'*How* Do I Choose Thee? Let me Count the Ways': A Textual Analysis of Similarities and Differences in Modes of Decision-making in China and the United States

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ABSTRACT   This paper investigates the effect of decision-makers' *culture* on their implicit choice of how to make decisions. In a content analysis of major decisions described in American and Chinese twentieth-century novels, we test a series of hypotheses based on prior theoretical and empirical investigations of cross-cultural variation in human motivation and decision processes. The data show a striking degree of cultural *similarity* in the relationships between decision content, situational characteristics and the decision mode(s) employed, but also support several hypotheses about cultural differences. As predicted, Chinese decision-makers more frequently used role-based logic (a form of recognition-based decision-making) to arrive at decisions, by virtue of their greater awareness of and need for relational obligations. The hypothesis (based on conjectures about Chinese thinking style and personality differences) that Chinese decision-makers would show more rule- and case-based decision-making (two other variants of recognition-based decision-making) than decision-makers in American novels was also supported. After controlling for other predictor variables, there also was support for the hypothesis (based on comparative analyses of Chinese and Western philosophy) that analytic modes which base decisions on the calculation of best consequences would be used less frequently by Chinese decision-makers. There was no evidence of greater prevention focus in Chinese decisions. These and other observed cultural similarities and differences in the dynamics of decision mode selection have implications for the study and practice of decision-making in managerial settings.

Actions taken by an organization are frequently the direct consequence of a decision made by one or more of its managers. Line managers decide to initiate discussion about a new product to be added to the company's offerings. Top-level management teams choose between two mutually exclusive capital investment initiatives. Human resource managers select the subset of employees in a depart-

ment that will be laid off as the result of the CEO's decision to downsize the company. Managerial decisions involve considerations on different outcome dimensions (e.g. finances, ethics) and differ on more abstract dimensions, such as their importance, time urgency, degree of risk or uncertainty and potential for interpersonal conflict. Decision-makers differ on demographic dimensions such as age, gender and ethnicity, and on personality dimensions. How do variables like personality, time pressure or decision topic affect how decisions are made? And how should different ways of making decisions be characterized?

Behavioural decision research over the past two decades has shown that people arrive at decisions in qualitatively different ways; that is, they use decision modes that employ very different cognitive and affective processes. Analytic strategies, which include both prescriptive and heuristic versions of cost-benefit based decision-making, have received the vast majority of attention from both theoreticians and empirical researchers within the traditional decision sciences. The management literature has been more eclectic and inclusive in its consideration of potential decision processes (see, for example, Janis and Mann, 1977; March, 1994, 1997; O'Connor, 1997; Shapira, 1997; Zhou, 1997). A comprehensive taxonomy of decision modes and a model that attempts to predict 'when who will choose how and why' has, however, not been proposed there either. In this paper, we develop such a model that incorporates the effects of culture on decision mode selection and apply it to decisions featured in US and Chinese novels. In contrast to the notion that decision mode usage is simply a matter of personality or culture, we adopt a functional approach and find systematic main effects of and interactions between factors that include the content and other characteristics of decisions and culture. Our results validate our characterization of different modes of making decisions and highlight important cultural and universal effects on 'when who chooses how and why'.

WHY STUDY DECISION MODE SELECTION?

Investigations of *how* people make decisions and how they (implicitly) decide to decide are important for three reasons. First, the process by which a decision is made often determines its outcome. While different ways of making a decision may result in the same choice (which then is made with high confidence), we become aware of the existence of different decision modes when they generate different choice recommendations. In the lay-off decision above, the human resource manager may arrive at a quick, gut-feeling mediated selection of employees (using an affect-based decision mode), which may however be internally vetoed as the manager goes over the list of employees in an analytic mode, considering the pros and cons of laying off each one in an explicit and compensatory fashion. Which decision mode is attended to most[1] and gets greater weight will determine the outcome of the decision. Second, knowledge of how a decision is made is

crucial if we want to aid or intervene in the decision, as intervention will be successful to the extent that it modifies the decision processes naturally employed by the decision-maker. Lastly, there is evidence that people are aware of the decision mode they and others use to make decisions, and that they use this information to judge the appropriateness of the decision process (especially in organizational settings) and to make inferences about the intentions of others based on their perceived decision mode usage (Ames, Flynn and Weber, 2004). If people use decision modes as a diagnostic cue, researchers ought to know more about how and why decision modes are selected.

Taxonomy of Decision Modes

Weber (1998) distinguished the following decision modes:

(a) In *calculation-based decision making*, the evaluation and combination of probability and outcome information are central processes. People somehow calculate the value of choice options and choose the option that maximizes (expected or multi-attribute) benefits, while minimizing costs (Payne, Bettman and Johnson, 1993). Outcome and likelihood evaluation and combination may either obey optimal prescriptive algorithms or use heuristic shortcuts, but the basic process is one of decomposition of choice alternatives, evaluation of outcome components and their integration to determine which choice alternative provides the best value.

(b) In *recognition-based decision-making*, the central cognitive activity is not evaluation and calculation, but recognition and classification. The decision-maker recognizes the decision situation as a member of a category for which a best action is known (Simon, 1990). As soon as the decision situation has been classified, an if–then rule is activated which dictates the behaviour or choice. There are several special cases of recognition-based decision-making. (i) In *rule-based* decisions, the decision-maker has stored an explicit rule that dictates choice behaviour for specific types of situation. Examples include the rule of a recovering alcoholic never to accept any alcoholic beverage, or an auditor's rule never to accept any gift from a client. At the individual level, decisions that are approached in an explicitly and consciously rule-based fashion often involve self-control issues (Prelec and Herrnstein, 1991). At the organizational level, decisions for which rules or standard-operating-procedures are invoked often involve conflicts of interest. (ii) In *case-based decisions*, a decision mode typically found among experts in a substantive domain (e.g. senior financial analysts or chess grand masters), the presenting decision problem evokes memory of similar situations that have been seen and solved in the past, i.e. an implicit rule that derives from past experience is activated by analogical classification. The case-study method

employed by many professional schools, including law and business schools, is based on the assumption that past solutions can beneficially be transferred to similar new situations. Domain expertise consists of a rich and representative store of problem situations and their solutions, as well as the ability to quickly and correctly identify the most appropriate classification for a new problem situation. (iii) In *role-based decision-making*, the decision situation primes a social role held by the decision-maker, which in turn is associated with rules of conduct that prescribe behaviour and choice (March, 1994). Examples include the decision of an executive assistant to interrupt another, potentially more interesting activity when summoned by his commanding executive, or the decision of a doctor to stop at the site of a roadside accident to offer medical assistance even though this will make her late for an important business appointment. Role-based decisions are made by the implicit and automatic activation of a role-related code of conduct, not as the result of a weighing of pros and cons of different actions. The inculcation of role-related behavioral norms and use of role-based decision-making can be seen as society's way of preventing individuals from using a calculation-based mode which would lead them towards acting in their personal best interest, when self-interest may run contrary to the collective interest. March (1994) argues that the process of making a decision in a role-based fashion is intrinsically reinforcing. Activation of a role-related behavioural norm reminds us of our social identity, from which we, as social animals, derive comfort.

(c) In *affect-based decision-making*, people base their decision on their immediate, holistic, affective reaction to different choice alternatives, with affect-guided approach and avoidance reactions as the primary decision process (Damasio, 1993; Epstein, 1994; Hsee and Kunreuther, 1998; Loewenstein, Weber, Hsee and Welch 2001). Examples of decisions made in an affect-based mode are liking-based hiring decisions or anger-based firing decisions. While cognitive appraisal theory (Ellsworth, 1994; Lazarus, 1991) differentiates affective reactions along a range of dimensions that go beyond simple valence, the distinction between positive affect (resulting in approach) and negative affect (resulting in avoidance) usually suffices for purposes of predicting affect-based choice.

