

INTERNAL AND SUBSTANTIVE INCONSISTENCIES IN DECISION-MAKING

Christopher K. Hsee

Jiao Zhang

Junsong Chen

In press

D. Koehler & N. Harvey (eds.), *Blackwell Handbook of Judgment and Decision-making*

Oxford, England: Blackwell

Introduction

Most effects that have intrigued students of behavioral decision theories can be characterized as “inconsistencies.” These inconsistencies fall into two general categories: internal and substantive inconsistencies (Kahneman, 1994). Most existing research on judgment and decision making concerns internal inconsistency. An internal inconsistency occurs when people’s decisions violate one or several basic axioms of rational decision theory, such as procedure invariance, descriptive invariance, cancellation, and transitivity. A prime example of internal inconsistency is the preference-reversal phenomenon, that the preference elicited using one method differs from the preference elicited using a different -- but normatively equivalent -- method. This constitutes a violation of procedure invariance. Students of preference-reversals are interested in why decisions made under normatively equivalent conditions contradict each other and not in whether the decision in either condition is “good” or “bad” according to an external criterion.

Inspired by Kahneman and his coauthors’ work on decision, predicted, and experienced utilities (e.g., Kahneman, 1994; 2000; Kahneman & Snell, 1990, 1992; Kahneman, Wakker, & Sarin, 1997), a new direction in judgment-and-decision research has emerged. It concerns the substantive inconsistency of decisions. A substantive inconsistency occurs when one’s decision is suboptimal according to some external substantive criterion, such as the maximization of (predicted) hedonic experience (Kahneman, 1994). The criterion requires decision-makers to choose the option that brings the greatest (predicted) experienced utility.

This chapter consists of two parts. The first part focuses on internal inconsistency and reviews research on preference-reversal. The second part focuses on substantive inconsistency and reviews recent research showing inconsistency between decision and (predicted) experience. The review in this chapter is not meant to be comprehensive, but is thematic and reflects what we consider to be representative.

Internal Inconsistency: The Case of Preference-Reversal

Broadly defined, any systematic change in preference order between normatively equivalent conditions can be called a preference-reversal (e.g., Slovic & Lichtenstein, 1983). However, preference-reversal has a more restricted meaning. It usually refers to situations where the choice options, including their descriptions, remain the same but the preference elicitation methods differ. For the purpose of this review, we divide preference elicitation methods into three classes: (a) choice versus pricing; (b) choice versus matching; and (c) joint versus separate evaluations. The first two are about types of responses, and the last is about mode of evaluation. All these preference-reversals are violations of procedure invariance. Procedure invariance, an important pillar of rational choice, demands that “strategically equivalent methods of elicitation will give rise to the same preference order” (Tversky, 1996, p. 185). We now review these three classes of preference-reversals in turn (for other reviews, see Seidl, 2002; Chapter 17, this volume; Slovic, 1995).

Preference-reversal between choice and pricing

Lichtenstein and Slovic (1971) and Lindman (1971) demonstrated the preference-reversal phenomenon by showing that the preference elicited through a direct choice differs from the preference elicited through a pricing task. Consider the following pair of lotteries from Lichtenstein and Slovic (1971):

A: .95 Win \$2.50; .05 Lose \$.75

B: .40 Win \$8.50; .60 Lose \$1.50.

Lottery A (called a P-bet) gave a large probability of winning a small amount of money; lottery B (called a \$-bet) gave a smaller probability of winning a larger amount of money. Participants were either asked to pick the lottery they wanted to play (the choice condition) or to price the two lotteries (the pricing condition).

Normatively, these two elicitation methods should yield the same preference order. But Lichtenstein and Slovic documented a robust preference-reversal: In the choice condition,

most participants chose the P-bet, but in the pricing condition, most assigned a higher price to the \$-bet. The choice--pricing preference-reversal has been replicated by many other researchers (e.g., Grether & Plott, 1979; Pommerehne, Schneider, & Zweifel, 1982; Reilly, 1982), and also replicated in casinos with real gamblers and real money (e.g., Lichtenstein & Slovic, 1973).

The most widely accepted explanation for the choice--pricing preference-reversal is the compatibility hypothesis. This compatibility hypothesis states that an attribute will have a greater weight on the required response if the attribute is compatible in scale or units with the response than if it is not (e.g., Slovic & MacPhillamy, 1974). Because price is compatible with the pricing response and not with the choice response, price receives more weight in the pricing task (Lichtenstein & Slovic, 1973). Some researchers suggest that choice-pricing reversals are mediated by anchoring and adjustment (e.g., Lichtenstein & Slovic, 1971, 1973; Schkade & Johnson, 1989).

Slovic, Griffin, and Tversky (1990) showed that the compatibility hypothesis also applies to riskless options. For example, in choice, people prefer an option with a shorter time delay over an option with a higher payoff, but in pricing, the preference reverses. Irwin (1994) and Irwin and Baron (2001) secured evidence for the compatibility hypothesis involving moral judgments. For example, Irwin and Baron found that when people evaluate different desks, the prices of the desks (monetary considerations) receive greater weight in willingness to pay (monetary responses), and whether the desks are made of rainforest wood (non-monetary considerations) receive greater weight in attractiveness ratings (non-monetary responses).

Goldstein and Einhorn (1987) identified a confounding factor in previous studies on choice-pricing reversal. They argued that the choice task is comparative and is not about money, and the pricing task is non-comparative and is about money. They unconfounded these two factors and found preference-reversals both between monetary and non-monetary responses and between comparative and non-comparative responses. We will review preference-reversals between comparative and non-comparative responses later.

Mellers and her coauthors (Mellers, Chang, Birnbaum, & Ordonez, 1992; Mellers, Ordonez, & Birnbaum, 1992) proposed a change-of-process theory to account for preference reversals between rating and pricing: probabilities and payoffs are integrated additively in rating but multiplicatively in pricing.

Preference-reversal between choice and matching

Another important type of preference-reversal concerns the inconsistency between choice and matching. This effect was first discovered by Slovic (1975), and was studied extensively by Tversky, Sattath and Slovic (1988). In a classic study showing the effect (Tversky et al., 1988), participants were presented with information about two hypothetical job candidates applying for a production engineer position who differed on two attributes, technical knowledge and human relations, as follows:

	Technical knowledge	Human relations
Candidate A	86	76
Candidate B	78	91

Both attributes were evaluated on a scale ranging from 40 (very weak) to 100 (superb).

One group of participants (the choice condition) was asked to choose between the two candidates. Another group of participants (the matching condition) was presented with the same two alternatives, with one of the four scores missing, and were asked to fill in that missing score so that the two candidates were equally attractive. The result revealed a choice-matching preference-reversal: In choice, most people chose Candidate A (the one with the better technical knowledge), but in matching, the score most people filled in implied a preference for Candidate B (the one with better human relations). This finding suggests a *prominence effect* -- that the more important attribute in a choice set (e.g., technical knowledge in the study) receives greater weight in choice than in matching.

