

Lay Rationalism and Inconsistency between Predicted Experience and Decision

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ABSTRACT

Decision-makers are sometimes depicted as impulsive and overly influenced by 'hot', affective factors. The present research suggests that decision-makers may be too 'cold' and overly focus on rationalistic attributes, such as economic values, quantitative specifications, and functions. In support of this proposition, we find a systematic inconsistency between predicted experience and decision. That is, people are more likely to favor a rationalistically-superior option when they make a decision than when they predict experience. We discuss how this work contributes to research on predicted and decision utilities; we also discuss when decision-makers overweight hot factors and when they overweight cold factors. Copyright © 2003 John Wiley & Sons, Ltd.

KEY WORDS rationale; rationalism; rule; decision utility; experienced utility; predicted utility; consumption experience; inconsistency; preference reversal

Traditional decision theorists assume that when choosing between options that have the same costs, decision-makers analyze which option will deliver the highest expected outcome utility and choose that option. This is a consequentialist utility analysis approach. In reality, people rarely base their decisions strictly on this approach.

In recent years, behavioral decision theorists have proposed that choices are often driven by decision-makers' affect toward the choice options (e.g. Frederick, 2002; Hsee & Rottenstreich, 2002; Kahneman, Schkade, & Sunstein, 1998; Loewenstein, 1996; Loewenstein et al., 2001; Rottenstreich & Hsee, 2001; Slovic et al., 2002), and that such affect-driven decisions often lead to different choices than the consequentialist utility analysis would prescribe. For example, when choosing between two equally expensive computers, one with a faster processor and the other having a more appealing color, decision-makers may focus more on the color of the computers than warranted by a careful consequentialist utility analysis. It appears that decisions are not 'cold' enough.

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In the present research, we suggest that decisions may be too ‘cold’. Decision-makers may give too much weight to ‘rationalistic’ factors by the consequentialist benchmark. Rationalistic factors are attributes, such as economic value, size, quantity, numerical specifications, and functions.¹ At the end of the article, we will discuss when people overweight rationalistic attributes and when they underweight these attributes, and how to reconcile the present research with research on affect-driven and impulsive decisions. For the time being, we will elaborate on our theory and show that it is possible for decisions to be too cold.

Our research focuses on situations where the choice options have a well-defined consumption period, are predicted to induce different experiences during the consumption period, and do not have any other consequentialist differences (such as differences in future costs or benefits). In such situations, the consequentialist utility analysis is reduced to a prediction of which option will deliver the best experience during the consumption period. According to this analysis, the decision-maker should consider an attribute only to the extent that it affects predicted consumption experience. In other words, the decision-makers should predict which option will bring the best consumption experience and base their decision strictly on their prediction. If people indeed resort to this consequentialist analysis, there should be no inconsistency between predicted experience and decision.

In reality, decision-makers may not spontaneously make such predictions, and even if they do, they may not strictly base their decisions on such predictions. We propose that decision-makers have a tendency to resist affective influence, and to rely on rationalistic attributes to make their decisions. We refer to this tendency as *lay rationalism*. Specifically, if one group of people are asked to predict which option in a choice set will bring the best consumption experience and another group of people are asked to indicate which option they will choose, there may be a *predicted-experience-versus-decision inconsistency*, and the inconsistency will be in a systematic direction: Decision-makers give more weight to rationalistic attributes than do experience-predictors.

The remainder of the article is organized as follows. In the next three sections, we identify and study three specific manifestations of lay rationalism: (a) lay economism (focus on economic values), (b) lay scientism (focus on hard rather than soft attributes), and (c) lay functionalism (focus on main function or objective). Table 1 summarizes the general theme of this article, and the three specific manifestations.

In each section, we will present evidence for predicted-experience-versus-decision inconsistencies. Then we discuss the significance and potential problems of using predicted-experience-versus-decision

Table 1. A summary of the main propositions

		Decision-makers tend to focus on the following factors:	Decision-makers tend to downplay the following factors:
General thesis	Lay rationalism	Rationalistic factors	Hedonistic factors
Specific manifestations	Lay economism	Total/absolute economic payoff	Factors unrelated to total or absolute economic value but still important for consumption experience, such as trend, social comparison, etc.
	Lay scientism	Hard (objective and unequivocal) attributes	Soft (subjective and malleable) attributes
	Lay functionalism	Primary function or primary objective	Factors unrelated to primary function or objective but still important for consumption experience

¹‘Rationalistic’ does not mean ‘rational’. The word ‘rational’ is loaded with too many interpretations and we avoid using this word in this article.

inconsistency to study lay rationalism, and suggest alternative methods. We also review the relevant literature and discuss the relationship between our notion of lay rationalism and the literature on rule-based and reason-based choice. We conclude with an integrative framework that reconciles the present research and research on affective and impulsive decisions.

LAY ECONOMISM

Lay economism urges decision-makers to focus on economic calculus and choose the option that entails the greatest (perceived) economic gains. Some attributes are more central to economic calculus than others. For example, the size and the price of a pizza are more central to economic calculus than its shape, color, or taste. Lay economism implies that when the choice options involve a tradeoff between an attribute central to economic calculus and another attribute less central to economic calculus but still important for consumption experience, people will assign more weight to the attribute central to economic calculus in their decision than in their prediction of consumption experience.