Implicit and Contingent Selection of Decision Mode(s)

Weber (1998) hypothesized that qualitatively different modes of making decisions coexist because they serve different functions. In particular, they allow the decision-maker to satisfy different needs or realize different objectives. Taxonomies of human motivation – whether from psychology (Hilgard, 1987; Murray, 1938), philosophy (Habermas, 1972), or sociology (M. Weber, 1919) – suggest that human

needs are multifaceted and far broader than portrayed in the caricature of *homo economicus* – rational economic man (or woman) who cares only to maximize his or her own material needs in an instrumental and calculating fashion, without concern or empathy for others. While material needs are important, other classes of needs also play important roles. Social needs, for example, include both affiliation (wanting to belong) and individuation (asserting one's autonomy and uniqueness). If calculation-based decision-making is best suited to satisfy material needs; role-based decision-making is a way of filling affiliative needs, since a decision that follows the rules or norms associated with a social role reaffirms the decision-maker's social identity. Affect-based decision-making is a way of filling needs of individualistic self-assertion, i.e. a way of affirming one's autonomy by doing something simply because one likes to, without any need to analyse or justify the decision to others or even to oneself (Weber and Lindemann, 2002). The perceived need to justify one's decisions to others (Tetlock, 1992), on the other hand, may predispose the decision-maker to choose in a recognition-and-rule based mode, using a socially endorsed rule of conduct that will provide legitimacy to the decision. When individual or cultural history differentially emphasizes the validity and importance of components in this portfolio of needs, a functional explanation of decision mode selection would predict corresponding differences in the frequency of the decision modes hypothesized to contribute to the attainment of these needs. A functional framework can also explain observed relationships between decision domain (e.g. work-related or personal decisions) and decision mode selection, since the relative importance or salience of different needs is often content-specific (e.g. material needs play a larger role in investment decisions than in dating decisions).

CULTURAL SIMILARITIES AND DIFFERENCES IN DECISION MODE SELECTION

In this paper, we test a series of hypotheses about the functional value of decision modes in a comparative study that takes advantage of long-standing cultural differences in functional factors that are assumed to influence implicit selection of decision modes. While the basic decision mode selection model is assumed to be universal, culture enters into it by shaping the prevalence of factors that influence decision mode selection and in governing how these functional factors translate into mode selection. Prior work suggests that decision content (e.g. ethical or financial choices), situational characteristics (e.g. importance, time pressure) and individual differences in decision motives (e.g. a chronic need for assessment) each have an effect on the mode that is employed (Blais and Weber, 2001; Goldstein and Weber, 1995; Tada and Weber, 1998; Weber and Lindemann, 2002). These determinants of mode selection vary between cultures. Some cultures may engender more ethical decision episodes while others present more instrumental decisions. Some cultures may put decision-makers under greater time pressure. Some cul-

tures endorse collective goals and group interests while others laud individualistic goals and motives.

We define culture as the set of long-standing values, attitudes, beliefs, social structures and institutions which have been shaped by local conditions that include geography, climate, history, economics and politics as a way of coping with these conditions. Culture has been found to influence psychological processes that range from optical illusions (e.g. Segall, Campbell and Herskovits, 1966) to causal attribution (Morris and Peng, 1994) and the construction of the self (e.g. Markus and Kitayama, 1991). In the area of decision-making, cultural differences have been documented in calibration and overconfidence (Yates, Lee and Bush, 1997) and apparent risk taking (Hsee and Weber, 1999; Weber and Hsee, 1998). Weber and Hsee's (20000) cultural explanation of cross-national differences in risk taking, the cushion hypothesis, hinges on American–Chinese differences in the relative balance struck between individualism and collectivism in social interactions (Triandis, 1989). Individualism emphasizes personal freedom and responsibility; collectivism endorses social relatedness and interdependence. Compared with those in individualistic cultures, members of a socially collectivist society like China will be more likely receive help when needed, i.e. are 'cushioned' when they 'fall'. Collectivism acts as implicit mutual insurance against catastrophic losses. Members of strong social collectives thus, quite accurately, perceive the risk of risky options to be smaller and only appear to take greater risks (Weber and Hsee, 1998).

Cultural Products as Evidence

Establishing the existence of cultural differences has been likened to the creation of a mosaic, where different studies, methods and measures serve as tiles that, in combination, allow the emergence of a convincing picture, even though each single piece of evidence may be subject to alternative explanations (Weber and Hsee, 1999). An important tile in the effort to distinguish longstanding cultural differences from more transient, coincidental differences is the analysis of cultural products. The events and circumstances that – over many generations – create culture-specific values, habits and norms leave their trace in such products as proverbs, literature, philosophy and art (Morris, Menon and Ames, 2001). Weber, Hsee and Sokolowska (1998), for example, provided converging evidence for Weber and Hsee's (1998) cushion hypothesis of cultural differences in risk taking by a comparative content analysis of proverbs. American proverbs were found to be more applicable to financial-risk decisions than to social-risk decisions, whereas Chinese proverbs were more equally applicable to the two domains. The proverbs produced by these two cultures over time reflected the fact that social concerns rate equal to financial or materialistic concerns in collectivist cultures, but are of less importance in individualist cultures.

The diagnosis of the mode(s) used by a decision-maker in a particular situation provides a methodological challenge (Weber and Lindemann, 2002). Descriptions of decisions in novels and the way in which they are made provide a way of circumventing this difficulty. Like in a think-aloud protocol, the omniscient author typically provides readers with information about the motives, needs and objectives that drive a decision, and about the way or ways in which the decision gets made. While the story line of a novel can either be realistic or transgressive, we conjecture that the psychological processes depicted in fiction need to be believable and recognizable to readers and will thus reflect universal as well as culturally-shaped values, norms, affective reactions and information processing. We thus tested a set of predictions about cultural differences in decision mode prevalence that arise from our decision mode selection model in a textual analysis of major decision episodes described in twentieth-century novels. We selected novels from the USA and China for analysis and comparison because of differences in the degree of collectivism in the two cultures. Of the 40 countries studied in Hofstede's (1984) evaluation of country collectivism, the USA obtained the lowest score and China was among the highest scoring cultures,[2] making these two countries ideal candidates to evaluate predictions that involve the use of this construct. Both countries also have well-established and widely read literatures, with classical novels and bestsellers in China that have been translated into English.

Evidence supporting the validity of using descriptions of behaviour in twentieth-century novels to make inferences about actual behaviour comes from Gaenslen (1986), who culled 36 well-established findings on conflict resolution and dispute settlement from the social psychological and anthropological literature and then examined whether these findings were supported by fictional conflicts described in Chinese, Japanese, Russian and American novels. While there was less correspondence between the social science results and fictional accounts of behaviour in censored (Chinese and Soviet) novels, an average of 87% of the social science findings were supported in each of the four sets of uncensored novels.

MODEL AND PREDICTIONS

As shown in Figure 1, we assume that mode selection is influenced by decision content (e.g. instrumental versus romantic decisions), situational characteristics (e.g. time pressure) and decision motives (e.g. need for social connectedness). *A priori*, we hypothesized that culture would influence decision mode selection solely by affecting the prevalence of these functional factors. Our results indicate however that culture also enters into decision mode selection in a second way, namely by shaping some details of how these functional factors translate into mode selection. Predicted and observed cultural effects on decision mode selection should be interpreted, however, against the backdrop of strong cross-cultural similarities. We will
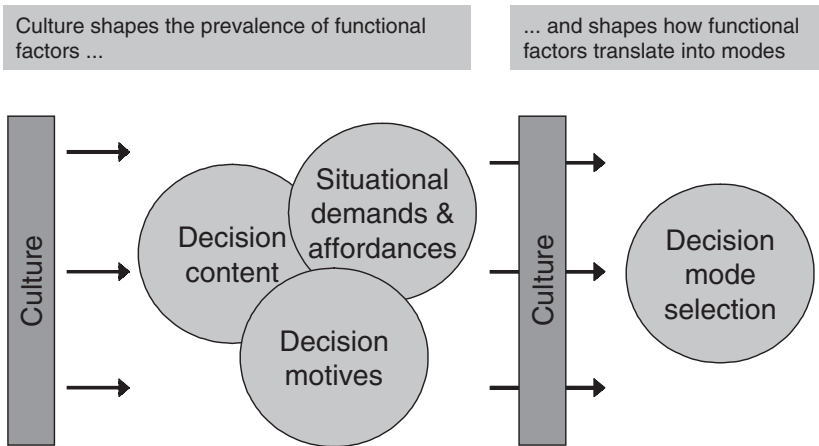
Figure 1. A Functional Model of Decision Mode Selection: The Influence of Culture

show that decision modes seem to serve basic and universal functions, with only minor modifications in different cultures.

