Health Remedies: From Perceptions to Preference to a Healthy Lifestyle

WENBO WANG

HEAN TAT KEH

LISA E. BOLTON*

* Wenbo Wang is a doctoral student at the Stern School of Business, New York University (wwang2@stern.nyu.edu); Hean Tat Keh is an associate professor of marketing at the Guanghua School of Management, Peking University (htkeh@gsm.pku.edu.cn); Lisa E. Bolton is an assistant professor of marketing at the Wharton School, University of Pennsylvania (boltonl@wharton.upenn.edu). Correspondence: Wenbo Wang, Hisch Hall Suite 921, Stern School of Business, New York University, 40 West Fourth Street, New York, NY 10012.

Abstract

A conceptual framework is presented to understand consumer preference for health remedies. We argue that the interplay of three antecedents—remedy perceptions, illness perceptions, and individual/situational characteristics—drive remedy preference. In a series of studies, we test hypotheses based on this framework in an investigation of consumer preference for Traditional Chinese and Western medicines in China. Moreover, remedy perceptions and preferences are shown to have differential consequences for a healthy lifestyle. These findings shed light on the lay theories of medicine that guide consumer behavior.

吃药不忌口,枉费大夫手。

(*He who takes medicine and neglects to diet wastes the skill of his doctors.) ~ Chinese Proverb*

Consumers today face a wide array of choice options. Proliferation in choice extends to remedies for illness or disease—including drugs, supplements, radiation, surgery, chiropractics, acupuncture, massage therapy, homeopathy, Ayurveda, and Traditional Chinese medicine, to name a few. In many countries of the world, medical pluralism is the norm, with Western and Traditional medicines existing side-by-side in the marketplace. Even in countries with a dominant medical tradition, complementary and alternative medicines are increasingly available. Given the increasing voice of consumers in health care decision-making, the present research asks: how do consumers perceive and form preferences for health remedies, and what are the consequences for consumer health and welfare? The present research builds a framework for examining these questions and tests it in an investigation of consumer perceptions and preference for Traditional Chinese and Western medicine in China.

A FRAMEWORK FOR UNDERSTANDING HEALTH REMEDY PREFERENCES

Research in the health domain has frequently been premised on one of the following theoretical frameworks: protection motivation theory, the health belief model, subjective expected utility theory, and the theory of reasoned action. These models posit that health-protective behavior is a function of the probability and severity of health outcomes, the perceived effectiveness of the protective behavior, and the perceived costs and barriers to action

(for a review, see Weinstein [1993]). Health-protective behaviors have included various kinds of coping strategies (Duhacek 2005), from stopping a risky behavior or maintaining or starting a protective behavior, to seeking further information or emotional support, to avoidance/denial. Adherence to medication or treatment regimes has also been a subject of considerable interest, given its consequences for health outcomes (Osterberg and Blaschke 2005). Relative preference for health remedies, although not typically of focal interest in prior research, may be inferred from these models—for example, as a function of relative effectiveness of the remedies, ceteris paribus.

We argue, however, that prior research may understate the importance of consumer perceptions in determining remedy preferences, given the increased voice of consumers in health-care decision-making and especially in decisions involving self-care (where the role of the health care practitioner is minimized). Consumer perceptions do play a role in prior health literature, largely focused on risk perceptions, self-efficacy and response efficacy beliefs—at the expense, arguably, of other perceptions related to illness and/or treatment remedy. There are a few notable exceptions. Researchers of mental health have attempted to link illness perceptions to remedy preferences and outcomes (e.g., preference for cognitive vs. medication therapy for depression; Manber et al. 2003). Disparate research for other illnesses (e.g., high blood pressure; Frosch, Kimmel, and Volpp 2007) has also examined the link between illness perceptions or lay beliefs and attitudes and adherence to treatment remedies. In a more systematic approach, the common-sense model of illness representations (Leventhal, Meyer, and Nerenz 1980) proposes that lay beliefs about illness (of which there are multiple dimensions) guide coping behaviors and

outcomes. However, research based on this model has largely focused on (chronic) illness perceptions, rather than remedy perceptions, and has typically relied upon correlational research methods (for a meta-analysis, see Hagger and Orbell 2003). Focusing on the role of remedy perceptions, Horne (1999) proposes that patients' beliefs about the *necessity* of prescribed medication, along with *concerns* about dependence and other negative effects, will (together with illness perceptions) affect medication *adherence*. Preliminary research is supportive (Byrne, Walsh, and Murphy 2005; Horne and Weinman 2002; Horne, Weinman, and Hankins 1999; Llewellyn et al. 2003) but has typically relied upon main effects models and correlational methods.