Tversky et al. (1988) explained the prominence effect with a new compatibility hypothesis that concerns the compatibility between the qualitative/quantitative nature of

the response and the qualitative/quantitative nature of the strategies people use to provide the response. A qualitative response, such as choice, evokes a qualitative decision strategy, such as the lexicographic rule; a quantitative task, such as matching, evokes a quantitative decision strategy, such as the weighted average rule.

Fischer and Hawkins (1993) referred to this new compatibility hypothesis as strategy compatibility, and referred to the original compatibility hypothesis as scale compatibility, and showed that strategy compatibility can operate independently of scale compatibility. These authors also demonstrated that the more prominent attribute in a choice set not only weights more in choice than in matching, but also weights more in other qualitative task (e.g., strength of preference) than in other quantitative tasks (e.g., rating).

Nowlis and Simonson (1997) studied the compatibility between the comparative/non-comparative nature of responses and the comparable/non-comparable nature of stimuli. For example, they found that in choice, poor-brand/low-price products are favored over good-brand /high-price products, but in ratings of purchase intention, the preference reverses. Presumably, price is a comparable attribute and choice is a comparative response; brand is a non-comparable and enriched attribute and rating is a non-comparative response. Therefore, price looms larger in choice and brand looms larger in rating.

Compatibility between stimuli and responses can take other forms than scale and strategy: Tversky (1977) showed that common features of alternative options weight more heavily in similarity judgments and distinctive features weight more heavily in dissimilarity judgments. Slovic et al. (1990) proposed the notion of valence compatibility between stimuli and responses. Supporting this idea, Shafir (1993) found that people are both more likely to accept and more likely to reject enriched options (which have more positive and more negative features) over impoverished options (which have fewer positive and fewer negative features). Chapman and Johnson (1995) identified a compatibility effect due to the semantic relationship between attributes and responses. For example, they found that health items such as products that improve one's eye-sight

are preferred to commodities when evaluations are expressed in life expectancy, and that the preference reverses when evaluations are expressed in monetary terms.

In summary, the preference-reversals reviewed so far exist between different types of responses. Different types of responses accentuate different aspects of the stimuli and lead to different preferences. This is the essence of the compatibility idea. In the next section we review a different kind of preference-reversal.

Preference-reversal between joint and separate evaluations

Arguably, any judgment or decision is made in one or some combination of two basic modes -- joint and separate. In the joint evaluation (JE) mode, people are exposed to multiple options simultaneously and evaluate them comparatively. In the separate or single (SE) evaluation mode, people are exposed to only one option and evaluate it in isolation. For example, when shopping for a TV in an electronics store, consumers are in JE, because usually there are many models for them to compare. On the other hand, when consumers are debating whether to bid for a TV at an estate auction where there are no other TVs, they will probably consider this particular TV alone and are therefore in SE. JE and SE are not a dichotomy, but a continuum.

Recent research has documented systematic reversals between JE and SE. In a typical study (Hsee, 1996), participants were asked to indicate their willingness to pay (WTP) for two second-hand music dictionaries in either JE or SE. The dictionaries involved a tradeoff along two attributes -- number of entries and cosmetic condition, as below:

	Number of entries	Cosmetic condition
Dictionary A:	20,000	A torn cover
Dictionary B:	10,000	Intact cover

In JE, WTP was higher for the 20,000-entry/torn-cover dictionary; but in SE, WTP was higher for the 10,000-entry/intact-cover dictionary.

JE/SE reversals have been documented in other contexts, such as compensations and job offers (e.g., Bazerman, Loewenstein, & White, 1992; Bazerman, Schroth, Shah, Diekmann, & Tenbrunsel, 1994; Hsee, 1993), consumer products (e.g., Nowlis & Simonson, 1994), and hiring (e.g., Hsee, 1996). For example, Bazerman et al. (1992) found that between an option that entailed a high payoff to oneself and looked unfair (e.g., \$600 to self and \$800 to other) and an option that entailed a lower payoff to oneself and looked fair (e.g., \$500 to both sides), the former option was favored in JE and the latter favored in SE. Hsee (1993) found that between a salary stream with a higher total amount and a decreasing trend, and one with a lower total amount and an increasing trend, the former was favored in JE and the latter favored in SE.

JE/SE reversals are different from the traditional choice-pricing and choice-matching reversals. In the traditional preference-reversals, the tasks that produce the reversal always involve different types of responses; whether they involve different evaluation modes is not essential. For example, in the choice-matching preference-reversal, both choice and matching are in JE. In the JE/SE reversals, the tasks that produce the reversal involve different evaluation modes (JE versus SE); whether they involve different types of responses is not essential. For example, in the dictionary study, the response is always willingness to pay.

Hsee (1996; Hsee, Loewenstein, Blount, & Bazerman, 1999) proposed the *evaluability hypothesis* to account for JE/SE reversals. According to this hypothesis, a JE/SE reversal occurs because some attributes are more difficult to evaluate independently than others and these attributes exert greater impact on JE than on SE. For example, in the dictionary study, number of entries is difficult to evaluate independently; most people in SE would not know how good a dictionary with 10,000 entries or a dictionary with 20,000 entries is, and would not evaluate the two dictionaries much differently. Conversely, whether the cover of a dictionary is intact or defective is easier to evaluate independently; even in SE people would find a defective cover undesirable and an intact cover desirable, and would evaluate the intact-cover dictionary more favorably. In JE, people could recognize that

20,000 entries are considerably better than 10,000 entries and would favor the 20,000-entry dictionary.

The evaluability hypothesis suggests that in SE, an objectively dominated option may be valued more highly than an objectively dominating option. For instance, Hsee (1998) asked students to indicate their willingness-to-pay for one or both of two servings of Haagen Daz ice cream: Serving A featured 8 oz of ice cream in a 10 oz cup (underfilled), and Serving B featured 7 oz of ice cream in a 5 oz cup (overfilled). Objectively, Serving A dominated Serving B, because Serving A contained more ice cream (and offered a larger cup!). Not surprisingly, in JE Serving A received a higher WTP. But in SE, Serving B received a higher WTP. This result supports the evaluability hypothesis: Whether the serving contains 7 or 8 oz of ice cream is independently difficult to evaluate and makes little difference in SE; in contrast, whether a serving is underfilled or overfilled is independently easy to evaluate and makes a difference in SE.

A similar violation of dominance was obtained in a study involving two sets of dinnerware: one containing 24 intact pieces and the other containing 40 pieces, of which 32 were intact and eight were broken (Hsee, 1998). In JE the 40-piece set was valued more. But in SE, the 24-piece was valued more, presumably because whether a dinnerware set contained 24 or 32 intact pieces was a difficult-to-evaluate cue and whether a dinnerware set contained broken pieces or not was an easy-to-evaluate cue. This result has been replicated in a study involving real financial consequences to the respondents (List, 2002).