This effect has been explored in a study reported in Hsee (1999). Research participants were asked to imagine that they could receive a piece of chocolate as the prize for winning a lottery and could choose either a smaller and less expensive (0.5 oz/\$0.50) chocolate which was in the shape of a heart, or a larger and more expensive (2 oz/\$2.00) chocolate which was in the shape of a cockroach. A predicted-experience-versus-decision inconsistency emerged: When asked to predict which chocolate they would enjoy more eating, most respondents favored the heart-shaped one, but when asked which one they would choose, most picked the roach-shaped one. We interpret these results as evidence for lay economism.

In this section, we report two other studies. Each examines an instance of lay economism. The first study examines the tendency to focus on absolute economic gains over temporal comparisons. The second study examines the tendency to focus on absolute economic gains over social comparisons.

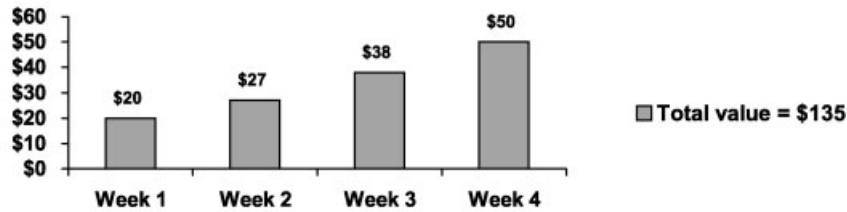
Dinner set study

Respondents (143 students from a midwestern university in the USA) were asked to imagine that they had won a sweepstake and could choose one of two prizes, each entitling them to a set of four free dinners. The recipient could consume only one free dinner in each of the following four weeks. Each prize specified the monetary values of the dinners they could have and the sequence in which they had to consume these dinners in the following four weeks. These specifications were conveyed through the graphs reproduced on the next page.

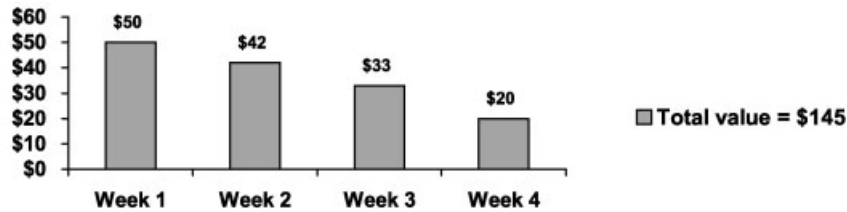
Note that the values of individual meals were increasing in Prize A and decreasing in Prize B, but the total value was lower in Prize A than in Prize B. Half of the respondents were asked to predict which set of dinners they would enjoy more in the next four weeks, and the other half were asked to indicate which set they would choose.

From the consequentialist utility-analysis perspective, both the total value of the dinners and their temporal sequence are valid cues to predict the enjoyment of these dinners. Specifically, expensive dinners are usually more enjoyable than inexpensive dinners, and improving sequence is usually more enjoyable than decreasing sequences (e.g. Ariely, 1998; Hsee & Abelson, 1991; Kahneman et al., 1993; Loewenstein & Prelec, 1993). Therefore, from the consequentialist perspective, people should use both of these attributes to predict the enjoyment of each dinner set and choose the one with the greater predicted overall enjoyment. There should be no predicted-experience-versus-decision inconsistency. However, we expected an inconsistency. Because total value is central to economic calculus and temporal sequence is not, we expected that the respondents would give more weight to the total-value attribute in their decision than in their prediction of consumption experience. The results confirmed our expectation. Of the respondents asked to predict enjoyment, only 32% favored the descending, more-expensive option (B). But of the respondents asked to choose one set of dinners, 51% opted for that option ($\chi^2(1, N = 143) = 5.30, p = 0.024$).

PRIZE A:



PRIZE B:



Office study

Like temporal sequence, social comparison (i.e. whether one gets more or less than a similar other) also plays an important role in people's experience. However, just as decision-makers emphasize absolute economic gains over temporal patterns, decision-makers emphasize absolute economic gains over social comparisons. Specifically, suppose that people are faced with two options, one superior on absolute payoff to oneself, and the other superior on the relative payoff between self and others. Compared to what people predict would bring the better experience, people will be more likely to choose the option superior on absolute payoff.

This effect was originally demonstrated in a study by Tversky and Griffin (1991). Participants evaluated hypothetical job offers from two companies. One company offered them more money (\$35,000) but offered their colleagues even more (\$38,000). The other company offered them less salary (\$33,000) but offered their colleagues even less (\$30,000). When asked to predict feelings, most predicted greater happiness by working at the lower-paying job. But when asked to make a decision, most opted for the higher-paying job.

We interpret these results as evidence for lay economism in decision making. However, these results are susceptible to an alternative explanation: The perceptions of fairness only affected one's feelings at the job, but the money earned from the job could be used long after one left the job. In feeling-predictions respondents were only asked about their feelings at the job, but in decisions respondents may have taken a longer-term perspective.