Our approach is both confirmatory and exploratory. We propose a number of culture-specific predictions of our model and subject them to empirical test. At the same time, we examine our data set for relationships that were not anticipated. Our model is used to organize both our predictions and the results section, which summarize both confirmatory and exploratory analyses. We begin by examining universal functionality, including main effects of domains, situations and motives on mode selection. We then consider how culture may affect the prevalence of the functional factors. Lastly, we turn to how culture interacts with these functional factors to influence mode selection.

Universal Effects (UE) on Decision Mode Selection

Decision content. Previous research suggests that the domain or content of a decision may affect mode selection as the result of differences in the salience of different needs present in different decision domains (Blais and Weber, 2001; Goldstein and Weber, 1995). In particular, we predicted that:

- instrumental decisions would show greater use of the cost-benefit mode (UE-D1);
- relationship-related decisions would show reduced use of the cost-benefit mode (UE-D2) and;
- would instead by made in a role-based mode or in an affect-based mode, especially for close, romantic relationships (UE-D3).

Situational demands. Based on evidence in Weber and Lindemann (2002), we expected more abstract characteristics of the decision situation to also influence mode selection. In particular, we predicted that:

- time pressure would lead to greater use of recognition-based decision making (UE-S1), since recognition-based decisions can be made fast, without conscious deliberation;
- a sense of obligations towards a particular course of action would (essentially by definition) lead to greater use of recognition-and-rule-based decision-making (UE-S2).

Decision motives. Self-regulation theory (Higgins, 1999; Kruglanski et al., 2000) distinguishes between two regulatory states (assessment orientation, which favours careful analysis, and locomotion orientation, which favours rapid action) and two regulatory foci (promotion focus, which involves promoting the achievement of ideal states, and prevention focus, which concentrates on preventing deviations from oughts and obligations). Situations differ in the extent to which they trigger a regulatory state or focus, and individuals show stable differences in their chronic disposition towards the two states and foci. Cost-benefit based decision-making embodies analysis and assessment, and recognition-based decision-making seems to lend itself to situations that put a premium on rapid action or locomotion. Weber and Lindemann (2002) found that individual differences in preferred regulatory state were related to decision mode selection in these ways. We were interested in whether novelists in both cultures would choose to show such relationships between situational or chronic decision motives and decisions that are made in different modes. In particular, we hypothesized that:

- situations in which the character makes a decision in a cost-benefit mode would be described as putting a larger premium on assessment (UE-M1); and
- situations in which the character makes a decision in recognition-based mode would be described as putting a larger premium on locomotion (UE-M2).

Cultural Main Effects (CE) on Content Domain, Situational Demands, and Decision Motives

Decision content. Many individual and organizational decisions involve material or financial consequences and material risks: Should you buy stocks in a particular company or leave your money in a money market account? Others involve social consequences and social risks: Should you tell your business partner that his planned trip to China would interfere with your own travel plans or should you just quietly rearrange your own plans? Weber, Blais and Betz (2002) found

systematic differences in risk-taking in a factor analysis of a broad range of risky decision situations that clustered around six largely independent content domains: material decisions, gambling, relationship/social decisions, recreational choices, ethical decisions and health/safety choices. Weber, Hsee and Sokolowska (1998) demonstrated cultural differences in the salience of different content domains and their interconnection. Consistent with Weber and Hsee's (1998) conjecture that collectivist insurance against material risks is obtained at the cost of having to worry more about social risks (since maintenance of one's social network is of greater importance in collectivist cultures), they found that American proverbs were judged to be more applicable to financial-risk decisions than to social-risk decisions, whereas Chinese proverbs were more equally applicable to the two domains. In other words, the proverbs produced by these two cultures over time reflected the fact that social concerns rate equal to financial or materialistic concerns in collectivist cultures, but are of lesser importance in individualist cultures. Consistent with these results, we predicted that:

- the frequency of non-romance, relationship-related decisions would be greater in Chinese than in American novels (CE-D1), and/or more specifically;
- a greater number of material or instrumental decisions would also involved relationship issues in Chinese than in American novels (CE-D2).

Situational demands. Weber and Hsee's (1998) cushion hypothesis predicts that decision situations in Chinese novels should:

- more frequently involve obligations on part of the decision-maker (CE-S1). Since social interconnections are maintained by the informal and reciprocal exchange of favours, we would expect to see greater concern with and indication of social obligations that point towards particular actions and choices in a society that places greater value on interconnectedness.

Decision motives. Based on Weber and Hsee (1998), we predicted that:

- American decision-makers would be described as more risk averse in their non-relationship risky choices than Chinese decision-makers (CE-M1).

There is a sizable literature on cultural differences in thinking styles between Westerners and Chinese (Nisbett, 2003), which is mostly anecdotal and based on cultural stereotypes. Our textual analysis of decisions provides us with a way of checking on the validity (or at least general acceptance) of these stereotypes. Graham (1967), for example, notes the neglect of logic in Chinese philosophy, observing that, with the exception of the short-lived Moist school in the fifth

century BC, Chinese philosophical systems are practical, moral, or mystical, and indifferent to abstract speculation. He conjectures that this may be a consequence of characteristics of the Chinese language, which organizes uninflected words (characters) solely according to word order, turning Chinese into lexicographers rather than grammarians. This conjecture suggests the hypothesis that:

- Chinese decision-makers should be described as more locomotion oriented and/or less assessment oriented (CE-M2/3).

Lee, Aaker and Gardner (2000) found that situationally induced as well as chronic differences in a person's self-construal as either independent or interdependent resulted in more promotion versus prevention focused information-processing, respectively. Given the greater degree of social collectivism in China, we predicted that:

- Chinese decision-makers should be described as more prevention-focused than American decision-makers (CE-M4).

Decision Mode Usage

Hsu (1970) and Markus and Kitayama (1991) examined differences in the Chinese–Western conceptions of the self, suggesting that the Chinese perceive the world as based on a network of relationships which makes them socio-oriented and situation-centred, in contrast to Westerners self-orientation and individual-centredness. Different definitions of self are most likely to be associated with differences in the importance of self-related goals (i.e. social connectedness versus autonomy). Under the assumption that role-based decision-making satisfies the need for feeling connected and that affect-based decision-making satisfies the need for feeling autonomous, we predicted:

- a greater frequency of role-based decisions in Chinese novels (ModeUse1a); and
- a greater frequency of affect-based decisions in American novels (ModeUse2).

Zhang (1992) and Yates and Lee (1996) describe a frequently-used Chinese decision mode called folk-precedent-matching. When confronted with a decision problem, the decision-maker searches for precedents, which are stories and legends in the past. The folk-precedent typically provides a rule of conduct for a given category of decisions and thus is a variant of rule- or case-based decision-making. This adds to the logic of Graham (1967) described above in predicting that decision-makers in Chinese novels will show:

- more evidence of using recognition-based (and in particular rule- and case-based) modes than decision-makers in US novels (ModeUse1b/c).

Northrop (1946) describes the Chinese mind as non-analytic and as less interested in abstract reasoning than the Western mind. Nisbett (2003, p. 211) makes similar claims about cultural differences in analytic versus holistic thought. Anecdotal evidence suggests cross-cultural differences in the acceptability and use of analytic decomposition and subsequent integration of decision alternatives. Pollock and Chen (1986), who went to the PRC to help plan a water-pollution control system for the Huangpu River, describe finding a decision environment that was almost completely devoid of a formal concern for uncertainty. Thus we predicted:

- fewer descriptions of cost-benefit based decision-making in Chinese than in American novels (ModeUse3).

METHOD

Table 1 lists the 16 US novels (six bestsellers and ten classics) and 13 Chinese novels (five bestsellers and eight classics) that were analysed in this study. Bestselling novels were selected for having sold large numbers of copies in their respective country, with publication dates starting in 1976 (the end of the cultural revolution in the PRC). Classic novels were included in our sample if they showed up on the list of each of three literature professors who were asked to nominate the most influential twentieth-century novels in their country.[3] As the result of these selection criteria, bestsellers were not only more popular, but also of more recent origin than classic novels.

