



Preference construction, loss aversion, and risk taking in aging

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Preferences as Memory Program

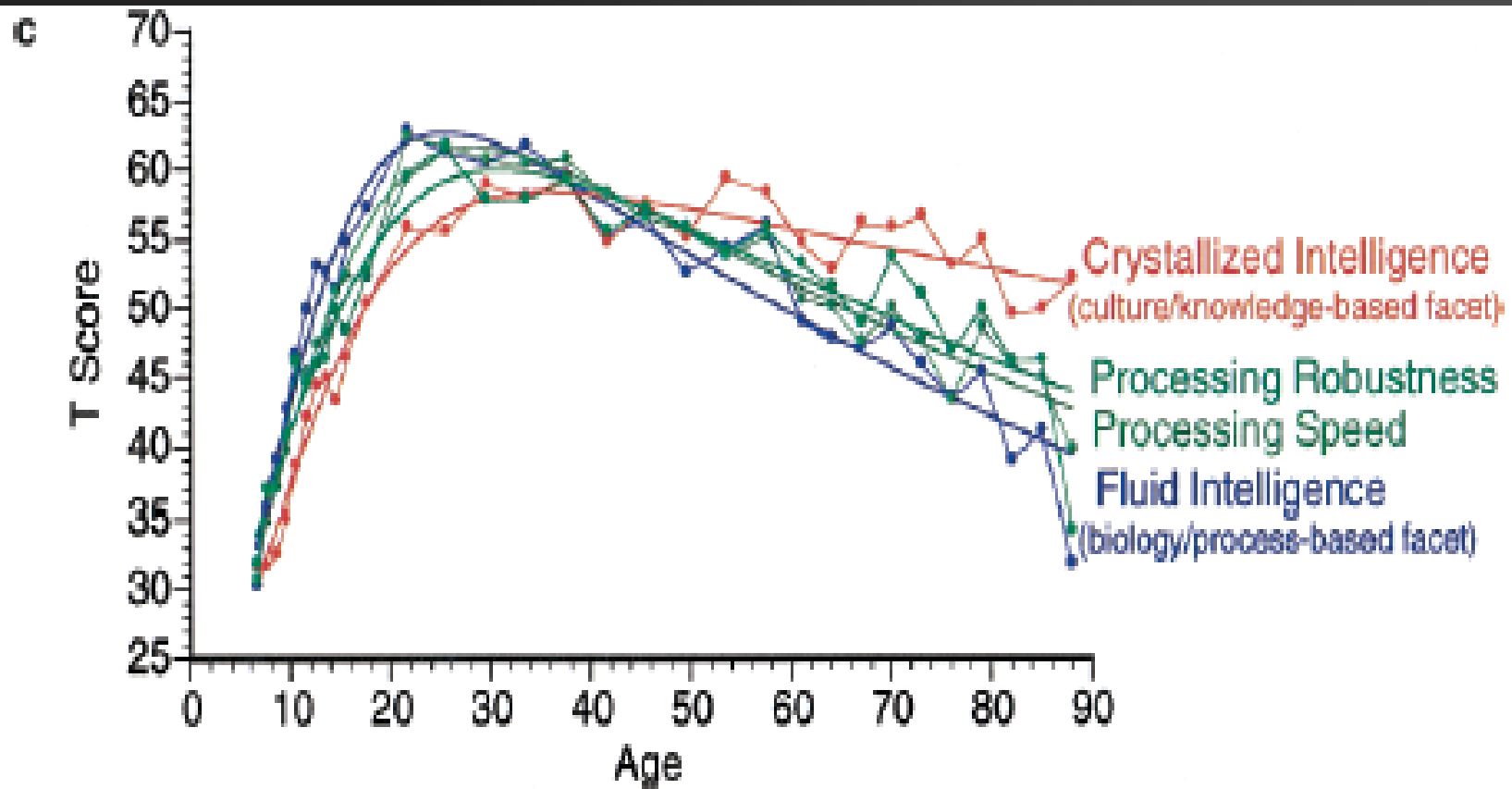
(Weber and Johnson, 2006)

- Preferences often constructed
 - Multiple, often conflicting goals
 - Internal and external information that can be recruited/retrieved
- Leverage what we know about memory processes
 - Priming, Memory Reactivity, Retrieval Output Interference
- Unify account of seemingly disparate phenomena
 - E.g., memory retrieval interference to explain loss aversion, temporal discounting, default effects
 - Common mechanism predicts common individual differences and aging effects