In the spirit of such research, we propose that preference for a health remedy is a function of both illness perceptions and remedy perceptions. The present research distinguishes itself from prior research in four main ways: 1) We examine the interplay of illness and remedy perceptions, rather than considering each in isolation. We also explore illness and remedy perceptions that have not been examined in prior research. 2) We examine the effects of illness and remedy perceptions on preference (rather than adherence), inasmuch as consumers today frequently face choices among remedies. Our research will also consider downstream consequences of remedy perceptions and preference, specifically the effects on a healthy lifestyle. 3) We utilize experimental methods that allow us to infer causality, rather than the correlational approach noted earlier. 4) Our framework takes a constructivist approach to understanding remedy preference, advocating additional roles for individual and situational characteristics. Figure 1 provides an overview of the conceptual framework. Specific hypotheses based on this framework

will be discussed by focusing on perceptions and preference for two types of health remedies—specifically, Traditional Chinese medicine (TCM) and Western medicine (WM).

---
insert figure 1 about here

Overview of Traditional Chinese and Western Medicines in China

TCM and WM are important forms of health practice in China and other Asian countries. In China, TCM and WM have coexisted for more than 200 years (Qu 2005), and both types of medication are licensed as patent medicine and widely available at pharmacies, hospitals, and other outlets. The pharmaceutical industry ranks as the second largest advertiser in China, spending almost ¥30 billion in 2005 (CTR 2006). The majority of Chinese consumers purchase over-the-counter drugs for self-care, and the market performance of the two types of health remedies varies significantly across illnesses (China Nonprescription Medicines Association 2004). Moreover, the world market for TCM is estimated at over $23 billion (Qiu 2007), with most of the growth coming from Europe and the USA (The Economist 2002; Zeng 2006). Surprisingly, however, research is scant on consumer behavior vis-à-vis TCM versus WM—a void addressed by the present research.

To briefly summarize, TCM theory is strikingly different from the biomedicine model that dominates WM. WM is closely linked to the scientific method and emphasizes empirically measurable biochemical processes that drive disease, its treatment, and health. WM is primarily

concerned with the material aspect of the body and views all medical phenomena as cause-effect sequences, relying on rigorous scientific studies and research that seek empirical proof to all phenomena (Morgan 1985; Piron et al. 2000; Wyngaarden 1985; Yu 2001). To remedy disease, WM relies on drugs (the focus of our investigation), radiation, and/or surgery to treat symptoms and disease. On the other hand, TCM favors a holistic approach, views the universe and body philosophically and develops inductive tools and methods with such principles to guide restoring the total balance of the body (Yu 2001). The Chinese approach is based on a philosophic-scientific approach as compared to WM's cause-and-effect approach (Piron et al. 2000). In TCM theory, the correct balance between Yin and Yang make up the vital energy, 'Qi' (气), an essential life-sustaining substance of which all things are made. Disease or illness is caused by the imbalance of Yin and Yang, which may be brought about by external agents (e.g., climate changes) and internal dysfunctions (e.g., too much stress) (Compilation Committee 2003a; Needham and Lu 2000). To remedy disease or illness, TCM practitioners prescribe harmony-restoration treatments in the form of herbal medicine, acupuncture, moxibustion, massage, and other treatments (Compilation Committee 2003a). Herbal medicine (the focus of our investigation) consists of plant and animal extracts consumed in the forms of capsule, pill, and sometimes tea, and now accounts for around 90% of the Chinese drug market (China Materia Medica Annual Review 2005). Chinese medicine is frequently made up of more than two herbs, which are used to correct the excess and deficiency of Yin or Yang, thus curing the disease (Compilation Committee 2003b).