The major decision-making episodes in each novel were identified by two graduate-student raters who were blind to the purposes of the study. Only those episodes identified by both raters (87% of all episodes identified by any single rater) were included in our sample. A major decision was defined as requiring: (a) conscious awareness of one or more choices, (b) some thought about the possible outcome of the choices and c) final selection of one option. Episodes involving daily routines (e.g. where habit makes conscious thought about options unnecessary) or decisions without any description of the underlying deliberative process were not included. Our goal was to identify meaningful choices that were described in enough detail to afford a glimpse of the character's underlying decision processes. Identified decision episodes varied in length from a few paragraphs to a dozen or more pages.

A different set of two independent raters,[4] also blind to the experimental hypotheses, coded each decision on several dimensions: Was the decision made by only an individual or a group? Was the decision-maker male or female and in what

Table 1. List of classic and bestselling American and Chinese novels analysed and the number of major decisions identified in each novel

Chinese novels	Number of decisions	American novels	Number of decisions
Classics		Classics	
Miss Sophie's Diary	7	The Sun Also Rises	9
The True Story of AQ	11	The Age of Innocence	10
The Border Town	4	The Bluest Eye	9
Camel	19	Sister Carrie	15
The Family	13	The Scarlet Letter	7
A Fortress Besieged	20	The Great Gatsby	9
Rickshaw Boy	20	The Grapes of Wrath	12
The Midnight	27	Huck Finn	10
		Lolita	6
		Moby Dick	14
Bestsellers		Bestsellers	
At Middle Age	9	Pet Cemetry	10
A Small Town Called Hibiscus	5	Breathing Lessons	10
The Gourmet	12	The Bonfire of the Vanities	18
Red Sorghum	24	Sophie's Choice	25
		Airframe	11
		The Firm	13
Total	**184**	**Total**	**188**

age bracket? What was the subjective importance of the decision to the character? What was the decision's 'objective' importance, as apparent to the rater in light of the past and future developments in the novel? Did the decision-maker experience conflict with others? Did the decision involve risk or uncertainty, and if so, did the decision-maker end up choosing a riskier or a safer option? Did the decision-maker feel any obligation to pursue a particular course of action? Did he or she vacillate between different decision options? Did the decision-maker face time pressure? How quickly was the decision reached? Did the decision-maker experience post-decision regret? Was the outcome of the decision good? Was it bad? These judgements were either dummy coded or rated on three-point scales.

Raters also coded each decision episode for the content domain(s) it involved. In particular, raters dummy-coded whether the decision involved *romance* (matters concerning love, seduction, romance and sex), *non-romantic relations* (matters concerning relationships with relatives, friends and acquaintances other than those involving romance), *image* (matters concerning self-presentation and preservation of one's own social status), *ethics* (matters concerning values, morals and laws), *health* (matters concerning risks to physical well-being), and/or *instrumental* concerns (matters concerning money, income and career). Raters were instructed to check

off as many categories as applied. The domain categories derived from previous research which provided evidence that people approach decisions in these content domains differently (Frisch and Clemen, 1994; Tada and Weber, 1998; Weber, Blais and Betz, 2002).

Finally, raters coded each episode for decision mode(s) employed in arriving at the final decision, dummy-coding whether the decision involved a *calculation-based* mode (with the decision-maker comparing and weighing the values of the potential outcomes of different choice options explicitly), a *recognition-based* mode (with the decision-maker identifying the decision as matching a prior case, a rule or a role-based obligation that specify the course of action; if so, raters identified the specific prior *case*, general *rule* or social *role*), a *positive affect based* mode (with the decision maker relying on positive feelings, such as happiness or excitement), or a *negative affect based* mode (with the decision-maker relying on negative feelings, such as guilt or anger). Raters also coded the decision meta-motives described for each episode, in particular the extent to which the decision-maker was *prevention* oriented (oriented toward or vigilant about avoiding bad things, including, but not limited to, not wanting to disappoint or let others down), *promotion* oriented (oriented toward or eager about achieving good things), *locomotion* oriented (oriented toward taking actions, moving ahead and getting things done) and *assessment* oriented (oriented toward careful evaluation and making the right or ideal choice).

RESULTS

Results are presented in six sections: (1) descriptive results about the decision coding; (2) results that reflect universal decision mode selection dynamics; (3) main effects of culture on the factors determining (universal) decision mode selection processes; (4) effects of culture on decision mode selection, explained by cultural differences in determining factors and interactions between culture and selection dynamics; (5) an integrative summary of all determinants of decision mode selection; and (6) results about the relationship between contingent decision mode usage and the described outcome of the decisions.

Descriptive Results

Counts and coding reliability. As shown in Table 1, 188 decisions were coded from the US novels (an average of 11.8 per book) and 184 from the Chinese novels (an average of 14.1 per book). The two independent raters had a kappa of 0.475 (75.3% agreement) across all codings. Coding disagreements between raters (which typically involved minor differences in the degree to which a particular coding category applied) were reconciled in discussions between the two coders, which were moderated by one of the authors.

Bestsellers versus classics. To determine whether the type of decision situation and described decision mode(s) differed in bestsellers (designed to entertain) versus twentieth-century classics (designed to educate and perhaps shape, rather than reflect, social norms), we examined whether the text source of decision episodes (bestsellers from the last 25 years or acclaimed twentieth-century classic) affected any of the codings. There were very few statistically significant differences as the function of text source on any of the independent or dependent measures: decisions in bestsellers were more prevention-focused than decisions in classics (2.52 versus 2. 26; $F(1,367) = 7.61$, $p < 0.01$). Romance decisions were more frequent in classics than in bestsellers (22% versus 11%; $F(1,368) = 6.45$, $p < 0.01$)) and image-related decisions more frequent in Chinese classics than in Chinese bestsellers (52% versus 33%, $F(1,368) = 4.68$, $p < 0.03$), but equally frequent in American novels of both types (34%). Thus all subsequent analyses were conducted across both types of text.

Decision characteristics. Consistent with our focus on major decisions, coded decisions were on average of moderate to high importance, both from the perspective of the decision maker (2.48 (SD = 0.6) on a three-point scale) and from the perspective of the coders (2.30 (SD = 0.7)).[5] Across both cultures, *relational*, *image* and *instrumental* decision content was most prevalent, emerging in 46.5%, 43.6% and 42.5 % of coded decisions, respectively. *Ethical* content was involved in 25.8% of decisions while *health* was involved in 22.6%. *Romance* was involved in 17.5% of decisions. More important decisions tended to be about image, romance, ethics and health (with correlations of +0.17, +0.16, +0.11 and +0.11, respectively; all $p < 0.05$); less important decisions about recreation ($r = -0.21$, $p < 0.0001$). More important decisions took longer ($r = .+ 0.19$, $p < 0.0002$) and were more likely to result in regret ($r = +0.11$, $p < 0.05$). These relationships held in both cultures. Across cultures, 79% of decisions resulted in a good outcome, while 43% of decisions resulted in a bad outcome.[6]

Decision modes. Negative affect-based decision processes were present in 46% of decisions, while positive affect-based decision processes were present in 21%. A recognition-based decision mode was used in 40% of decisions, while a calculation-based mode was used in 36% of decisions. Many decisions were made using more than one mode. The average number of modes involved in a given decision was 1.35, with more modes used for more important decisions ($r = 0.20$, $p < 0.001$).

Identity of decision-makers. Almost all Chinese decisions (94%) and American decisions (85%) were made solely by individuals. The majority of decision-makers in both sets of novels were men, though men were more prevalent in Chinese than in American novels (79% versus 69%, $\chi^2(1) = 5.94$, $p < 0.02$). Most decision-makers

were either young adults (47%) or middle-aged adults (39%) across both sets of novels. However, the age distribution was broader in American than Chinese novels ($\chi^2(3) = 25.94$, $p < 0.0001$), i.e. there were more teenage (4% versus 2%) as well as older (18% versus 2%) decision-makers in American novels. While there was no correlation between gender and age in both countries' bestsellers, male decision-makers were consistently older than female decision-makers in both Chinese and American classic novels (with an age–gender correlation of $r = 0.29$ and 0.51, respectively, $p < 0.001$).