Individual Differences and Life Span Effects in Decision Making

- Good to be theory-driven
 - Query theory and effects on preference construction
 - Johnson, Häubl, Keinan, 2006; Weber et al, 2007)
 - Size of working memory span and effects on probability judgments
 - Dougherty et al. (2003, 2006)
- Individual or age differences can be a way to test predictions of theory about causal mechanisms
 - E.g., Memory inhibition vs. executive functions

Different cognitive processes decline at different rates with age



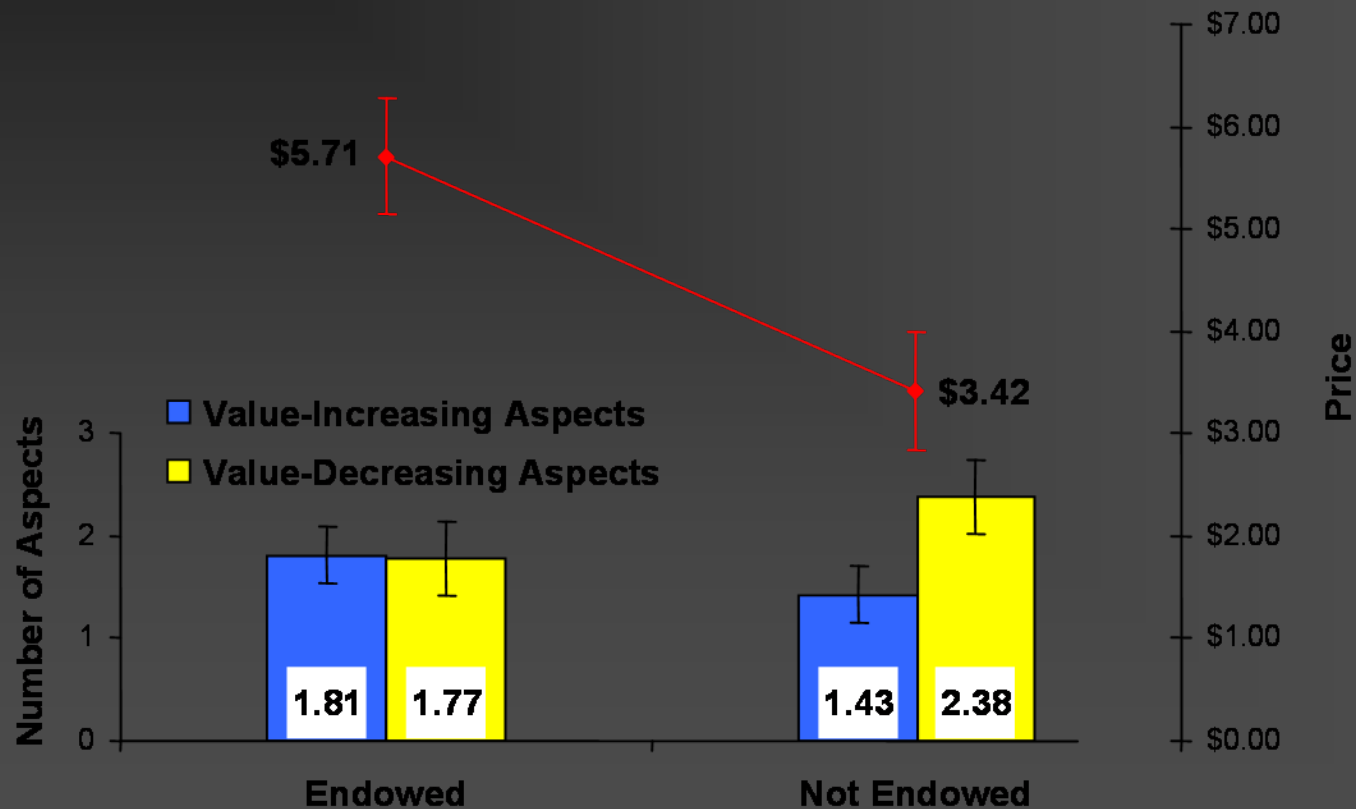
Query Theory

- To answer questions like “How much...?”, “Which one..?”, people:
 - *Decompose* query into components
 - These are conducted *serially*
 - Different valuation questions suggest *different query orders*
 - *Path dependence*: Due to retrieval interference, the first query produces a richer representation
 - Retrieval Induced Forgetting
 - Part-List Cueing
 - Attentional shifts
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Loss Aversion and Query Theory