Besides what we have reviewed above, there are other types of JE/SE reversals. For example, Irwin, Slovic, Lichtenstein, and McClelland (1993) found that in JE people were willing to pay more for improving the air quality in Denver than for improving a consumer product such as a VCR, but that in SE WTP values were higher for improving the consumer product. Kahneman and Ritov (1994) found that in JE people would contribute more to programs that save human lives (e.g., farmers with skin cancers) but in SE they would contribute more to programs that save endangered animals (e.g., dolphins)

(see also Sunstein, Kahneman, Schkade, & Ritov, 2002). Unlike the stimuli used in the studies previously reviewed, the options in Irwin et al.'s and Kahneman & Ritov's studies were of different categories (e.g., air quality versus consumer products) and shared no common attributes. Explanations for these results require a combination of norm theory (Kahneman & Miller, 1986) and the evaluability hypothesis and are beyond the scope of this chapter (cf. Hsee et al., 1999).

Internal inconsistency: Summary

In this section, we have concerned ourselves with internal inconsistencies of decisions, and have focused on the case of preference-reversals. We have reviewed the literature on two general classes of preference-reversals, those involving different types of responses (choice versus pricing or choice versus matching) and those involving different evaluation modes (JE versus SE).

Despite their theoretical differences, these two classes of preference-reversals are often confounded in reality. In particular, a choice task typically involves JE, requiring people to compare the alternative options simultaneously. On the other hand, a judgment task often entails SE or some combination of JE and SE, allowing people to evaluate one object at a time. Consequently, preference-reversals in reality often exist between "JE choice" and "SE judgment," and these reversals can potentially be accounted for by either evaluability, compatibility, or both.

The preference-reversal literatures reviewed in this section refute a basic assumption of rational choice model, that preferences are stable, and support an important proposition of behavioral decision theory, that preferences are constructed and labile (e.g., Bettman, Luce, & Payne, 1998; Payne, 1982; Chapter 6, this volume; Payne, Bettman, & Johnson, 1992; Slovic, 1995).

Substantive Inconsistency: The Case of Decision-experience Inconsistency

Behavioral decision researchers have devoted much of their effort to the study of internal inconsistency of decisions, where seemingly inconsequential manipulations lead to

marked different responses. The preference-reversals we have reviewed are examples of such internal inconsistencies.

A potentially more important topic is substantive inconsistency of decisions -- people's failure to choose the best option according to some external, substantive criterion (e.g., Hammond, 1996; Kahneman, 1994; Kahneman & Snell, 1990, 1992; Chapter 1, this volume; Sen, 1993). What would be a reasonable substantive criterion for decisions? The answer depends on the decision. The present review focuses on decisions about choice options that have a well-defined consumption period and do not differ systematically in other aspects than their experienced utility during this period. For such decisions, we follow Kahneman (1994; 2000; Kahneman et al., 1997) and consider the maximization of consumption experience (i.e., experienced utility during the consumption period) as the substantive criterion. If one fails to choose the option that delivers the best consumption experience, we say that an inconsistency between decision and experience occurs. In what follows, we review several major causes for such inconsistencies.

Impact bias

An important prerequisite for consistency between decision and experience is that the decision-maker accurately predicts which option will bring the best experience. In the past several decades, psychologists and behavioral decision theorists have accumulated ample evidence showing that people often over-predict the intensity or duration of their future affective reaction, a phenomenon called the impact bias (Gilbert, Driver-Linn, & Wilson, 2002; Wilson & Gilbert, 2003). Here, we follow Wilson and Gilbert (2003) to use "impact bias" to refer to both intensity bias (e.g., Buehler & McFarland, 2001) and durability bias (Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998).

The impact bias may arise when people fail to predict the power of adaptation or change in aspiration (e.g., Brickman, Coates, & Janoff-Bulman, 1978; Frederick & Loewenstein, 1999; Kahneman, 2000; Loewenstein & Schkade, 1999). For example, when a person moves from a small apartment to a bigger one, she may predict lasting increased happiness. In reality, her happiness will increase initially but over time it will dwindle,

because she has hedonically adapted to the larger home, or because she develops an aspiration for an even bigger home, or both.

The impact bias may also occur because of focalism, that predictors focus too much on the target event and overlook other factors that may influence their experience (e.g., Schkade & Kahneman, 1997). For example, after the defeat of their favorite team, sports fans predicted that they would be very unhappy for a long time, but in reality the memory of a lost game was just one of myriad things that affected their experience and had little impact only a few days after the game (Wilson, Wheatley, Meyer, Gilbert, & Assom, 2000). A variation of focalism is that people overpredict the impact of features unique to the target event and underpredict the impact of features shared by both the target event and alternative events (e.g., Dunn, Wilson, & Gilbert, 2003).

For negative events, there is another cause for misprediction: People fail to anticipate the power of their psychological immune system to moderate the impact of a negative event (Gilbert, et al., 1998). For instance, Gilbert et al. (1998) asked participants to predict how they would feel a few minutes after receiving negative personality feedback from either an experimental computer program or a team of seasoned clinicians. The participants predicted that they would feel equally bad in the two conditions. However, they actually felt less bad when the negative feedback was delivered by the computer program than by the clinicians. Presumably, when the negative feedback was conveyed by a computer program, it was easier for the immune system to set in and reduce its impact by dismissing the validity of the feedback.

Failure to appreciate the power of one's own immune system may lead to a decision-experience inconsistency. In one study (Wilson, Wheatley, & Gilbert, 2000), the participants were asked to imagine that they were playing a hypothetical dating game in which they were competing with another same-sex participant. In one condition, the "predictors" were asked to select a dosage of a mood-enhancing drug they would like to take if they lost the game before predicting how bad they would feel if they lost the game. The "experiencers" were asked to make the same decision and to indicate how bad they

felt after they were told that they had lost the game. Interestingly, the predictors selected a significantly higher dosage than did the experiencers. As in the typical immune neglect studies (e.g., Gilbert et al., 1998), the predictors also predicted that they would feel worse than the experiencers actually felt. It seems that the predictors chose too high a dosage because they predicted that they would feel worse than they actually would.

Misprediction due to biased memory, incorrect theory or wrong state

Our choice of future events is often based on our memory of past events, but our memory of past events may be biased (e.g., Karney & Coombs, 2000; Levine, 1997; Mather, Shafir & Johnson, 2000). One particular bias in memory is duration neglect (e.g., Fredrickson & Kahneman, 1993). The following study illustrates duration neglect and its implication for decision-experience inconsistency. Kahneman, Fredrickson, Schreiber, & Redelmeier (1993) asked research participants to go through two aversive episodes, one short and one long. The short episode required the participants to submerge their hands in very cold water for 60 seconds. The long episode required the participants to submerge their hands in very cold water for 60 seconds and then in mildly cold water for another 30 seconds. Objectively, the long episode was worse than the short one. Yet the participants remembered the long episode as less aversive, because (a) they were insensitive to the duration of the episode and (b) their memory of the overall aversiveness of an episode was dictated by the aversiveness of the final moment of the episode. Consequently, when the participants were asked to repeat one of the episodes, most chose to repeat the long one.