This kind of alternative explanation is difficult to eliminate altogether in research on predicted-experience-versus-decision inconsistency. Whenever an inconsistency is observed, a critic may always say that the options entail other consequentialist differences than predicted experiences. In this research we try our best to avoid this criticism by using stimuli that do not have other consequentialist differences beyond a specified period. The following study is a replication of Tversky and Griffin (1991) in a context with this intention in mind.

Participants (116 students from a southern university and a midwestern university in the USA) were asked to imagine that they planned to work for one year before returning to college and had received two offers,

which were identical in compensation and workload. The only differences were in office size. The participants read:

Company A gives you a small (100 sq ft) office, and gives another employee (who has similar qualifications to you) an equally small office. Company B gives you a medium size (170 sq ft) office but gives another employee (who has similar qualifications to you) a large (240 sq ft) office.

Notice that unlike income from salary, which could be used after one leaves the job, the size of one's office can only be enjoyed at work, and has the same 'consumption period' as the fairness attribute (colleague's office size). Even so, we replicated Tversky and Griffin's (1991) predicted-experience-versus-decision inconsistency. Of the respondents in the prediction condition, only 34% predicted greater happiness in Company B (with medium office for self and larger office for others), but of the respondents in the decision condition, 57% chose to work at that company ($\chi^2(1, N = 116) = 6.46, p = 0.011$). Although an office is not money, it reflects a tangible material benefit, like salary and prize, and is in this sense an economic gain. Therefore the result of this study supports lay economism.

Discussion of lay economism

Lay economism represents a tendency in decision-makers to act like a lay economist—to focus on economic calculus, to compare options in terms of economic gains and losses, and to downplay other experience-inducing factors, such as temporal trends and social comparisons. Ironically, what a lay economist would do may be quite the opposite of what a real economist would recommend. No right-minded real economist would say that one should choose the job with a bigger office if one is not happy, or that one should choose the more expensive, roach-shaped chocolate if one would not enjoy it. The lay economist may well be more concerned with economic gains and losses than what the real economist would recommend.

LAY SCIENTISM

Lay scientism urges decision-makers to base their choice on 'hard attributes' rather than 'soft attributes'. We define hard and soft attributes as follows: When two options differ on a certain attribute, if it is (or perceived to be) objective and unequivocal as to which option is better, then this attribute is a hard attribute. If it is (or perceived to be) subjective and malleable as to which option is better, then it is a soft attribute. For example, the resolution of a digital camera is a hard attribute. *Ceteris paribus*, a 5-megapixel camera is unequivocally better than a 3-megapixel camera. On the other hand, the taste of a coffee is a soft attribute. It is a matter of personal taste whether one likes the taste of one coffee or the taste of another. The distinction between hard and soft attributes is similar, but not identical, to such other distinctions in the literature as quantitative versus qualitative attributes (e.g. Gonzalez-Vallejo, Erev & Wallsten, 1994; Viswanathan & Narayanan, 1994; Yalch & Yalch, 1984), comparable versus enriched attributes (Nowlis & Simonson's, 1997), and search attributes versus experiential attributes (Wright & Lynch, 1995).

Lay scientism implies that people will place more weight on the hard attribute relative to the soft attribute in decision than in prediction of consumption experience. The following study demonstrates this effect.

Stereo study

Respondents (563 students from two midwestern universities, two southern universities and one West Coast university in the USA) were asked to imagine that they were shopping for a stereo system and had narrowed their choices to two equally expensive Sony models. The two models involved a tradeoff between sound richness and power.

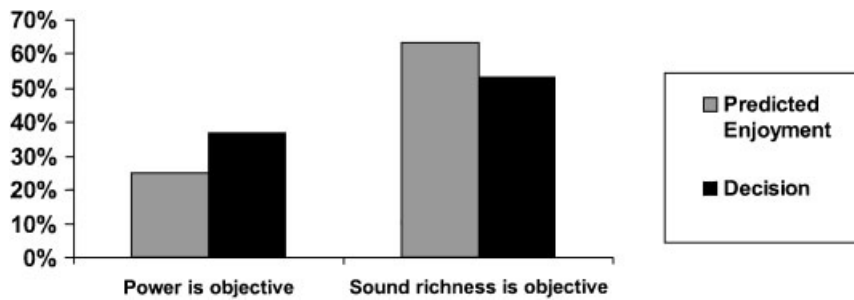


Figure 1. Percentages of respondents favoring the more powerful model

To half of the respondents, sound richness was described as a subject (soft) attribute and power as a objective (hard) attribute. The respondents read,

You listened to both models. You found Sony A's sound richer than Sony B's, and personally you liked Sony A's rich sound. However, Sony B is much more powerful than Sony A: Sony B has 150 watts/channel whereas Sony A has only 50 watts/channel. The power of a stereo is an objective measure. In contrast, whether the sound of a stereo is rich or not is purely subjective.