- Endowment effect
 - Selling prices are larger than buying prices
 - Loss aversion as explanation
 - Prospect Theory (Kahneman & Tversky, 1979)
 - Query Theory explanation of loss aversion/endowment effect
 - Sellers ask value-increasing question first, buyers do the opposite
 - Predicts clustering of value-increasing and value-decreasing arguments in think-aloud or type-aloud protocols, in opposite orders
 - Predicts larger proportion of value-decreasing arguments being generated by buyers (non-endowed) than by sellers (endowed)
 - Balance of arguments should mediate differences in price
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Endowment Effect Study (Johnson, Häubl, & Keinan, 2007)



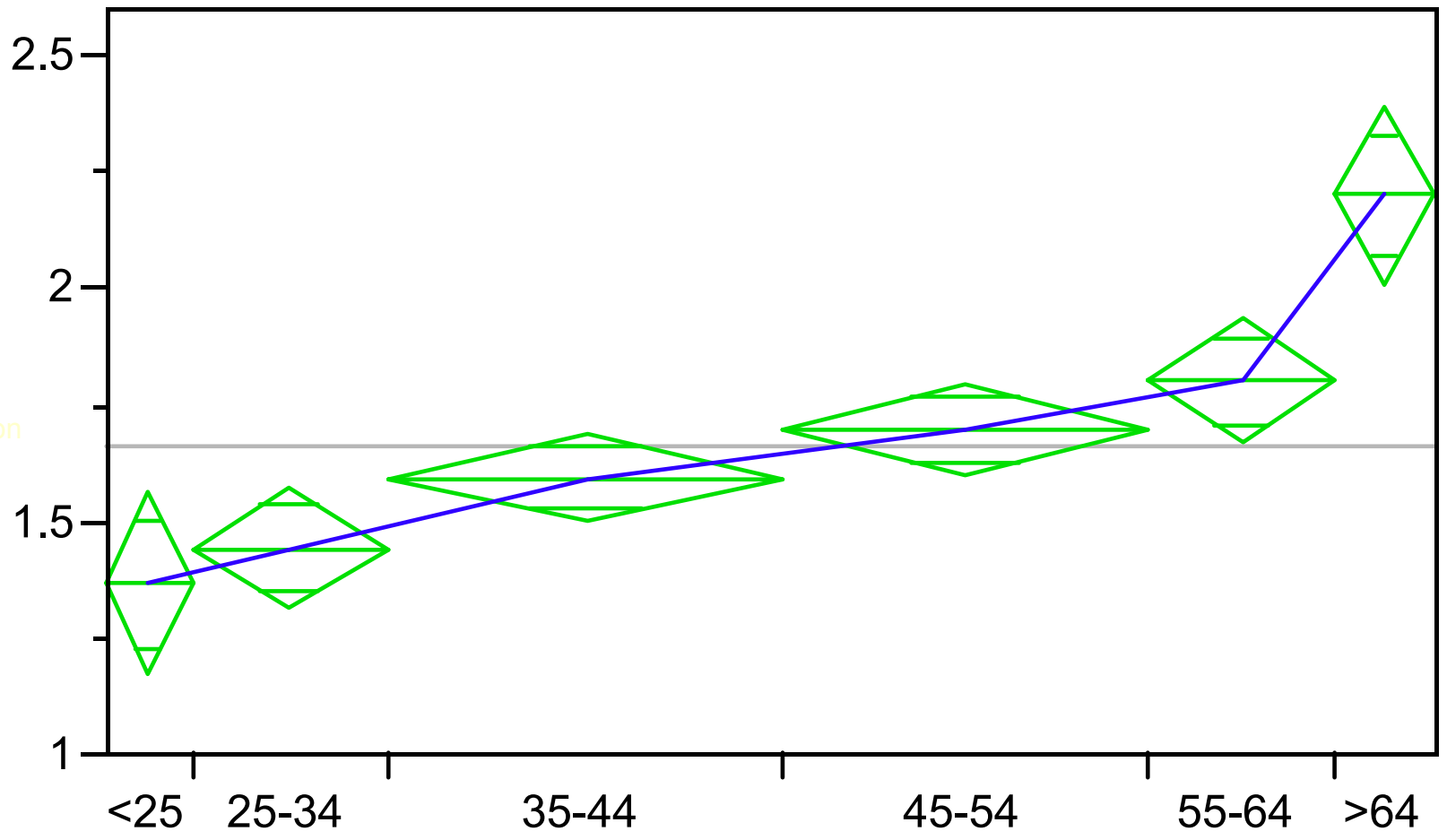
Loss aversion and aging

- Loss Aversion should increase with age
 - Older Adults are more affected by fan effects (Cohen, 1990; Gerard, Zacks, Hasher, & Radvansky, 1991)
 - Less able to avoid interference on STM and Stroop Tasks (Hedden & Park, 2001; Spieler, Balota, & Faust, 1996)
 - Less ability in Directed Forgetting Tasks (Zacks, Radvansky, & Hasher, 1996)
 - Part list cueing effects are much worse in older adults (Marsh, Dolan, Balota, and Roediger, 2004)
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Measures and Correlates of Loss Aversion (Gächter, Johnson, Hermann, 2007)

- 347 Owners of a popular German car
 - Personal Interviews
 - Provided several different measures of loss aversion in different domain, that differed in importance and expertise
 - Real Transactions
 - Information about Age, Education, Income, etc.

$\lambda_{\text{consumption}}$



Age

Drivers of loss aversion

- Jointly the biggest drivers of loss aversion are
 - Knowledge
 - Importance
 - Age
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Risk Taking

- Behavior of strong theoretical interest as well as practical importance
 - Theory: how to model risky decisions and individual and situational differences in choice
 - Practice: how to modify people's choices
- Traditional economics/finance models
 - Expected Utility (EU) theory
 - Risk-return models, like Capital Asset Pricing Model (CAPM)
 - Risk is an (invariant) attribute of the risky (investment) option
 - Risk Attitude/Risk Tolerance is the only thing presumed to vary between individuals

Problem with single determinant (parameter) for risk preference

- Need to account for both situational and chronic/biological differences in risk taking
 - Age and gender differences in sensation seeking
- Hard to do so with a single parameter