Misprediction may also result from inaccurate lay theories of adaptation, contrast, and other psychological effects (e.g., Kahneman & Snell, 1992; Novemsky & Ratner, 2003; Robinson & Clore, 2002). In a study by Kahneman and Snell (1992), participants predicted decreasing enjoyment from repeated consumption of the same yogurt over several days but in reality their enjoyment increased. In a study by Novemsky and Ratner (2003), participants predicted that their enjoyment of a good-tasting jellybean would increase after consuming a bad-tasting jellybean, but in reality they did not experience such contrast effects.

Another potential contributor to misprediction is what Loewenstein (1996) called empathy gap. People are said to be in a “hot” state when under the influence of visceral factors, such as hunger and sexual arousal, or in a “cold” state when not under such visceral influences. Poor predictions may occur when people in a hot (cold) state predict their experiences in a cold (hot) state. For example, Read and van Leeuwen (1998) found that currently hungry people are more likely than currently satiated people to choose an unhealthy snack even though the snack will only be consumed in the future (see also Gilbert, Gill & Wilson, 2002).

Distinction bias

Another source of failure to make accurate affective forecasting or experience-maximizing choices is evaluation mode, joint (JE) versus separate (SE). Extending the evaluability hypothesis, Hsee and Zhang (2004) proposed that the evaluation (utility) function of most attributes differ systematically between JE and SE. In JE, people can compare alternative values of an attribute, and through such comparisons, can differentiate the desirability of these values. Consequently, the evaluation function in JE will be relatively steep (the solid curve in Figure 1). In SE, people see only one value on the attribute. Generally speaking, people are able to tell whether a value is good or bad, but unable to tell precisely how good or how bad it is. For example, in SE most people would find winning \$10 good and losing \$10 bad, but would not find winning \$10 much different from winning \$30. Thus, the evaluation function in SE will be steep around zero (or a reference point) and relatively flat elsewhere (the dashed line in Figure 1) (See Willemsen & Keren, 2004, for a similar analysis of the evaluation functions).

*** Insert Figure 1 here ***

More often than not, decisions, and their accompanying affective predictions, are made in JE, but the consequence of a decision is experienced in SE. For example, when a person shops for a house, she typically compares the houses on the market with each other or with her current house (JE). When the person lives in the new house she has bought, she

is mostly in SE of that house alone. In other words, experience follows the SE curve, but predictions and decisions follow the JE curve.

The mismatch in evaluation mode between predictions and experience may lead to mispredictions. Specifically, if two values of an attribute differ only quantitatively or far from the reference point (e.g., losing \$10 versus losing \$30, and living in a 2000 ft² versus living in a 3000 ft² house), people in JE are likely to exhibit a distinction bias, i.e., overpredict the difference these values will make to SE experience. If two values differ qualitatively or on two sides of the reference point (e.g., winning \$10 versus losing \$10, and being employed versus being unemployed), people in JE are unlikely to overpredict the difference these values will make to SE experience. These propositions have been confirmed empirically (see Hsee & Zhang, 2004).

The misprediction discussed above can also lead to mischoice. The following story, adapted from Hsee (2000), illustrates the point. A person shopping for a pair of audio speakers in an audio store was debating between two equally expensive models. One looked attractive and the other ugly. He then compared the sounds of the two systems by playing a CD back and forth. Through the comparisons he found the sound of the ugly model *slightly* but *distinctively* better, and decided to buy it. But soon after he had brought the speakers home, he found their appearance annoying and relegated them to the basement. The moral of the story is that in comparing the two models, the protagonist exhibited a distinction bias: he overpredicted the difference in sound quality between the two models -- something that was salient in JE but would be inconsequential in SE (see Kahneman, Knetsch, & Thaler, 1986 for a similar observation concerning fairness perception). For empirical demonstrations of this type of mischoice, see the task-reward experiment in Hsee and Zhang (2004) and the noise-picture experiment in Hsee and Zhang (2003).

Lay rationalism

[p]In order to choose the experientially optimal option, people not only need to accurately predict future experience, but also need to base their decision on their prediction. The

research we have reviewed above concerns inaccurate prediction of experiences. The research we review in this section shows failure to base decisions on predicted experiences. One cause of this failure is *lay rationalism*, a tendency to base decisions on rationalistic factors rather than on the overall predicted experience of the options (Hsee, Zhang, Yu, & Xi, 2003; see also Shafir, Simonson, & Tversky, 1993).

Lay rationalism manifests itself in different forms, including lay economism, lay scientism, and lay functionalism. *Lay economism* is the tendency to base decisions on economic values of the options. In a classic study by Tversky and Griffin (1991), for example, respondents were presented with two job options, one with a lower salary to self (\$33,000) and an even lower salary for their colleague (\$30,000), and one with a higher salary to self (\$35,000) and an even higher salary for their colleague (\$38,000). Most respondents predicted higher overall happiness from the first job, but most chose the latter. In a more recent study, (Hsee, Zhang, et al., 2003), participants were given two consumption sequences -- one entailing an improving temporal pattern but a smaller total monetary value and the other entailing a decreasing temporal pattern but a larger total monetary value. Most people predicted greater overall enjoyment from the former sequence, but most chose the latter.

Another manifestation of lay rationalism is *lay functionalism*, a tendency to base decisions on functions and objectives rather than on overall enjoyment. For example, in a study reported in Hsee, Zhang et al. (2003), respondents were asked to assume that they had won a \$1,000 cash prize from a department store and could claim the money in one of two ways: (a) go to the store and receive a beautifully-printed check with their name on it; or (b) have the store wire the money to their bank without seeing the check. Most respondents predicted greater happiness doing (a), but most respondents chose to do (b). This is consistent with previous research showing that people have both consummatory and instrumental needs (e.g., Pham, 1998); compared with experience-predictors, decision-makers are more concerned with non-consummatory, instrumental aspects of the choice options.

A third manifestation of lay rationalism is *lay scientism*, a tendency to base decisions on hard and objective attributes rather than on soft and subjective attributes. In a study by Hsee, Zhang, et al. (2003), respondents considered two hypothetical stereo systems varying in power and sound richness. In one condition, power was described as an objective attribute and sound richness a subjective experience; in the other condition, power was described as a subjective experience and sound richness an objective attribute. A choice/predicted-experience inconsistency occurred in both conditions, but in the opposite directions. When power was the “hard” attribute, power received greater weight in choice than in predicted experience; when sound richness was the “hard” attribute, sound richness received greater weight in choice than in predicted experience.

Traditional economists are sometimes faulted for their obsession with money and tangible goods (e.g., Frey & Stutzer, 2002; Rabin, 2002). The proceeding review suggests that this materialistic and objectivist position is not invented by economists, but rooted in the lay public.