To the other half of the respondents, sound richness was described as a objective (hard) attribute and power as a subject (soft) attribute. The respondents read,

On a certain scale (where greater numbers indicate richer sound), Sony A is rated 150, whereas Sony B is rated only 50. However, you listened to both models. You found Sony B's sound 'more powerful' than Sony A's, and personally you liked Sony B's powerful sound. The sound richness rating is an objective measure. In contrast, whether a stereo sounds powerful or not is purely subjective.

We expected an inconsistency between predicted enjoyment and decision in both conditions, but in opposite directions. Indeed, in the condition where power was the hard attribute, more people favored the more-powerful model in decision than in enjoyment-prediction. In the condition where sound richness was the hard attribute, fewer people favored the more-powerful model in decision than in predicted enjoyment (see Figure 1). An analysis combining both conditions reveals a significant 2 (whether power or sound richness was the hard attribute) \times 2 (prediction vs. decision) interaction effect ($\chi^2(1, N = 563) = 5.83, p = 0.016$).

Discussion of lay scientism

Lay scientism reflects the tendency in decision-makers to trust hard facts and discount soft preferences. There are two related underlying reasons for this tendency. First, making a decision on the basis of a hard attribute seems more objective and scientific, and hence more justifiable. Second, there is greater certainty in the relative desirability of the choice options on the hard attribute than on the soft attribute; therefore it is safer to base the decision on the hard attribute.

LAY FUNCTIONALISM

Lay functionalism urges decision-makers to focus on the primary objective or function of the choice options and not to be distracted by factors unrelated to the primary objective or function even if they are still important for consumption experience. For example, the primary objective for going to school is to get an education. Thus, if a student is admitted by two schools, one providing a better education (e.g., Yale) and the other located in a more attractive city (e.g., Hawaii), lay functionalism would advise the student to attend the

school that provides the better education. Likewise, the primary function of a pain reliever is to relieve pain. Thus, if a patient has the choice of a more effective pain-reliever that tastes bitter or a less effective pain-reliever that tastes sweet, lay functionalism would advise the patient to choose the more effective pain reliever. In these situations, lay functionalism seems quite right. Indeed, lay functionalism is often taught by parents to their children, and by teachers to their students.

However, in many other situations, choice options may involve attributes that are unrelated to the primary objective or function but are nevertheless very important to the overall consumption experience. In these situations, lay functionalism may lead decision-makers to underweight these attributes. The following studies demonstrate this effect.

Television study

Respondents (94 students from a midwestern university in the USA) were asked to imagine that they were shopping for a television on the internet and were interested in two models which were equally large and equally expensive. They were also told that:

A reliable consumer survey company has rated those TVs on two attributes (picture quality and sound quality) on a scale from 40 (poor) to 100 (perfect). Their ratings are as follows:

	Picture quality	Sound quality
Model A	85	90
Model B	90	75

Presumably, in purchasing a TV, having good picture quality is a more important objective than having good sound quality. This assumption was verified in a pre-test where 100% of the 25 respondents considered picture quality as more important than sound quality in purchasing a TV.

From the consequentialist utility-analysis perspective, buyers should base their choice on their prediction of which TV will deliver the better overall consumption experience. However, we expected that people would weigh picture quality more in decision than in prediction of consumption experience, hence exhibit a predicted-experience-versus-decision inconsistency. The results confirmed the prediction. When asked to predict which TV they would enjoy more when using it, only 24% of the respondents picked Model B (the one with the better picture quality), but when asked to make a purchase decision, 45% of the respondents chose Model B ($\chi^2(1, N = 94) = 4.31, p = 0.038$).²

Castle-village study

This is a replication of the TV study with the priority of objectives empirically manipulated. Respondents (116 students from a midwestern university in the USA) were asked to imagine they were choosing between two bus tours in Austria, which would take them to see a village and a castle. Half of the respondents were told that their primary objective in joining the tour was to see a castle and the other half were told that their primary objective was to see a village. In the castle-as-primary-objective condition, the expected qualities of the two bus tours, in terms of an informed friend's ratings on 1 (worst) to 10 (best) scales, are as follows:

	Castle	Village
Tour A	6	9
Tour B	8	4

²The reader may wonder why only 24% of the respondents expected greater enjoyment from the better-picture model. That is because the better-picture model was only slightly better in picture (90 versus 85 on the 100-point scale) than the better-sound model, but the better-sound model was considerably better in sound (90 versus 75 on the 100-point scale) than the better-picture model.

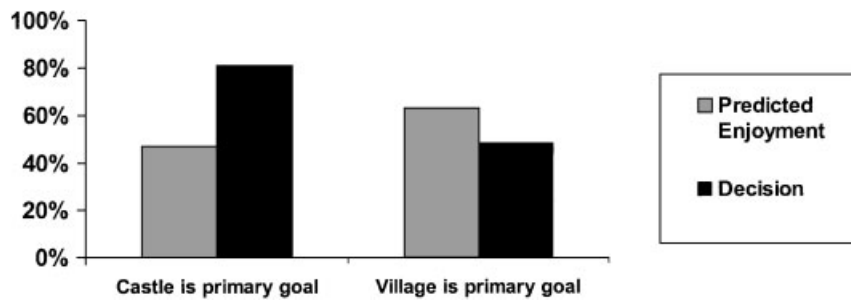


Figure 2. Percentages of respondents favoring the better castle tour

The village-as-primary-goal condition was identical to the castle-as-primary-goal condition except that participants were told that their primary goal was to see the village and the labels of castle and village in the display above were swapped.