 - Is risk attitude really the only determinant of risk taking that varies between individuals or situations?
- Behavioral models of risk taking add determinants
 - Prospect Theory
 - Adds loss aversion and probability weighting
 - Generalize risk-return models (Weber & Milliman, 1997)
 - *Perceived riskiness* of risky choice options seen as a psychological variable

DoSpeRT Items (Weber, Blais, Betz, 2002)

- Admitting that your tastes are different from those of a friend. (S)
 - Going camping in the wilderness. (R)
 - Betting a day's income at the horse races. (I)
 - Swimming far out from shore on an unguarded lake or ocean. (R)
 - Investing 10% of your annual income in a moderate growth mutual fund. (I)
 - Not wearing a seat belt when being a passenger in the front seat. (H)
 - Taking some questionable deductions on your income tax return. (E)
 - Disagreeing with an authority figure on a major issue. (S)
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DoSpeRT Subscale correlations (Weber, Blais, Betz, 2002)

Study 3

	F	H	E	R	S	Total
F	1.00					.60
H	.29	1.00				.60
E	.51	.61	1.00			.45
R	.36	.34	.34	1.00		.75
S	-.07	.06	.04	.13	1.00	.33

Risk taking

- Distinguish between

- Perception

- Evaluation of outcomes and probabilities (hot or cold)

- Motivation

- Whether risk as perceived is exciting or scary
 - Probably related to optimum arousal set points
 - Sensation seeking (Zuckerman)
 - Perceived-risk attitude (PRA), b :

$$\text{Willingness to take}(X) = a(\text{Benefit}(X)) + b(\text{Perceived Risk}(X)) + c$$

PRA (Weber, Blais, Betz, 2002)

previously found not to differ between domains, gender, and culture

Domain	averse	neutral	seeking
F	44	72	0
H	45	70	1
R	43	71	0
E	49	65	2
S	50	66	0

Determinants of Perceived Riskiness

- Expected outcome volatility
 - Familiarity with risk and perceived control
 - Home bias effects in investing mediated by differences in perceived riskiness (Kilka & M. Weber, 2000; Weber et al., 2005)
 - Gender and risk taking (Weber, Blais, Betz, 2002)
 - Other affective responses (dread and fear)
 - Risk as feelings (Loewenstein, Weber, Hsee, & Welch, 2001)
 - Affective responses known to differ across life span (Carstensen, 1995)
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Aging results

(hot off the press, treat with caution)

- Some differences in likelihood of taking risks and perceived riskiness between younger (<30 yrs) and older (>60 yrs) adults
 - But, *also* differences in PRA
 - Older adults significantly *more* perceived-risk averse
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