We wish to note that an inconsistency between predicted experience and decision is not always an error. For example, suppose that a restaurant patron predicts greater enjoyment from eating a high-cholesterol steak, but orders a low-cholesterol pasta instead. This may simply reflect the person’s willingness to sacrifice (predicted) enjoyment for health benefits. Hsee, Zhang, et al. (2003) suggest that lay rationalism is an antidote to impulsive behavior, a way to sacrifice pleasure for other benefits. The problem, however, is that people do not (sufficiently) distinguish situations where the sacrifice of pleasure will bring about other benefits and situations where it will not, and that people follow lay rationalism even in the latter situations. In these situations, following lay rationalism and making decisions that are inconsistent with predicted experiences *are* errors.

Decisions based on rules

Lay rationalism implies that decision-makers do not base their choice strictly on predicted consequences of the choice options. This implication is shared by research on *rule-based decisions* (e.g., Amir & Ariely, 2003; Prelec & Herrnstein, 1993; Simonson,

1989; Simonson & Nowlis, 2000). Examples of decision rules (broadly defined) include “don’t waste” (Arkes & Ayton, 1999; Arkes & Blumer, 1985), “seek variety” (e.g., Simonson, 1990), “don’t choose the same dish as your friends” (Ariely & Levav, 2000), “don’t pay for delays” (Amir & Ariely, 2003), to name just a few.

Research on variety-seeking has also revealed inconsistencies between decision and (predicted) experience. In one of the original studies on variety-seeking, Simonson (1990) asked one group of students to make simultaneous choices of candies for several future consumption occasions, another group to make sequential choices of candies right before each consumption occasion, and a third group to make predictions for candy preferences in those occasions. The result is intriguing: Both the sequential choosers and the preference-predictors preferred low variety, but the simultaneous choosers sought high variety.

In a more recent study on variety-seeking, Ratner, Kahn and Kahneman (1999) asked participants to construct a song sequence from one of two sets of songs. One set contained more songs than the other, but the additional songs were less enjoyable. Ratner et al. found that those who were given the larger set constructed sequences with greater variety but enjoyed them less. In a study on group variety-seeking, Ariely and Levav (2000) found that restaurant goers tend to order different items than what their friends order, but enjoy the resulting items less.

In a study exploring the “don’t waste” rule, Arkes and Blumer (1985) asked participants to imagine that they purchased a \$100 ticket for a weekend ski trip to Michigan and a \$50 ticket for a weekend ski trip to Wisconsin. They later found out that the two trips were for the same weekend. They could not return either of the two tickets and had to pick one to use. Although the participants were told that they thought the Wisconsin trip was more enjoyable, most of them chose the trip that cost them more money -- the Michigan trip (see Chapter 16, this volume, for strategies to minimize such biases).

Medium maximization

Another potential cause of decision-experience inconsistency is medium maximization. Oftentimes, when people exert effort in order to obtain a desired outcome, the immediate reward they receive is not the outcome per se, but a medium -- an instrument with which they can trade for the desired outcome (e.g., Kivetz & Simonson, 2002; van Osselaer, Alba, & Manchanda, 2001). For example, points in consumer loyalty programs and miles in frequent flyer programs are both media. Suppose that an individual is faced with different courses of actions, each corresponding to a certain level of effort, a certain level of medium and a certain outcome, as follows:

Action A $\rightarrow$ effort level A $\rightarrow$ medium level A $\rightarrow$ outcome A

Action B $\rightarrow$ effort level B $\rightarrow$ medium level B $\rightarrow$ outcome B

Action C $\rightarrow$ effort level C $\rightarrow$ medium level C $\rightarrow$ outcome C

....

Assume also that the action that yields the best effort-to-outcome return (i.e., the utility of outcome minus the disutility of effort) is not the action that yields the highest effort-to-medium return.

Ideally, when people are faced with such options, they should ignore the medium and choose the outcome that yields the best effort-to-outcome return. In reality, decision-makers often choose the option that yields the best effort-to-medium return (see Hsee, Fang, Zhang, & Zhang, 2003 for theory and evidence). This finding has important implications for life. The money people earn for their work is a medium and the experience derived from consuming the things they obtain with the money is the outcome. The finding that people maximize medium suggests that when people choose between different jobs, they may choose the job with the greatest effort-to-money return rather than the job with the best effort-to-experience return.

Substantive inconsistency: Summary

In this section we have reviewed selected research on inconsistencies between decision and (predicted) experience. Theoretically the different causes we reviewed are separable.

Practically they often co-exist. To illustrate, let us consider the following two-society problem, adapted from Frank (1999):

There are two societies, A and B. Each resident in Society A earns an equivalent of \$60,000 a year and has ample time to spend with his or her friends. Each resident in Society B earns an equivalent of \$80,000 a year but has little time to spend with his or her friends.

We predict that residents in Society A are generally happier, but that when presented with a choice between the two societies, many will choose Society B. In fact, most countries in the world are moving toward the direction of Society B and this may be an indication that people are choosing Society B over Society A.

People may choose Society B for several of the reasons we reviewed above. One is lay rationalism: People may find it more rational or defensible to base their choice on concrete economic gains than on non-economic concerns. A second reason is impact bias. People may fail to predict that they will adapt to either level of income and that the difference in income will make little difference in the long run. A third reason is the medium effect. People may base their choice on the face value of the income rather than the utility of the income; the difference between \$80,000 and \$60,000 seems large in face value, but may be tiny in utility. A fourth reason is distinction bias: Whether one earns \$60,000 or \$80,000 is only a matter of degree and would make little difference in SE, but whether or not one has time with their friends is a matter of valence and would make a greater difference in SE. Experience with each society is in SE, and this is why people in Society A are likely to be happier. But a choice between the two societies requires JE, and this explains why people are likely to choose Society B.

Conclusion

Much of the early and now-classic behavioral decision research is designed to identify and explain internal inconsistencies in decisions between normatively equivalent conditions. Internal inconsistency is important because it implies that the decision in at

least some condition is substantively suboptimal, but it does not tell us in which condition the decision is substantively suboptimal.

Some recent behavioral decision research focuses more directly on substantive suboptimality of decisions, particularly, on inconsistencies between decisions and predicted or real experiences. Arguably, the optimization of experience is the ultimate goal of our decisions (e.g., Kahneman, 1994; see also Frey & Stutzer, 2002; Chapter 1, this volume). The emerging interest in the experienced utility of decisions gives behavioral decision research a new significance, and motivates it to join forces with other areas of psychology and with economics (e.g., Diener & Biswas-Diener, 2002; Easterlin, 2001; Frank, 1999; Frey & Stutzer, 2002) to develop an interdisciplinary science of happiness.