As predicted, in both conditions the option better serving the primary goal was favored more in decision than in predicted enjoyment. Specifically, in the castle-as-primary-goal condition, more people favored the better-castle tour in decision than in predicted enjoyment, but in the village-as-primary-goal condition, fewer people favored the better-castle tour in decision than in predicted enjoyment (see Figure 2). When combined, the two conditions yield a significant interaction between objective (castle versus village) and response (predicted enjoyment versus decision) ($\chi^2(1, N = 116) = 7.53, p = 0.006$).

Check study

A variation of lay functionalism is the belief that in making decisions one should adopt the most efficient path to achieve the main objective and not be distracted by process-related considerations. This study illustrates this effect.

Respondents (136 students from a midwestern university in the USA) were asked to assume that they had won \$1000 in a lottery conducted by Marshall Field's (a local department store) and that they could-choose one of two ways to receive the money:

- A. You go to Marshall Field's in downtown. They will give you a beautifully-printed check of \$1000, with your name printed on it. You then deposit the check in your bank.
- B. Marshall Field's will directly wire the money to your bank. You don't get to see the check.

Presumably the primary objective of the decision-maker is to get the money. In respect to this objective, Method B is the more efficient option, although Method A yields more incidental pleasures from seeing the check. This assumption was verified in a pre-test where we asked 46 respondents whether seeing the check or efficiency in getting the money was more important to them in this scenario, and 76% of the respondents considered efficiency more important.

Of the respondents asked to predict whether they would feel happier if Method A was used or if Method B was used, only 46% predicted greater happiness if Method B (the more efficient method) was used. Of the respondents asked to choose one method, a significantly higher percentage—63%—picked B ($\chi^2(1, N = 136) = 4.27, p = 0.039$).

Discussion of lay functionalism and its relationship with lay economism and scientism

Lay functionalism represents a tendency in decision-makers to be instrumental and functionalist. This tendency may lead decision-makers to underweight factors that are important to their consumption experience, but do not serve to fulfill their main objective. In a recent study, Chitturi, Raghunathan and Mahajan (2003) found that when presented with a more functional cell phone and a better-looking cell phone, consumers often

choose the more functional model, even though they like the better-looking model more and believe that the better-looking model is more expensive. These intriguing findings are consistent with our results.

Although we have presented the three cases of lay rationalism (lay economism, lay scientism and lay functionalism) separately, they may share some inherent relationship. Both lay economism and lay scientism seem to stem from a general desire to base one's decision on things that are 'real'—i.e. substantive, material, and concrete, and not on factors that are ethereal or purely psychological. For example, getting a more expensive meal, getting a bigger office, or getting more wattage feels like a 'real' gain, whereas the preference for a worse-to-better dinner sequence, for a fair treatment, or for a rich sound, seems ethereal and purely psychological. Furthermore, people may also consider substantive gains as more important than psychological experiences. Therefore, lay economism and lay scientism may also be related to lay functionalism. This analysis suggests a hierarchical structure of the three special cases we have discussed within the general rubrics of lay rationalism.

COMMENTS ON PREDICTED-EXPERIENCE-VERSUS-DECISION INCONSISTENCY AND LAY RATIONALISM

So far, a predicted-experience-versus-decision inconsistency has been viewed as a means to demonstrate lay rationalism. In fact, such an inconsistency is important in its own right. In their seminal work, Kahneman and Snell (1990, 1992; Kahneman, 1994) made a distinction among three types of utilities—decision utility (as revealed by one's choice), experienced utility (feelings with the chosen option), and predicted utility (prediction of experienced utility). One of the most important questions for all decision theorists is when decision utility differs from experienced utility, that is, when people fail to choose the option leading to the best experience.

According to Kahneman and Snell (1990, 1992), there are two possible causes. One is an inconsistency between predicted utility and experienced utility. That is, decision-makers may mis-predict their experience and consider a less-enjoyable option more enjoyable. The other is an inconsistency between predicted utility and decision utility. That is, decision-makers may base their choice on factors other than predicted experience.

The last few decades have witnessed a large amount of research on the first type of inconsistency, about predicted and actual experience (e.g. Gilbert, Gill, & Wilson, 2002; Kahneman & Snell, 1990, 1992; Loewenstein & Frederick, 1997; Loewenstein & Schkade, 1998; March, 1978; Schkade & Kahneman, 1998). In contrast, there has been much less research on the second type of inconsistency, about predicted utility and decision utility. The present research, which studies predicted-experience-versus-decision inconsistencies, seeks to fill this gap.