Men in both countries' novels were more frequently than women depicted as making instrumental (i.e. financial and career) decisions (50% versus 32%, $F(1,305)$ = 8.98, $p < 0.005$). Women in Chinese novels, on the other hand, were more frequently shown as making romance decisions (38% versus 16%, $F(1,305) = 5.15$, $p < 0.02$). Age and gender of the decision-maker interacted in determining the frequency with which the character was shown to use calculation-based decision-making. In both cultures, males were less likely shown as using calculation-based decision-making than females ($F(1,305) = 10.10$, $p < 0.002$). In addition, the frequency of calculation-based decision-making *in*creased with age for female decision-makers (with 75% of elderly decision-makers using this mode), but *de*creased with age for male decision-makers (with only 35% of elderly decision-makers using this mode) ($F(1,305) = 11.00$, $p < 0.001$). The observed lower frequency of calculation-based decision making by men is consistent with the results in a study of non-fictional decision-makers, i.e. American and Canadian undergraduates (Blais and Weber, 2001).

Age interacted with culture in terms of the number of decision modes that characters were described as employing in parallel: number of modes *in*creased with age for decision-makers in Chinese novels (from 2.13 modes/decision for young decision-makers to 2.66 for elderly decision makers), but *de*creased with age in American novels (from 2.48 modes/decision for young decision-makers to 1.55 for elderly decision-makers) ($F(1,305) = 11.33$, $p < 0.001$). Consistent with reports of greater cognitive complexity for women's decision processes in Western women (Blais and Weber, 2001; Weber, Boeckenholt, Hilton and Wallace, 2000), the decision processes of female decision-makers were depicted as more complex in US novels: women were shown as using a larger number of decision modes (2.15 versus 1.98, $F(1,305)$ = 3.96, $p < 0.05$) than men and as being more assessment oriented (2.24 versus 2.06, ($F(1,305) = 5.72$, $p < 0.02$). Lastly, men were shown as more likely than women to have made a decision that resulted in a bad outcome (48% versus 28%, $p < 0.005$), an effect that was especially strong in American novels.

Universal Effects (UE) on Decision Mode Selection

Decision content. Predictions about the way in which decision content would affect mode selection were tested by correlating the coding for domain (0 = did not apply,

1 = applied) with the codes for mode usage (0 = mode not used, 1 = mode used). As predicted, instrumental decisions showed greater use of a calculation-based mode ($r = 0.23$, $p < 0.01$; UE-D1). Relationship-related decisions showed reduced use of a calculation-based mode ($r = −0.11$, $p < 0.05$; UE-D2) and were instead made in an affect-based mode, especially for romantic relationships ($r = 0.23$, $p < 0.01$; UE-D3). In addition to these hypothesized relationships, ethical decisions were associated with recognition-based decision making ($r = 0.14$, $p < 0.01$), presumably because the need for justification to oneself and others in ethical decisions makes the use of rule- and/or role-based decision-making attractive.

Situational demands. Both hypotheses about the effect of situational characteristics on mode selection were confirmed: time pressure was associated with greater use of recognition-based decision-making ($r = 0.11$, $p < 0.05$; UE-S1), as was a sense of obligations towards a particular course of action ($r = 0.15$, $p < 0.01$; UE-S2). In addition, conflict with others was negatively associated with a calculation-based mode ($r = −0.16$, $p < 0.05$), and the presence of risk was positively associated with calculation-based decision-making ($r = 0.11$, $p < 0.05$).

Decision motives. Predictions about the relationship between self-regulation meta-motives and decision mode selection were tested by correlating the coding for the regulatory orientations of decision-makers (1 = not an orientation at all, 3 = definitely an orientation) with the dummy codes for mode usage (0 = mode not used, 1 = mode used). As predicted, greater assessment orientation on the part of the decision-maker was associated with greater use of calculation-based decision-making ($r = 0.24$, $p < 0.01$; UE-M1). However, there was no evidence of an association between locomotion orientation and greater use of recognition-based decision-making ($r = −0.07$, $p < 0.10$; UE-M2), probably as the result of a restricted range of locomotion orientation in our selected set of (more important) decisions.

Cultural Main Effects (CE) on Content Domain, Situational Demands and Decision Motives

Decision content. Table 2 shows the proportion of decisions from different content domains in each set of novels. There was no evidence for the first, more general prediction from the cushion hypothesis (CE-D1). Contrary to our prediction, relationship-related decisions were *more* frequent in American than in Chinese novels, as was the frequency of ethical and health-related decisions, while Chinese novels featured more instrumental decisions. There was, however, support for the second, more specific prediction: instrumental (financial and career) decisions in Chinese novels that also reported a relational element were significantly more frequent in Chinese than in American novels (0.22 versus 0.06, $p < 0.006$).

Table 2. Proportion of decisions in indicated content domains in two sets of novels

Content Domain	Proportion in Chinese Novels (n = 184)	Proportion in American Novels (n = 188)
Instrumental (Financial/Career)	**0.50**	0.35
Relationship	0.41	**0.52**
Instrumental AND Relationship	**0.22**	0.06
Image	0.46	0.41
Romance	0.18	0.17
Ethical	0.18	**0.34**
Health	0.18	**0.28**

Note: Entries in bold indicate the greater proportion in those cases where the difference between the two is significant at the 0.05 level.

Situational demands. Contrary to our hypothesis (CE-S1), there was no indication that Chinese decision-makers felt more obligated towards a particular course of action than Americans (mean ratings were 1.28 versus 1.39, respectively, p > 0.10). There were no significant country differences on any of the other coded situational characteristics either, including decision importance (with country means of 2.51 and 2.47), time pressure (1.58 versus 1.70), and whether the decision involved risk (0.41 versus 0.40) or conflict with others (0.64 versus 0.60).

Decision motives. As predicted, American decision-makers were more risk averse than Chinese decision-makers (CE-M1): in the 41% and 42% of decisions that involved risk in the Chinese and American samples respectively, a significantly smaller proportion of Chinese decision-makers (26%) than American decision-makers (35%) chose the safer option (p < 0.05). Consistent with the cushion hypothesis, this cultural difference in risk aversion was only present for non-relationship related decisions, with 35% of Americans selecting the safer options versus 25% of Chinese. For relationship decisions, both nationalities chose the safer option 33% of the time. Also as predicted, Chinese decision-makers were more locomotion oriented than Americans (with mean ratings of 2.66 versus 2.43, p < 0.01; CE-M2), but only marginally less assessment oriented (2.01 versus 2.15, p < 0.10; CE-M3). Contrary to the prediction based on Lee et al. (2000), American decision-makers were actually more prevention focused than Chinese decision-makers (with mean ratings of 2.46 versus 2.28, p < 0.05, CE-M4). There was no difference in the degree of promotion focus described for decisions in the two sets of novels (2.11 versus 1.99, p > 0.10).

Effects of Culture on Decision Mode Selection

Table 3 shows that, as predicted, Chinese decision-makers were more likely than American decision-makers to employ recognition-based decision-making (with

Table 3. Proportion of decision mode usage in two sets of novels

Decision Mode	Proportion in Chinese Novels (n = 184)	Proportion in American Novels (n = 188)
Recognition (Rule/Role/Case)	**0.48**	0.31
Calculation	0.34	0.38
Positive affect	0.18	0.24
Negative affect	0.47	0.45

Note: Entries in bold indicate the greater proportion in those cases where the difference between the two is significant at the 0.05 level.

mode usage proportions of 0.48 versus 0.31; $p < 0.05$; ModeUse1). This country difference in the frequency of recognition-based decision-making was consistently present for all three subcategories of recognition-based decision-making, namely rule-based (0.15 versus 0.04), role-based (0.33 versus 0.24), and case-based (0.12 versus 0.08) decision-making. There was no evidence that Chinese would be less likely than American to use calculation-based decision-making (ModeUse3; 0.34 ~ 0.37).[7] In both cultures, decisions with an assessment orientation were more likely to be made in a calculation-based mode and (in Chinese novels only) less likely to be made using negative affect. There was little evidence for our prediction that American should show greater use of affect-based decision-making, i.e. no difference for negative affect and an only marginally-significant effect in the predicted direction for positive affect.