References

- Amir, O. & Ariely, D. (2002) Decision by rules: disassociation between preferences and willingness to act, unpublished manuscript, Massachusetts Institute of Technology.
- Ariely, D. & Levav, J. (2000) Sequential choice in group settings: Taking the road less traveled and less enjoyed, *Journal of Consumer Research*, 27, 279--90.
- Arkes, H. R. & Ayton, P. (1999) The sunk cost and Concorde effects: Are humans less rational than lower animals? *Psychological Bulletin*, 125, 591--600.
- Arkes, H. R. & Blumer, C. (1985) The psychology of sunk cost, *Organizational Behavior and Human Decision Processes*, 35, 124--40.
- Bazerman, M. H., Loewenstein, G. F., & White, S. B. (1992) Reversals of preference in allocation decisions: Judging an alternative versus choosing among alternatives, *Administrative Science Quarterly*, 37, 220--40.
- Bazerman, M. H., Schroth, H. A., Shah, P. P., Diekmann, K. A., & Tenbrunsel, A. E. (1994) The inconsistent role of comparison others and procedural justice in reactions to hypothetical job descriptions: Implications for job acceptance decisions, *Organizational Behavior and Human Decision Processes*, 60, 326--52.
- Bettman, J. R., Luce, M. F., & Payne, J. W. (1998) Constructive consumer choice processes, *Journal of Consumer Research*, 25, 187--217.
- Brickman, P., Coates, D., & Janoff-Bulman, R. (1978) Lottery winners and accident victims: Is happiness relative? *Journal of Personality and Social Psychology*, 36, 917--27.
- Buehler, R. & McFarland, C. (2001) Intensity bias in affective forecasting: The role of temporal focus, *Personality and Social Psychology Bulletin*, 27, 1480--93.
- Chapman, G. B. & Johnson, E. J. (1995) Preference-reversals in monetary and life expectancy evaluations, *Organizational Behavior and Human Decision Processes*, 62, 300--17.
- Diener, E. D. & Biswas-Diener, R. (2002) Will money increase subjective well-being? *Social Indicators Research*, 57, 119--69.

- Dunn, E. W., Wilson, T. D., & Gilbert, D. T. (2003) Location, location, location: The misprediction of satisfaction in housing lotteries, *Personality and Social Psychology Bulletin*, 29, 1421--32.
- Easterlin, R. (2001) Income and happiness: Towards a unified theory, *Economic Journal*, 111, 465--84.
- Fischer, G. W. & Hawkins, S. A. (1993) Strategy compatibility, scale compatibility, and the prominence effect, *Journal of Experimental Psychology: Human Perception and Performance*, 19, 580--97.
- Frank, R. (1999) *Luxury Fever: Why Money Fails to Satisfy in an Era of Excess*. New York: Free Press.
- Frederick, S. & Loewenstein, G. F. (1999) Hedonic adaptation. In D. Kahneman, E. Diener and N. Schwartz (eds.), *Well-being: The Foundations of Hedonic Psychology* (pp. 302--29). New York: Russell Sage Foundation.
- Fredrickson, B. L. & Kahneman, D. (1993) Duration neglect in retrospective evaluations of affective episodes, *Journal of Personality and Social Psychology*, 65, 45--55.
- Frey, B. S. & Stutzer, A. (2002) What can economists learn from happiness research? *Journal of Economic Literature*, 40, 402--35.
- Gilbert, D. T., Driver-Linn, E., & Wilson, T. D. (2002) The trouble with Vronsky: Impact bias in the forecasting of future affective states. In L. F. Barrett and P. Salovey (eds.), *The Wisdom in Feeling: Psychological Processes in Emotional Intelligence* (pp. 114--43). New York: Guilford.
- Gilbert, D. T., Gill, M. J., & Wilson, T. D. (2002) The future is now: Temporal correction in affective forecasting, *Organizational Behavior and Human Decision Processes*, 88, 430--44.
- Gilbert, D. T., Pinel, E. C., Wilson, T. D., Blumberg, S. J., & Wheatley, T. P. (1998) Immune neglect: A source of durability bias in affective forecasting, *Journal of Personality and Social Psychology*, 75, 617--38.
- Goldstein, W. M. & Einhorn, H. J. (1987) Expression theory and the preference-reversal phenomena, *Psychological Review*, 94, 236--54.
- Grether, D. M. & Plott, C. R. (1979) Economic theory of choice and the preference-reversal phenomenon, *American Economic Review*, 69, 623--38.

- Hammond, K. R. (1996) How convergence of research paradigms can improve research on diagnostic judgment, *Medical Decision Making*, 16, 281--7.
- Hsee, C. K. (1993) When trend of monetary outcomes matters: Separate versus joint evaluation and judgment of feelings versus choice, working paper.
- Hsee, C. K. (1996) The evaluability hypothesis: An explanation for preference-reversal between joint and separate evaluations of alternatives, *Organizational Behavior and Human Decision Processes*, 67, 247--57.
- Hsee, C. K. (1998) Less is better: When low-value options are judged more highly than high-value options, *Journal of Behavioral Decision Making*, 11, 107--21.
- Hsee, C. K. (1999) Value-seeking and prediction-decision inconsistency: Why don't people take what they predict they'll like the most? *Psychonomic Bulletin and Review*, 6, 555--61.
- Hsee, C. K. (2000) Attribute evaluability and its implications for joint-separate evaluation reversals and beyond. In D. Kahneman and A. Tversky (eds.), *Choices, Values and Frames*. Cambridge University Press.
- Hsee, C. K., Fang, Y., Zhang, J., & Zhang, Y. (2003) Medium maximization, *Journal of Consumer Research*, 30, 1--14.
- Hsee, C. K., Loewenstein, G. F., Blount, S., & Bazerman M. H. (1999) Preference-reversals between joint and separate evaluations of options: A review and theoretical analysis, *Psychological Bulletin*, 125, 576--91.
- Hsee, C. K. & Zhang, J. (2003) *Choice-consumption inconsistency*. Unpublished manuscript.
- Hsee, C. K. & Zhang, J. (2004) Distinction bias: Mis-prediction and mis-choice due to joint evaluation., *Journal of Personality and Social Psychology*, in press.
- Hsee, C. K., Zhang, J., Yu, F., & Xi, Y. (2003) Lay rationalism and inconsistency between predicted experience and decision, *Journal of Behavioral Decision Making*, 16, 257--72.
- Irwin, J. R. (1994) Buying/selling price preference-reversals: Preference for environmental changes in buying versus selling modes, *Organizational Behavior and Human Decision Processes*, 60, 431--57.