We wish to mention that the predicted-experience-versus-decision inconsistency is not a choice-judgment preference reversal (e.g. Lichtenstein & Slovic, 1971; Slovic & Lichtenstein, 1968). In the choice-judgment preference reversal, choice is a dichotomous selection task and judgment is a numeric rating or value estimation task. In the predicted-experience-versus-decision inconsistency, both the prediction and the decision tasks are dichotomous selections.

Likewise, predicted-experience-versus-decision inconsistency is not a joint-separate evaluation reversal. In a joint-separate evaluation reversal (e.g. Bazerman et al., 1999; Hsee, 1996), joint evaluation requires that two or more choice options are presented simultaneously and separate evaluation requires that only one choice option is presented at a time. In our predicted-experience-versus-decision inconsistency studies, both the prediction and the decision tasks are performed under the joint evaluation mode where the choice options are juxtaposed. Therefore the predicted-experience-versus-decision inconsistency cannot be explained by theories for choice-judgment or joint-separate evaluation preference reversals.

Finally, we wish to suggest that lay rationalism is more likely to influence decisions that are elicited in joint evaluation than decisions elicited in separate evaluation. In separate evaluations, rationalistic attributes,

such as economic value and quantitative specifications, are often difficult to evaluate (see Hsee, 1996; Hsee et al., 1999 for further discussions on evaluability). For example, without a direct comparison, most people would not know how good a mini stereo system is if it has 50 W or if it has 150 W. If one group of people are asked to decide whether they would buy the 50 W model and another group are asked to decide whether they would buy the 150 W model, that is, if the decisions are elicited in separate evaluation, the difference between 50 W and 150 W is unlikely to make a difference. Only in joint evaluation can people recognize the superiority of 150 W over 50 W, and choose the 150 W model. In other words, joint evaluation is a pre-requisite for lay rationalism to influence decisions in this case.

OTHER WAYS TO STUDY LAY RATIONALISM

So far we have used exclusively predicted-experience-versus-decision inconsistency to study lay rationalism. In this section we suggest several other potential methods. One is protocol analysis of what one thinks during the decision making process. However, once learned and internalized, lay rationalism may operate automatically and may not be articulated in thought elicitation.

Another potential method is priming. For example, research participants may be asked to do an ostensibly unrelated task prior to the main decision-making task and asked to envision a rational economist or a hedonist gourmet in the ostensibly unrelated task. If the manipulation has any effect, its direction will be such that the subsequent decision will be more rationalistic after the economist priming. Moreover, we submit that such a priming manipulation will have a greater effect on decision than on predicted experience. Specifically, suppose that one runs a 2 (priming: accountant, gourmet or no priming) \times 2 (response: decision versus predicted experience). Our predictions are that the priming manipulation will have little effect on predicted experience but will have a greater impact on decision, and that the decision will be more consistent with the predicted experience after the gourmet priming than after the economist priming. These predictions reflect our belief that predicted experiences are more stable than decisions.

A third method is to manipulate the need for justification. The notion of lay rationalism resonates with social psychological research showing that people like to make decisions in a way that appears justifiable. The desire for justification is documented when one is making a choice for others (e.g. Kray, 2000; Kray & Gonzales, 1999), and when one is expected to explain one's choice to others (e.g. Tetlock & Boettger, 1989; see Kunda, 1990 and Lerner & Tetlock, 1999, for reviews). The desire for justification is also observed when one is making the choice for oneself and is not expected to explain the choice to others (e.g. Bazerman et al., 1999; Bettman, Luce, & Payne, 1998; Hsee, 1995; Shafir, Simonson, & Tversky, 1993; Simonson, 1989; Soman & Cheema, 2001). Likewise, we expect that even if the need for justification is merely internal, decision-makers will still try to be rationalistic.

We speculate that the need for self-justification arises not only when one makes the decision, but also when one consumes the chosen option, especially if the option turns out to be undesirable. In other words, focusing on rationalistic attributes in decision making is an insurance against *anticipated* need for justification. If the decision-maker bases the choice on rationalist factors, for example, if she bases her choice on a hard attribute, then even if the outcome turns out to be undesirable in the future, she could at least appease herself by saying, 'I made the best choice I could; it was the objectively best option'. If the above speculation is valid, then increasing the anticipated need for self justification should accentuate the desire to resort to rationalistic factors in decision making. In the following study, we illustrate this effect in the case of lay scientism.

Hiring study

Participants (79 students from a midwestern university in the USA) were asked to imagine that they worked for the human resource department of a company and were helping the marketing department to fill a position, which required two equally important qualifications: one-on-one communication skills and math

skills. The respondents then read the following description, which characterized communication skills as a soft attribute and math skills as a hard attribute:

There are two viable candidates. To assess their communication skills, you interviewed them yourself. To assess their math skills, you gave them a math test. In the interviews, you found Candidate A engaging and warm. Her answers were persuasive. Candidate B's answers were also good, but you did not find them as engaging as Candidate A's and you don't know why you had that feeling. As for the math test (highest score = 100), Candidate A scored 85 and Candidate B scored 95.