In both cultures, decisions with a stronger promotion focus were more likely to be made based on positive affect and less likely based on negative affect, while the reverse was true for decisions with a stronger prevention focus. There also were differences in the particular type of positive or negative affect that drove action in the two cultures. On the positive affect side, curiosity and lust were more prevalent American emotions, with no cultural differences in the frequency of love/empathy or pride. (The proportion of Chinese versus American decisions involving each emotion was 0.005 versus 0.5 for curiosity, 0.08 versus 0.15 for lust, 0.06 versus 0.06 for love/empathy, 0.06 versus 0.04 for pride.) For negative affect, anger was a more prevalent Chinese emotion, fear a more prevalent American emotion (consistent with observed cultural differences in risk aversion and prevention focus), with no differences in guilt, embarrassment, envy or sadness. (The proportion of Chinese versus American decisions involving each emotion was 0.19 versus 0.09 for anger, 0.12 versus 0.11 for guilt, 0.07 versus 0.07 for embarrassment, 0.02 versus 0.005 for envy and 0.03 versus 0.02 for sadness.)

Our initial hypothesis, attractive for its parsimony, was that culture would exert its influence on decision mode usage entirely through its effect on variables known

Table 4. Relationship between decision content and decision mode as a function of culture decision modes

Decision Content	Recognition (Rule/Role/Case) China	USA	Calculation China	USA	Positive Affect China	USA	Negative Affect China	USA	Number of Modes Used China	USA
Instrumental	−0.08	0.12	**0.30**	**0.18**	**−0.16**	0.13	**−0.21**	−0.10	−0.06	0.14
Image	0.02	0.07	−0.09	0.01	**0.20**	−0.002	**0.15**	**0.23**	0.12	**0.16**
Relationship	**0.16**	0.04	**−0.25**	0.02	−0.04	−0.03	0.05	0.12	0.01	0.09
Romance	−0.04	−0.09	0.04	**−0.20**	**0.25**	**0.22**	−0.02	0.00	0.09	−0.09
Ethical	**0.21**	**0.15**	−0.04	0.03	**0.30**	−0.11	0.04	**0.36**	**0.22**	**0.25**
Health	0.05	−0.07	0.06	0.30	−0.03	−0.08	0.06	**0.23**	0.09	**0.23**

Notes: Cell entries are the Pearson product moment correlation coefficient across the 184 Chinese decisions and the 188 American decisions, respectively. All bold correlations are significantly different from zero at the 0.05 level (two-tailed). Chinese and American correlations within a cell shown in italics are not significantly different from each other (at the 0.05 level).

to influence decision mode selection. In this case, culture differences in decision mode usage would be fully mediated by cultural differences in the prevalence of functional factors, with the implication that 'culture' would no longer be a predictor of decision mode usage if and when these functional factors are present in the regression equation. We thus examined whether the significant culture difference in the use of recognition-based decision-making was mediated by cultural differences in functional factors, including decision content, situational demands, age and gender of decision-maker and decision motives. The full set of predictor variables, including culture, accounted for 44% of the variance in the use of recognition-based decision-making. While there was partial mediation, culture remained to be a statistically significant predictor ($F(1,148) = 3.93$, $p < 0.05$) even in the presence of all functional factors.

There are multiple ways in which the universal-functional-framework hypothesis could be amended. The simplest one is, perhaps, to assume that the same functional factors play a role, but that they have different relationships to decision mode selection in different cultures.[8] We therefore tested whether the correlation coefficients between functional factors and decision modes, shown in Tables 4 and 5, were the same or were different in Chinese versus American novels.[9]

Universal effect of decision content on mode selection. Several of the relationships between decision content and mode shown in Table 4 were universal, i.e. were significant in both cultures and not significantly different from each other: recognition-based decision-making was more prevalent for non-romantic relationship decisions and

Table 5. Relationship between situational demands and decision mode as a function of culture.

| Situational Demand | Decision Modes | | | | | | | | | |
| | Recognition (Rule/Role/Case) | | Calculation | | Positive Affect | | Negative Affect | | Number of Modes Used | |
	China	USA	China	USA	China	USA	China	USA	China	USA
Importance	−0.09	**0.23**	*0.09*	*0.10*	*−0.02*	*0.06*	***0.20***	***0.33***	***0.14***	***0.26***
Time Pressure	*0.10*	***0.15***	*0.05*	*0.09*	*0.01*	*−0.09*	*0.05*	*0.12*	*0.13*	*0.12*
Risk Involved	*0.03*	*0.02*	0.01	**0.21**	*0.05*	*0.12*	0.09	**0.26**	0.10	**0.31**
Social Obligation	0.10	**0.24**	−0.02	−0.12	*0.04*	*−0.07*	*0.05*	***0.15***	*0.12*	*0.11*
Conflict with Others	***0.19***	*0.10*	***−0.22***	*−0.12*	*0.01*	*−0.13*	*0.08*	*0.00*	*0.11*	**0.24**

Notes: Cell entries are the Pearson product moment correlation coefficient across the 184 Chinese decisions and the 188 American decisions, respectively. All bold correlations are significantly different from zero at the 0.05 level (two-tailed). Chinese and American correlations within a cell shown in italics are not significantly different from each other (at the 0.05 level).

for ethical decisions. Calculation-based decision-making was more prevalent for instrumental decisions. Positive-affect guided decision-making was more prevalent for romantic decisions, and negative-affect guided decision-making (involving mostly guilt and shame) occurred more frequently for image and health decisions. Even though the last three relationships had not been predicted, they are not surprising in hindsight. Recognition-based decision-making for ethical decisions had also not been predicted, but makes sense in light of the conflict-laden nature of ethical decisions and the frequent need to justify such decisions to others.

Culture-specific effect of decision content on mode selection. Other relationships between decision content and decision mode were only found in one of the two cultures: calculation-based decision-making was less prevalent for non-romantic relationship decisions only for Chinese decision-makers and less prevalent for romantic decisions only for American decision-makers. Chinese decision-makers differentiated their use of positive-affect based decision making much more than American decision-makers, using it more for image-related and ethical decisions and less for instrumental decisions. Chinese decision-makers were also less likely to use negative affect-based decision-making for instrumental decisions, while American decision-makers were more likely to use negative affect-based decision-making for ethical decisions.

Universal effects of situational demands on mode selection. As shown in Table 5, a number of the relationships between situational characteristics and decision modes were

universal. As predicted, recognition-based decisions were more prevalent in decisions that involved time pressure. They were also more prevalent in decisions that involved conflict with others, presumably as the result of the justifiability of decisions made on the basis of socially endorsed rules. Calculation-based decisions were less prevalent in such decisions. Unexpectedly, the use of negative affect was more frequent for more important decisions.

Culture-specific effects of situational demands on mode selection. Other relationships between situational characteristics and decision modes only occurred in one culture. Chinese decision-makers showed less sensitivity to situational demands in their use of recognition-based decision-making, presumably due to their greater general propensity of use this mode. Predicted associations between recognition- and rule-based decision-making and situations with social obligations or time pressure were significantly stronger in American than in Chinese novels. Situations that involved risk were treated differently by American, but not Chinese decision-makers, with the former being more likely to make risky decisions in a calculation- or negative affect-based mode.

Determinants of numbers of modes used. The last column of Table 4 and the last column of Table 5 summarize the effect that decision content and characteristics had on the number of decision modes reported to be employed. In both cultures, decision-makers used a larger number of modes to make decisions related to self-image, as well as ethical decisions. American decision-makers only also employed a larger number of modes for health-related decisions. These results may be partly explained by examination of Table 5, which shows that more important decisions and decisions which involved conflict with others were made using a larger number of modes in both cultures. In American novels only, situations that involved risk also resulted in the use of more modes.