- Irwin, J. R. & Baron, J. (2001) Response mode effects and moral values, *Organizational Behavior and Human Decision Processes*, 84, 177--97.
- Irwin, J. R., Slovic, P., Lichtenstein, S., & McClelland, G. H. (1993) Preference-reversals and the measurement of environmental values, *Journal of Risk and Uncertainty*, 6, 5--18.
- Kahneman, D. (1994) New challenges to the rationality assumption, *Journal of Institutional and Theoretical Economics*, 150, 18--36.
- Kahneman, D. (2000) Experienced utility and objective happiness: A moment-based approach. In D. Kahneman and A. Tversky (eds.), *Choices, Values and Frames*. Cambridge: Cambridge University Press.
- Kahneman, D., Fredricson, B. L., Schreiber, C. A., & Redelmeier, D. A. (1993) When more pain is preferred to less: Adding a better end, *Psychological Science*, 4, 401--05.
- Kahneman, D., Knetsch, J. L., & Thaler, R. H. (1986) Fairness and the assumptions of economics, *Journal of Business*, 59, 285--300.
- Kahneman, D. & Miller, D. T. (1986) Norm theory: Comparing reality with its alternatives, *Psychological Review*, 93, 136--53.
- Kahneman, D. & Ritov, I. (1994) Determinants of stated willingness to pay for public goods: A study in the headline method, *Journal of Risk and Uncertainty*, 9, 5--38.
- Kahneman, D. & Snell, J. (1990) Predicting utility. In R. M. Hogarth (ed.), *Insights in Decision Making* (pp. 295--311). Chicago, IL: University of Chicago Press.
- Kahneman, D. & Snell, J. (1992) Predicting a changing taste: Do people know what they will like? *Journal of Behavioral Decision Making*, 5, 187--200.
- Kahneman, D., Wakker, P., & Sarin, R. (1997) Back to Bentham, *Quarterly Journal of Economics*, 11, 375--401.
- Karney, B. R. & Coombs, R. H. (2000) Memory bias in long-term close relationships: Consistency or improvement? *Personality and Social Psychology Bulletin*, 26, 959--70.
- Kivetz, R. & Simonson, I. (2002) Earning the right to indulge: Effort as a determinant of customer preferences towards frequency program rewards, *Journal of Marketing*

- Research*, 39, 155-170. Levine, L. J. (1997) Reconstructing memory for emotions, *Journal of Experimental Psychology: General*, 126, 165--77.
- Lichtenstein, S. & Slovic, P. (1971) Reversal of preference between bids and choices in gambling decisions, *Journal of Experimental Psychology*, 89, 46--55.
- Lichtenstein, S. & Slovic, P. (1973) Response-induce reversals of preference in gambling: An extended replication in Las Vegas, *Journal of Experimental Psychology*, 101, 16--20.
- Lindman, H. R. (1971) Inconsistent preferences among gamblers, *Journal of Experimental Psychology*, 89, 390--7.
- List, J. A. (2002) Preference-reversals of a different kind: The "more is less" phenomenon, *American Economic Review*, 92, 1636--43.
- Loewenstein, G. (1996) Out of control: visceral influences on behavior, *Organizational Behavior and Human Decision Processes*, 65, 272--92.
- Loewenstein, G. & Schkade, D. (1999) Wouldn't it be nice? Predicting future feelings. In D. Kahneman, E. Diener, and N. Schwartz. (eds.), *Well-being: The Foundations of Hedonic Psychology*. Russell Sage Foundation.
- March, J. (1994) *A Primer on Decision Making: How Decisions Happen*. New York: The Free Press.
- Mather, M., Shafir, E., & Johnson, M. K. (2000) Misremembrance of options past: Source monitoring and choice, *Psychological Science*, 11, 132--8.
- Mellers, B. A., Chang, S., Birnbaum, M. H., & Ordonez, L. D. (1992) Preferences, prices and ratings in risky decision making, *Journal of Experimental Psychology: Human Perception and Performance*, 18, 347--61.
- Mellers, B. A., Ordonez, L. D., & Birnbaum, M. H. (1992) A change-of-process theory for contextual effects and preference-reversals in risky decision making, *Organizational Behavior and Human Decision Processes*, 52, 331--69.
- Novemsky, N. & Ratner, R. N. (2003) The time course and impact of consumers' erroneous beliefs about hedonic contrast effects, *Journal of Consumer Behavior*, 29, 507--16.

- Nowlis, S. M. & Simonson, I. (1994) The context-dependency of attributes as a determinant of preference-reversals between choices and judgments of purchase likelihood, unpublished manuscript, Stanford University.
- Nowlis, S. M. & Simonson, I. (1997) Attribute-task compatibility as a determinant of consumer preference-reversals, *Journal of Marketing Research*, 34, 205--18.
- Payne, J. W. (1982) Contingent decision behavior, *Psychological Bulletin*, 92, 382--402.
- Payne, J. W., Bettman, J. R., & Johnson, E. J. (1992) Behavioral decision research: A constructive processing perspective, *Annual Review of Psychology*, 43, 87--131.
- Pham, M. T. (1998) Representativeness, relevance, and the use of feelings in decision making, *Journal of Consumer Research*, 25, 144--59.
- Pommerehne, W. W., Schneider, F., & Zweifel, P. (1982) Economic theory of choice and preference-reversal phenomenon: A reexamination, *American Economic Review*, 72, 569--74.
- Prelec, D. & Herrnstein, R. (1993) Preferences or principles: Alternative guidelines for choice. In R. J. Zeckhauser (ed.), *Strategy and Choice*. Cambridge, MA: MIT Press.
- Rabin, M. (2002) A perspective on psychology and economics, *European Economic Review*, 46, 657--85.
- Ratner, R. K., Kahn, B. E., & Kahneman, D. (1999) Choosing less-preferred experiences for the sake of variety, *Journal of Consumer Research*, 26, 1--15.
- Read, D. & van Leeuwen, B. (1998) Predicting hunger: The effects of appetite and delay on choice, *Organizational Behavior and Human Decision Processes*, 76, 189--205.
- Reilly, R. J. (1982) Preference-reversal: Further evidence and some suggested modifications in experimental design, *American Economic Review*, 72, 576--84.
- Robinson, M. D. & Clore, G. L. (2002) Belief and feeling: Evidence for an accessibility model of emotional self-report, *Psychological Bulletin*, 128, 934--60.
- Schkade, D. A. & Johnson, E. J. (1989) Cognitive processes in preference-reversals, *Organizational Behavior and Human Decision Processes*, 44, 203--31.