We manipulated the need for self-justification as follows. In the low-need-for-self-justification condition, respondents were asked to assume 'you will return to school and will leave the company soon. You will probably never find out how well the person you hired performs in the company'. In the high-need-for-self-justification condition, the respondents were asked to imagine, 'you will continue to work in the company and will soon find out how well the person you hired performs. If she does not perform well, you may ask yourself why you hired her instead of the other candidate'. In both conditions, respondents were told that no one else would ask them to justify their decision.

The result reveals a significant difference between the two conditions: In the low-need-for-self-justification condition, only 12% of the respondents chose the better-math candidate, but in the high-need-for-self-justification condition, the percentage rose to 30% ($\chi^2(1, N = 79) = 3.87, p = 0.049$). We interpret this result as evidence for our proposition that decision-makers give more credence to hard attributes when the need to justify their decisions is high than when the need is low.

GENERAL DISCUSSION

Lay rationalism and related literature

Our research is inspired by prior research suggesting that people base their choices on rules and reasons (e.g., March, 1994; Prelec & Herrnstein, 1991; Simonson, 1989; Simonson & Nowlis, 2000) or easy-to-articulate reasons (e.g., Shafir, Simonson, & Tversky, 1993). Examples of such rules and reasons include 'don't waste' (Arkes & Ayton, 1999; Arkes & Blumer, 1985), 'seek variety' (e.g., Simonson, 1990), 'don't buy stocks from obscure companies' (Barber, Heath, & Odean, 2002), 'don't choose the same dish as your friends' (Ariely & Levav, 2000), 'don't pay for delays' (Amir & Ariely, 2002), to name just a few. Sometimes people may choose a rule-consistent option even if they prefer another option. This effect was revealed in a study on variety-seeking (Simonson, 1990). Students were asked either to make candy selections for future consumption occasions or to make predictions for their preferences during those occasions. Those in the selection (decision) condition sought more variety than those in the preference-prediction condition. Our present research extends the existing research by focusing on lay rationalism, identifying its three key manifestations (economism, scientism and functionalism), and documenting systematic inconsistencies between predicted and decision utilities.

Our notion of lay economism is also influenced by Thaler's (1985, 1999) transaction utility theory. According to Thaler, holding the predicted consumption utility and the current price of a product constant, consumers are more likely to purchase the product with a higher reference price. The reference price of a product may be its list price, perceived market price, etc. In essence, the transaction utility theory suggests that one's purchase decision is influenced not only by the predicted consumption utility of the product, but also by the perceived economic gains or losses in the purchase. Indeed, purchasing something below its reference price is like achieving an economic gain, and purchasing something above its reference price is like suffering an economic loss. The present research on lay economism extends Thaler's original theory by showing that the pursuit of transaction utility is not limited to purchase decisions, and can engender a predicted-experience-versus-decision inconsistency.

Another line of research that has inspired ours, especially our lay functionalism notion, is Tversky, Sattath and Griffin's (1988)'s work on prominence. The prominence effect refers to the phenomenon that people assign more weight to the most important attribute of choice options when they are asked to make a choice (the choice condition) than when they are asked to fill in a missing attribute value in one of the options so that these options would appear equally attractive (the matching condition). There are at least two explanations for this phenomenon. One is compatibility (e.g., Fischer et al., 1999; Fischer & Hawkins, 1993; Nowlis & Simonson, 1997; Tversky et al., 1988). This explanation is not germane to our research, because it requires one condition to involve a comparative response and the other condition a non-comparative response, but in our research both the decision and the predicted-experience conditions involve comparative, choice responses. The other explanation is justification. According to Tversky et al. (1988), to base a decision on the most important attribute 'provides a compelling argument for choice that can be used to justify the decision to oneself as well as to others' (p. 372). In this sense, lay functionalism and prominence reflect the same underlying principle.

Our notion of lay scientism may also underline the medium effect. When people make efforts, they often receive a 'medium' (e.g., points or money), which they could trade for a desired outcome. Hsee et al. (2003) found that when choosing between options which award a medium, people would base their decision on the face value of the medium rather than strictly on the desirability of the outcomes. Hsee et al. explain this effect in terms of psychological myopia, a tendency to focus on the immediate reward. Another potential contributor to the medium effect is lay scientism, a tendency to focus on hard attributes. Typically, the desirability of the final outcome is ambiguous but the amount of media (e.g. number of points) is clear.

A main theme of the present research is that decision-makers underweight hot factors and overweight cold factors by the consequentialist utility analysis benchmark. This theme echoes the celebrated work by Wilson and his colleagues. These authors found that people asked to analyze reasons before making a decision are less likely to choose the option they will like later on than people not asked to analyze reasons (e.g. Wilson et al., 1989; Wilson, Hodges, & LaFleur, 1995; Wilson & Schooler, 1991). According to Wilson et al., analyzing reasons focuses the decision-maker's attention on easy-to-articulate features of the choice options and away from less easy-to-articulate feelings. The present research extends Wilson et al.'s research in two directions. First, the current research shows that even if they are not explicitly asked to analyze reasons, people may still choose options that are rationalistic but inconsistent with predicted preferences; it suggests that seeking rationalism in decision making is a spontaneous and automatic process. Moreover, the present research not only posits that decision-makers focus on rationalistic attributes, but also identifies three specific classes of rationalistic attributes.