Predicting Decision Modes

A single regression of decision mode selection onto all predictor variables simultaneously allows us to assess their joint and unique effects. In particular, it allows us to examine the effect of specific variables while controlling for simultaneous differences on other predictor variables. Table 6 shows that the three sets of functional predictors (decision content, characteristics and meta-motives) as well as their interactions with culture identified in Tables 4 and 5 significantly add to our ability to predict decision mode usage. Regressions of Mode Usage on these predictors accounts for between 39% and 50% of the variance for the four decision modes, with a significant increase in R^2 from the corresponding regressions that simply uses culture, gender and age of the decision-maker as predictors. Table 6 lists the variables that significantly predict mode usage with all other variables

Table 6. Predicting decision mode usage as a function of (a) culture, age and gender of the decision-maker, (b) additional predictors, including decision content, situational demands and decision motives

Predictors	Recognition-based mode	Calculation-based mode	Positive-affect based mode	Negative-affect based mode
(a)	$R^2 = 0.07$	$R^2 = 0.06$	$R^2 = 0.02$	$R^2 = 0.06$
Culture/gender/age	Culture (Chinese +)	Gender (male −) Gender*Age		
(b)	$R^2 = 0.50$	$R^2 = 0.45$	$R^2 = 0.39$	$R^2 = 0.44$
Decision content,	Romance (−)	Relationship (−)	Romance (+) Ethics (+)	
Situational demands, decision motives	Obligations (+)	Obligations (−) Assessment (+)	Conflict (−) Assessment (−) Prevention (−)	Importance (+) Assessment (+) Prevention (+)
Interactions Identified in Tables 4 and 5	Relationship*Culture Instrumental*Culture Obligation*Culture	Instrumental*Culture Importance*Culture	Ethics*Culture	
Culture/gender/age	Culture (Chinese +)	Culture (Chinese −)	Gender*Culture	

Notes: The first entry in each regression specifies R^2, the total proportion of variance in mode usage accounted for by the specified set of predictor variables. This is followed by a listing of variables that are significant predictors at the 0.05 level in the context of all other variables being present in the model. For non-interaction effects, the direction of the relationship is indicated by a plus or minus sign.

present in the model (Type III sums of squares). The main and interaction effects are consistent with the associations between predictors and mode usage described in Tables 4 and 5, with the following exceptions. Decision importance now significantly predicts calculation-based decision-making, in an interaction with culture. In American decisions, use of calculation-based decision-making decreases with importance, while the opposite is true in Chinese decisions. Gender interacts with culture for positive affect-based decisions, such that female American decision-makers are less likely to use this mode compared to the other three groups. It should be noted that the effect of culture is not completely accounted for by cultural differences in the values taken by functional factors, nor by cultural differences in the relationship between functional factors and mode usage. While much of the variance in mode use is explained by those differences, culture remains as a significant main effect in the frequency of recognition-based decision-making ($F(1,194) = 13.87$, $p < 0.0002$), with greater use by Chinese decision-makers, and emerges as a main effect in the frequency of calculation-based decision-making ($F(1,194) = 9.50$, $p < 0.005$), with greater use by American decision-makers. The effects of gender and age on the frequency of calculation-

Table 7. Predicting decision outcome as a function of (a) culture, age and gender of the decision-maker, (b) additional predictors, including decision mode, decision content, situational demands and decision motives

Predictors	Good Outcome	Bad Outcome	Regret
(a)	$R^2 = 0.03$	$R^2 = 0.05$	$R^2 = 0.05$
Culture/gender/ age	Gender (male−)	Gender (male+)	Gender (male+) Culture (Chinese+)
(b)	$R^2 = 0.45$	$R^2 = 0.50$	$R^2 = 0.50$
Decision modes			
Decision content, Situational demands, decision motives	Obligation (−) Prevention focus (+) Promotion focus (+) Assessment orientation (+)	Obligation (+) Promotion focus (−)	Good outcome (−) Bad outcome (+)
Interactions identified in Tables 4 and 5	Pos_Affect*Image	Pos_Affect*Image Neg_Affect*Instrumental Calcul.*Relationship*Culture	Pos_Affect*Image Calcul.*Instrumental *Culture Calcul.*Relationship *Culture
Culture/gender/ age		Gender (male +)	

Notes: The first entry in each regression specifies R^2, the total proportion of variance in mode usage accounted for by the specified set of predictor variables. This is followed by a listing of variables that are significant predictors at the 0.05 level in the context of all other variables being present in the model. For non-interaction effects, the direction of the relationship is indicated by a plus or minus sign.

based decision making, on the other hand, are completely accounted for by differences in functional factors associated with decisions encountered by male or female, younger or older decision-makers.

Contingent Use of Decision Modes and Described Quality of Decision Outcomes

Table 7 shows that decision modes and their contingent use in situations that differ in content, motivations and situational characteristics in the way described above predicts the quality of decision outcomes described by authors. Contingently applied decision modes account for 45% of the variance in whether the decision results in a good outcome, 50% of the variance in whether the decision results in a bad outcome and 50% of the variance in whether the decision maker experiences post-decision regret.

As shown in Table 7, decisions in both cultures are more likely to have a good outcome if they do not involve obligations to others and are made by decision-

makers who show more promotion and prevention focus and assessment orientation. For self-image related decisions, deciding based on positive affect is less likely to lead to a good decision outcome than the use of other modes. The gender main effect, with men experiencing fewer good decisions, disappears when other predictor variables are included in the model.

Decisions in both cultures are more likely to have a bad outcome if they involve obligations to others and are made by decision-makers who show less promotion focus. For self-image related decisions, deciding based on positive affect is more likely to lead to a bad decision outcome than the use of other modes. For instrumental decisions, deciding based on negative affect is more likely to lead to a bad decision outcome than the use of other modes. The relationship between using a calculation-based mode and the likelihood of the decision resulting in a bad outcome depended on culture. In Chinese novels, all decisions made in a calculation-based mode (and especially relationship decisions) were *more* likely to have a bad outcome. In American novels, relationship decisions made in a calculation-based mode were *less* likely to result in a bad outcome. Gender remained a significant predictor of a bad decision outcome (with men experiencing more bad outcomes in both cultures), even when all other predictors were in the model.

Not surprisingly, in both cultures good outcomes were less likely to be followed by regret, whereas bad outcomes were more likely to lead to regret. For self-image related decisions, deciding based on positive affect was more likely to result in regret. Instrumental decisions made in a calculation-based mode lead to significantly more regret than if made in another mode in Chinese novels (0.42 versus 0.07), but not in American novels (0.16 versus 0.10). A similar interaction with culture held for relationship decisions. Relationship decisions made in a calculation-based mode lead to significantly more regret than if made in another mode in Chinese novels (0.42 versus 0.16), but not in American novels (0.07 versus 0.12). Main effects of gender and culture on post-decision regret, with Chinese decision-makers being more likely than American decision-makers to experience it (0.20 versus 0.09) and male decision-makers more likely than females (0.20 versus 0.08), disappeared when our functional model predictor variables were included in the model.

DISCUSSION

The comparative analysis of decision processes described in twentieth-century Chinese and American novels reflect some differences and many commonalities in the implicit theories held by American and Chinese writers about the relationship between situational characteristics, decision-maker characteristics, employed decision modes and the outcomes of decisions. A summary of the most important culture-specific and universal hypotheses and the support they received is provided in Table 8. The fact that both bestselling and classic novels yielded very similar

Table 8. Summary of hypotheses and empirical support

Hypothesized Universal Effects	Supported
Calculation-based mode will be	
• more frequent for instrumental decisions	yes
• less frequent for relationship decisions	yes
Role-based mode will be more frequent for relationship decisions	yes
Role/Rule/Case-based mode will be more frequent	
• under time pressure	yes
• when locomotion/action is called for	yes
Hypothesized Cultural Effects	
Chinese novels will show	
• more relationship decisions	no
• more instrumental decisions that also involve relationship concerns	yes
• more decisions made by rule/role/case-based reasoning	yes
• fewer decisions made by analytic/calculation-based reasoning	partial
• less risk aversion by decision makers	yes
• less assessment orientation and more locomotion orientation	yes
• more prevention focus	no

results – there were few, if any genre or author effects on either predictor variables or dependent measures – suggests that cultural products of various sorts may, indeed, share the property of reflecting patterns of thinking and decision-making that are present in the group of individuals who created those products. While analyses of fictional characters may not pass muster as stand-alone evidence to support or refute social science hypotheses about the behaviour of individuals or groups, they seem to make a valuable contribution to the study of behaviour and psychological processes and their cross-cultural variation, adding tiles to the mosaic of evidence that may not be easily available any other way. At the very least, analyses of fictional accounts of behaviour reveal folk-psychological (and typically implicit) assumptions about described processes by authors, which can serve as a starting point for hypothesis generation in more traditional laboratory or field studies. Our conjecture about the psychological realism of decision processes and their determinants in novels was supported by the fact that cultural differences in risk-taking observed in fictional decisions agreed with differences in actual behaviour observed in a series of laboratory studies (Weber and Hsee, 1999).