- Schkade, D. A. & Kahneman, D. (1997) Does living in California make people happy? A focusing illusion in judgments of life satisfaction, *Psychological Science*, 9, 340--6.
- Seidl, C. (2002) Preference-reversal, *Journal of Economic Surveys*, 16, 621--55.
- Sen, A. (1993) Internal consistency of choice, *Econometrica*, 61, 495--521.
- Shafir, E. (1993) Choosing versus rejecting -- why some options are both better and worse than others, *Memory and Cognition*, 21, 546--56.
- Shafir, E., Simonson, I., & Tversky, A. (1993) Reason-based choice, *Cognition*, 49, 11--36.
- Simonson, I. (1989) Choice based on reasons -- the case of attraction and compromise effects, *Journal of Consumer Research*, 16, 158--74.
- Simonson, I. (1990) The effect of purchase quantity and timing on variety-seeking behavior, *Journal of Marketing Research*, 27, 150--62.
- Simonson, I. & Nowlis, S. M. (2000) The role of explanations and need for uniqueness in consumer decision making: Unconventional choices based on reasons, *Journal of Consumer Research*, 27, 49--68.
- Slovic, P. (1975) Choice between equally valuable alternatives, *Journal of Experimental Psychology: Human Perception and Performance*, 1, 280--7.
- Slovic, P. (1995) The construction of preference, *American Psychologist*, 50, 364--71.
- Slovic, P., Griffin, D., & Tversky, A. (1990) Compatibility effects in judgment and choice. In R. M. Hogarth (ed.), *Insights in Decision Making: Theory and Applications*. Chicago: University of Chicago.
- Slovic, P. & Lichtenstein, S. (1968) Relative importance of probabilities and payoffs in risk taking, *Journal of Experimental Psychology*, 78, 1--18.
- Slovic, P. & Lichtenstein, S. (1983) Preference-reversals: A broader perspective, *American Economic Review*, 73, 596--605.
- Slovic, P. & MacPhillamy, D. (1974) Dimensional commensurability and cue utilization in comparative judgment, *Organizational Behavior and Human Performance*, 11, 172--94.
- Sunstein, C. R., Kahneman, D., Schkade, D., & Ritov, I. (2002) Predictably incoherent judgments, *Stanford Law Review*, 54, 1153--1215.

- Tversky, A. (1977) Features of similarity, *Psychological Review*, 84, 327--52.
- Tversky, A. (1996) Rational theory and constructive choice. In K. J. Arrow, E. Colombatto, M. Perlman, and C. Schmidt (eds.), *The Rational Foundations of Economic Behavior* (pp. 185--202). London and New York: Macmillan and St. Martins press.
- Tversky, A. and Griffin, D. (1991) Endowment and contrast in judgments of well-being. In F. Strack, M. Argyle, and N. Schwartz (eds.), *Subjective Well-being: An Interdisciplinary Perspective* (vol. 21, pp. 101--18). Oxford, England: Pergamon Press.
- Tversky, A., Sattath, S., & Slovic, P. (1988) Contingent weighting in judgment and choice, *Psychological Review*, 95, 371--84.
- van Osselaer, Stijn, M. J., Alba, J. W., & Manchanda, P. (2001) Loyalty programs and process in mediated intertemporal choice, unpublished manuscript, University of Chicago, Chicago, IL 60637.
- Willemsen, M. G. & Keren, G. (2004) The role of negative features in joint and separate evaluation. *Journal of Behavioral Decision Makings*.
- Wilson, T. D. & Gilbert, D. (2003) Affective forecasting, *Advances in Experimental Social Psychology*, 35, 345--411.
- Wilson, T. D., Wheatley, T., & Gilbert, D. T. (2000) Unpublished raw data. University of Virginia.
- Wilson, T. D., Wheatley, T., Meyers, J., Gilbert, D. T., & Axson, D. (2000) Focalism: a source of durability bias in affective forecasting, *Journal of Personality and Social Psychology*, 78, 821--36.

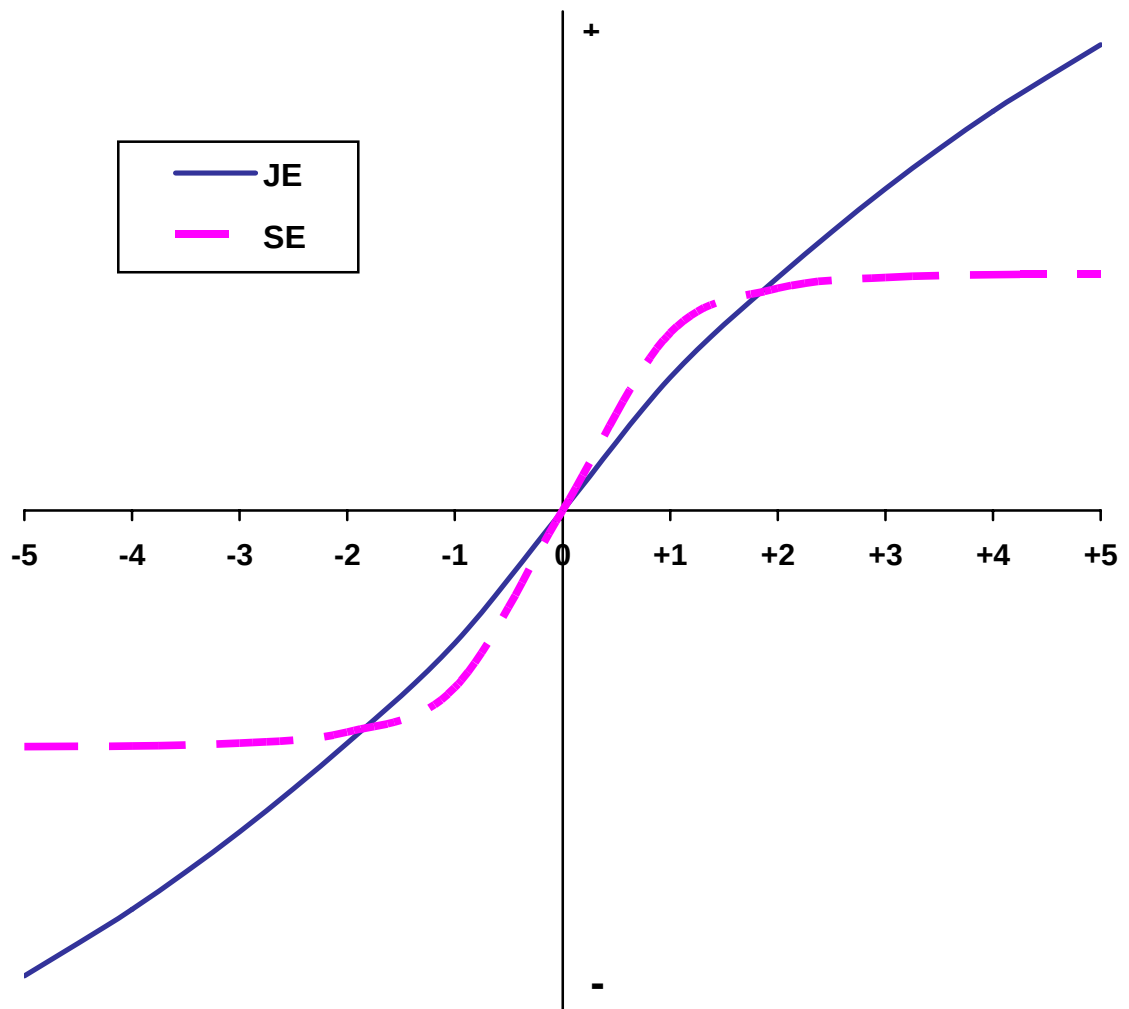


Figure 1. The “utility” (evaluation) function of an attribute can differ systematically depending on whether utility is elicited in joint evaluation (JE) or in separate evaluation (SE).