When decisions are too hot and when they are too cold

Predicted-experience-versus-decision inconsistency implies that by the standard of the consequentialist utility analysis, decision-makers focus too much on cold factors, such as quantity, money and goals, and too little on hot factors, such as feelings and experiences. This portrait of decision-makers seems at odds with the existing literature on affect-driven decisions (e.g. Hsee & Kunreuther, 2000; Slovic et al., 2002). Some research even portrays the decision-makers as myopic, impulsive, or ignorant of important cold considerations (Bazerman et al., 1999; Loewenstein, 1996; Schelling, 1984; Thaler & Shefrin, 1981).

How can we reconcile these two apparently contradictory models? We propose that the relative validity of the two models depends on the nature of the situation. Imagine two types of situations, A and B, each involving a tradeoff between a cold attribute and a hot attribute. In Type A situations, the cold attribute produces other and longer-term consequences than its effect on one's experience during a given consumption period. In Type B situations, both the cold and the hot attributes only affect one's experience during the consumption period. From the consequentialist utility-analysis perspective, decision-makers should give more weight to the cold attribute in Type A situations than in Type B situations. In reality, most people do not sufficiently

distinguish these two types of situations. Although people may indeed give more weight to the cold attribute in Type A situations than in Type B situations, they may not do so enough. As a result, in Type A situations people may still underweight the cold attribute and in Type B situations they may still overweight the cold attribute.

To appreciate our distinction between Type A and Type B situations, let us consider the following two scenarios:

Type A: A person, who loves apples, especially juicy apples, wins a basket of apples as a free gift at a farm fair. He is given two baskets to choose from. One contains five juicy-looking apples and the other contains twenty not very juicy-looking apples. Whichever basket he chooses, he may eat the apples in the basket while he is at the fair or bring them home.

Type B: The same as Scenario A, except that he may only eat the apples while he is at the fair and is not allowed to bring home any remaining apples.

From a consequentialist utility-analysis perspective, the apple-lover should give the cold attribute—quantity of apples—more weight in Type A Scenario than in Type B Scenario. In reality, he may not sufficiently distinguish these two scenarios. Although he may indeed give more weight to quantity in Type A Scenario than in Type B Scenario, he may not do so enough. As a result, compared to what the consequentialist utility-analysis would recommend, the apple-lover may still underweight quantity in Type A Scenario and overweight quantity in Type B Scenario.

Previous research on affect-driven and impulsive decisions mainly concerns Type A situations. The present research mainly concerns Type B situations.

The idea that people do not sufficiently distinguish Type A and Type B situations is consistent with Klayman and Brown's (1993) assertion that rules and heuristics are adapted but not easily adaptable. We believe that lay rationalism is developed to contain affect in Type A situations but they are overgeneralized and used even in Type B situations. This view also echoes Arkes and Ayton's (1999) proposition regarding the sunk-cost fallacy. They argue that the sunk-cost fallacy is a result of overgeneralizing the 'don't waste' rule from situations where past investments predict future benefits to situations where past investments do not predict future benefits.

Obviously, we are not merely interested in apple choices. The reason we analyze these situations is that they exemplify important real-life decisions. Consider two stylized examples. In the first, a high school graduate, who does not have much savings and needs money to go to college, is choosing between two short-term jobs: one pays more (a cold attribute) and the other is more enjoyable (a hot attribute). In the second example, a middle-aged person, who has enough savings to live comfortably for the rest of her life and is not interested in giving anybody else her money, is choosing between two life-long jobs. Again, one job pays more and the other is more enjoyable. Of the two examples, the first resembles a Type A situation, and the second resembles a Type B situation. From the consequentialist perspective, the person in the first example should pay more attention to the financial aspect of the job offers, and the person in the second example should give more consideration to the enjoyment aspect of the job offers. In reality, although people may do so, they probably do not do so enough. As a result, young and financially-needer people do not earn as much as they should and older and financially more secure people do not allow themselves as much enjoyment as they could.

Utility about consequence and utility about decision

We have argued throughout this article that decisions can be too rationalistic and cold. However, making a rationalistic decision may itself engender a pleasure; that is, a cold decision may itself create a hot feeling. For example, if a person chooses the option with the greatest economic gain, he may feel happy about the choice *per se*. A number of behavioral decision theories (e.g. Loewenstein et al., 2001; Luce et al., 1999;

Mellers et al., 1997; Mellers, Schwartz, & Ritov, 1999; Thaler, 1985) have proposed a distinction between two types of utilities in decision making. One is about the consequence of the decision; the other is about the process of decision. Consumption utility is about the consequence of the decision, and the utility from making a rationalistic decision is about the process of decision. To say that a decision is too cold or rationalistic is only from the consequentialist perspective, that is, only in comparison with (predicted) *consumption* utility. Ultimately, whether it is a mistake to choose a rationalist option that does not produce the highest consumption utility depends on how much utility one derives from making such a choice and whether it compensates the loss in consumption utility.

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