Our data strongly suggest that the use of rule-, role- and case-based processing is more pervasive in Chinese decision-making than in American decision-making. It was found in 48% of Chinese decisions versus 31% of American decisions. These decisions follow rules of preference or conduct that are activated by specific features of the decision situation. Rules are sometimes induced from previous successful decisions that may have been made in a calculation-based mode; at other times, they are a culturally transmitted component of social or professional

identities or roles.[10] Consistent with our hypothesis that the differential prevalence of recognition-based decision-making is the result of cultural differences in the salience and value of social cohesion and interdependence (which are reinforced by role-based decision-making), the cultural difference in the use of rule-, role- and case-based decision-making was largest for relationship decisions, where 57% of Chinese and only 33% of American decision-makers used these modes. Use of recognition-based decision-making was more ingrained in Chinese decision-makers than in American decision-makers in the sense of being far less influenced by abstract situational characteristics such as time pressure or social obligations. Furthermore, use of recognition-based decision-making inhibited calculation-based decision-making in Chinese, but not in American decision-makers.

There was partial support for the prediction that Chinese decision-makers would make decisions less analytically. After controlling for other predictor variables, Chinese decision-makers were significantly less likely to use calculation-based decision-making than Americans. While using calculation-based decision-making somewhat more sparingly, Chinese decision-makers used it somewhat more judiciously, i.e. in situations that were more important and more for instrumental, and less for relationship decisions. There were some consistent cultural differences in the implicitly expressed social norm regarding use of this decision mode by Chinese and American novelists. The use of calculation-based decision-making for relationship decisions was shown to result in fewer bad decisions in American novels, whereas in Chinese novels, all decisions made in a calculation-based mode were more likely to result in a bad outcome.

Support was obtained for the predictions that Chinese decision-makers would show a stronger orientation towards locomotion (i.e. towards making a decision and moving on) than American decision-makers. Contrary to the predictions of Lee et al. (2000) however, we found Chinese decision-makers to be *less* prevention focused than American decision-makers. Chua, Yates, Oe and Yamagushi (2003) also found differences in prevention focus contrary to those predicted by Lee et al. in a study comparing American, Japanese and Filipino decision-makers. Chen-Idson (personal communication, 2003) has found a positive relationship between risk aversion and prevention focus, which might explain our observed pattern of results (with Chinese being both less risk-averse and less prevention focused than American decision-makers).

With only small modifications, the comparative analysis confirmed the trans-cultural validity of the functional framework of decision mode selection described in the introduction. Almost all of the initially identified associations between the gender, age and culture of the decision-maker and employed decision modes and decision outcomes were completely accounted for by gender, age and cultural differences in the frequency of decisions in different content domains or with different characteristics. Culture, more than age or gender, showed some deviation from this pattern of complete mediation.

Managerial Decision-making Implications and Conclusion

How do people – implicitly – choose how to choose? What factors govern whether a manager deliberatively weighs costs and benefits or relies on recognizing the situation as one for which she knows the right answer? When are her decisions driven mostly by positive and when by negative affective reactions? In this paper, we developed a culture-sensitive functional model of decision mode selection. The model shown in Figure 1 holds that decision mode usage depends on functional factors, including decision content, decision-makers' meta-goals and motives, and situational demands and resources. While some of these functional relationships were universal (e.g. time pressure leading to greater use of recognition-based decision-making), we found that culture entered into the (implicit and unconscious) decision mode selection process in two ways. First, culture shaped the prevalence of a variety of functional factors known to affect decision mode selection. In addition, however, culture shaped the degree and way in which these functional factors affect mode usage. The results of our study confirm the view that decision mode selection is far from capricious and unpredictable. Decision modes employed exhibit a systematic fit to the functional demands of the decision–maker and the decision situation – and functional demands are often culture-bound.

Many of the specific results that emerged from our comparative textual analysis merit the attention of management researchers as well as practitioners. Some of these lessons involve cross-cultural differences, some of them awareness of universal regularities. Examples of the latter category include some awareness on the part of managers of the full range of decision tools at their disposal. Recognition-and-rule based decision processes are a way of taking advantage of accumulated experience in a domain, and form the basis of expert intuition. Recognition-and-role based decisions are a way of affirming and solidifying organizational structure and culture. Affect-based decision processes serve as rapid indicators of opportunity or danger. Calculation-based processes allow for explicit consideration of pros and cons and might be of value in situations where past experience does not apply or affective reactions need to be overruled. Awareness of the multiplicity of available decision modes and the benefits of using them strategically should help managers improve their own decision-making. Awareness of social norms regarding the appropriate situation-specific use of decision modes (calculation-based choice for instrumental decisions, role-based choice for relationship decisions and affect-based choice for romance decisions) will help managers improve the impact of decisions that involve others. Ames, Flynn, and Weber (2004) showed, for example, that people pay attention to the way in which a co-worker decides whether to grant or decline a favour they have asked for and perceive the person in a different a light as a function of observed decision mode, keeping the content of the decision constant.

In this and other contexts, it is also important to educate managers about existing cultural differences in the way that certain classes of decisions are approached. For decisions regarding favour requests that involve a strong relational component, in particular, Chinese co-workers can be expected to use rule- and role-based decision processes more frequently (and calculation-based processes less frequently) than American co-workers. Failure to appreciate such cultural main effects in decision mode usage may result in faulty attributions of intentions and attitudes, as spelled out by Ames, Flynn and Weber (2004). Cross-cultural negotiations are another area where lessons from this study could be applied, for example with respect to the persuasive impact of calculation-based versus rule- or role-based arguments for different cultures. A calculation-based argument about the relative positive and negative consequences of different solutions to a procedural issue (e.g. who should speak in what order in an important meeting) might seem legitimate and convincing to an American negotiator, but might be perceived as insulting to his Chinese counterpart, who is expecting a role-based proposal. International managers and other decision-makers who need to interact with counterparts of different nationalities and with different cultural values would seem well advised to know about cultural variations in the determinants of the (implicit) selection of decision modes, or to at least be open to the possibility of cultural differences.

NOTES

  [1] Weber and Lindemann (2002) discuss the fact that decision modes often run in parallel, and that the 'selection' of one mode over the other should be interpreted as shorthand for the relative allocation of attention to the output of these parallel processing systems.
  [2] Hofstede's sample of countries did not include the PRC, but longstanding cultural values and norms can be expected to be similar in Taiwan and the PRC.
  [3] It should be noted that three of the American novels that showed up on this list were actually written towards the end of the nineteenth century.
  [4] All analyses reported in this paper are based on selections and ratings by English-speaking judges reading American texts in the original and Chinese texts in English translation. In their analysis of American and Chinese proverbs, Weber, Hsee and Sokolowska (1998) observed an eye-of-the-beholder effect in addition to an effect of the nationality of the proverbs, i.e. the nationality of raters (Chinese versus Americans) affected judgements of both American and Chinese proverbs in addition to the national provenance of the proverbs. To check for such eye-of-the-beholder effects, we employed a third rater for four of the Chinese novels, a Taiwanese national who read the novels in the Chinese original. Both selection of decision episodes and rating of decisions on the dimensions described below showed similar levels of agreement with the two American raters as the two American raters showed between themselves.
  [5] The two ratings were highly correlated ($r(372) = 0.67$, $p < 0.0001$) and we subsequently use only subjective importance.
  [6] The fact that these two percentages add to more than 100% reflects the fact that some decisions had both good *and* bad outcomes.
  [7] But see discussion of Table 6 below. After controlling for other predictor variables, we find support for the hypothesis.

[8] Differences could exist in the strength or in the direction of the relationship.
[9] This involves regressing the decision mode in question on the functional factor in question for decisions from both sets of novels, while including country as a predictor and the interaction between country and the functional factor. A statistically significant interaction term is evidence for a cultural difference in slope.
[10] There were no cultural difference in the frequency of different types of rules or roles. The only exception was a larger frequency of hierarchical role relationships invoked in Chinese decisions (0.10) than in American decisions (0.01).

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