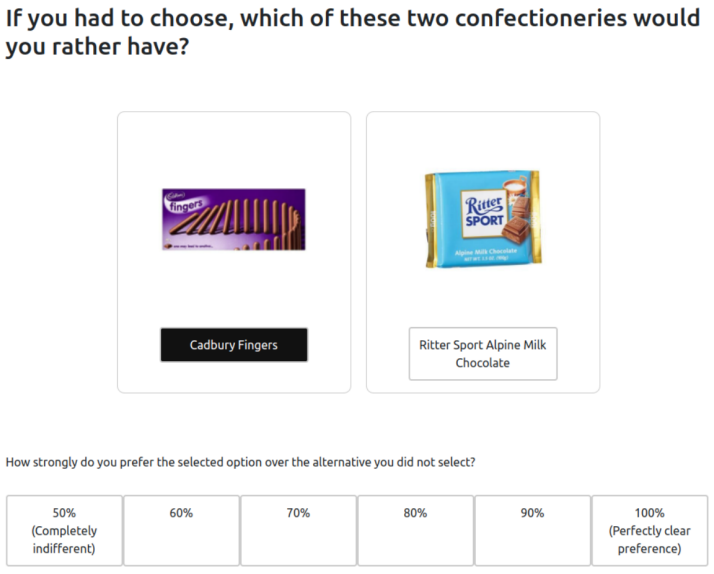
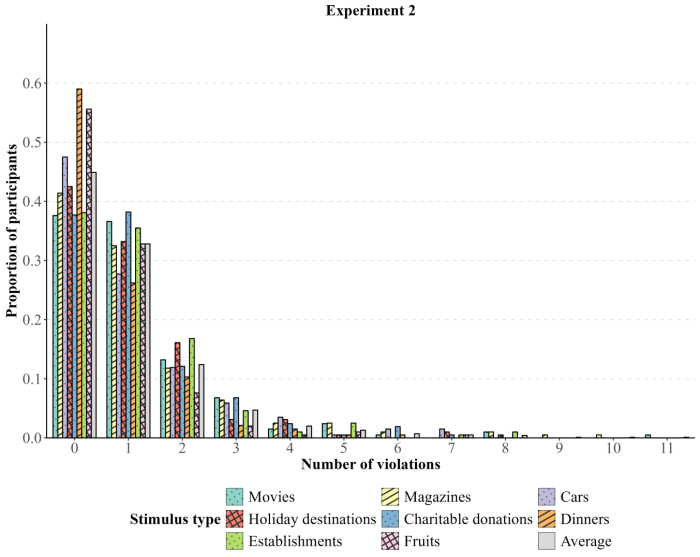


Table 5. *Results of finite mixture model for Experiment 2*

	Transitive models				Intransitive model
Stimulus type	SST	MST	WST	MMTP	Encompassing
Movies	0.994	0.002	0.001	0.001	0.002
	(0.977, 0.999)	(0, 0.013)	(0, 0.006)	(0, 0.004)	(0, 0.007)
Magazines	0.994	0.002	0.001	0.001	0.002
	(0.977, 0.999)	(0, 0.014)	(0, 0.006)	(0, 0.004)	(0, 0.007)
Cars	0.992	0.003	0.001	0.001	0.003
	(0.979, 0.998)	(0, 0.010)	(0, 0.005)	(0, 0.004)	(0.001, 0.008)
Holiday	0.994	0.002	0.001	0.001	0.002
destinations	(0.977, 0.999)	(0, 0.014)	(0, 0.006)	(0, 0.004)	(0, 0.007)
Charitable	0.994	0.002	0.001	0.001	0.002
donations	(0.977, 0.999)	(0, 0.013)	(0, 0.006)	(0, 0.004)	(0, 0.007)
Dinners	0.994	0.002	0.001	0.001	0.002
	(0.976, 0.999)	(0, 0.014)	(0, 0.007)	(0, 0.004)	(0, 0.007)
Establishments	0.994	0.002	0.001	0.001	0.002
	(0.977, 0.999)	(0, 0.013)	(0, 0.006)	(0, 0.004)	(0, 0.007)
Fruits	0.994	0.002	0.001	0.001	0.002
	(0.977, 0.999)	(0, 0.013)	(0, 0.006)	(0, 0.004)	(0, 0.007)

Note. Mean (95% credible interval) proportion of population estimated to be associated with each model. Strong stochastic transitivity has the highest prevalence. Intransitive preferences appear to be rare. All figures rounded to three decimal places.

Figure 3. Proportion of participants who made a given number of violations of the closest transitive preference ordering, by condition and averaged across conditions



Results and Conclusion

- **Methodological Realignment:** Applied **representative design** for the first time to transitivity research, replacing artificial lotteries with real-world, everyday consumer objects and categories
- **Falsification of the Received View:** Overturned the APA definition that preferences are "often" intransitive; found that intransitivity is virtually non-existent for everyday options
- **Prevalence of Strong Transitivity:** Estimated that the population prevalence of **Strong Stochastic Transitivity (SST)** is close to 100% across ten distinct everyday categories
- **Theoretical Implication:** Validates a theory of **conceptual preferences**; subjective values are stored as structured conceptual knowledge in long-term memory rather than constructed ad hoc on the spot

aps
ASSOCIATION FOR PSYCHOLOGICAL SCIENCE

Incomparability and Incommensurability in Choice: No Common Currency of Value?

Perspectives on Psychological Science
1–20


Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/17456916231192828
www.psychologicalscience.org/PPS
Sage

Lukasz Walasek and Gordon D. A. Brown
Department of Psychology, University of Warwick

Abstract

Models of decision-making typically assume the existence of some common currency of value, such as utility, happiness, or inclusive fitness. This common currency is taken to allow comparison of options and to underpin everyday choice. Here we suggest instead that there is no universal value scale, that incommensurable values pervade everyday choice, and hence that most existing models of decision-making in both economics and psychology are fundamentally limited. We propose that choice objects can be compared only with reference to specific but nonuniversal "covering values." These covering values may reflect decision-makers' goals, motivations, or current states. A complete model of choice must accommodate the range of possible covering values. We show that abandoning the common-currency assumption in models of judgment and decision-making necessitates rank-based and "simple heuristics" models that contrast radically with conventional utility-based approaches. We note that if there is no universal value scale, then Arrow's impossibility theorem places severe bounds on the rationality of individual decision-making and hence that there is a deep link between the incommensurability of value, inconsistencies in human decision-making, and rank-based coding of value. More generally, incommensurability raises the question of whether it will ever be possible to develop single-quantity-maximizing models of decision-making.

References

Forsgren, M., Frimanson, L., & Juslin, P. (2025a). Preceding options affect subsequent listwise but not pairwise choice, even for experts. *Journal of Behavioral Decision Making*, *38*, e70019. doi: 10.1002/bdm.70019

Forsgren, M., Frimanson, L., & Juslin, P. (2025b). A preregistered falsification test of the decision by sampling model and rank-order effect. *Management Science*. doi: 10.1287/mnsc.2022.03611

Forsgren, M., Rehbinder, G. K., & Juslin, P. (2026). *Preferences for everyday objects are strongly transitive.* Unpublished manuscript.

Stewart, N., Chater, N., Stott, H. P., & Reimers, S. (2003). Prospect relativity: How choice options influence decision under risk. *Journal of Experimental Psychology: General*, *132*, 23–46. doi: 10.1037/0096-3445.132.1.23