The category (i.e., Chinese or Western medicine) is legally required to be marked on all

drug labels so that consumers can easily distinguish between the two. Chinese consumers frequently encounter, and are familiar with, the categories of Chinese and Western medicines when seeking to alleviate symptoms and cure illnesses or diseases. The question then arises: how do consumers perceive these health remedies, and what drives consumer preference?

Hypotheses

Prior research has tried to answer these questions by seeking out stable characteristics of individuals (e.g., age, education) that identify consumers of TCM versus WM, with mixed and even contradictory results (see, for example, Lau, Leung, and Tsui [2001] and Chung et al. [2007] on TCM consumption in Hong Kong). Our own research indicates that both TCM and WM consumption are widespread in China and that an approach to understanding consumption based on an assumption of fixed and stable preferences would be of limited use. Instead, our research reflects a context-sensitive constructed preferences approach to understanding TCM and WM consumption (Bettman, Luce, and Payne 1998). We begin by considering consumers' *remedy perceptions* (beliefs about the characteristics of TCM and WM remedies), then relate those perceptions to consumer preference for TCM and WM via the interaction of *illness perceptions* (beliefs about the characteristics of illnesses and symptoms) and *individual and situational characteristics*. Hypotheses are identified in the conceptual framework in figure 1.

Remedy Perceptions. The starting point for understanding remedy preference is to

understand consumer perceptions of TCM and WM. Existing research is scant and descriptive in nature (Chan et al. 2003; Kang et al. 2004; Lam 2001; Lee 1980; Liang 1999; Piron et al. 2000) but suggests that consumer perceptions of WM and TCM will differ in several important ways. For present purposes, we focus on three characteristics of drugs: action rapidity, side effects, and treatment focus, which constitute the benefits and drawbacks of medication-induced treatment (Kiebert et al. 1994). According to TCM theory, most diseases are caused by disequilibrium or imbalance, and a Chinese saying (标本兼治) describes medical success as not only alleviating the symptoms but also aiming for an entire recovery and re-balance of the Yin and Yang (Huang 2002; Compilation Committee 2003b). To this end, TCM is characterized as having mild and slow action, curing the underlying disease by means of correcting imbalance between Yin and Yang (Li 1996). In contrast, a focus on alleviating symptoms quickly seems more consistent with Western medicine, which views diseases as cause-effect sequences (Morgan 1985; Wyngaarden 1985) and tries to identify and aggressively remove the cause of the symptom. Sivin (1987, 326) observed that in China, "It was often said that biomedical therapy is better for relieving symptoms, but treatment by a skilled Chinese doctor is more likely to result in a cure." Accordingly, we hypothesize that:

H1: Consumers will perceive TCM (vs. WM) to have (a) slower action and milder side effects and (b) greater focus on treating the underlying illness versus alleviating the symptoms.

Remedy Preference. We expect that these differential perceptions for TCM and WM will, in turn, affect remedy preference. Chinese consumers perceive TCM to work more slowly and to

treat the underlying illness, and WM to work more quickly and to alleviate the symptoms. Therefore, consumers will prefer the medicine that is more consistent with their treatment time-frame (short or long) and goals (either symptom alleviation or cure of the underlying illness). Aside from common sense, the notion of matching is evident in prior research on preference (Burson 2007) and persuasion (Keller 2006). Accordingly, we hypothesize that:

H2: Consumer preference for TCM (vs. WM) will a) decrease when a faster recovery is desired; and b) increase when the goal is to treat the underlying illness (vs. alleviate symptoms).

We also investigate how individual and situational characteristics (i.e., treatment goals and time-frame) interact to affect preference. Specifically, we argue that consumers will generally prefer TCM over WM—except when the time-frame for treatment is short *and* the treatment goal is to alleviate symptoms. Our reasoning is two-fold: First, achieving an underlying cure would also alleviate symptoms, suggesting a goal hierarchy that favors the former and, in turn, TCM. Second, Chinese consumers, as members of a collectivist culture, may be more inclined to choose TCM as the cultural status quo (Gurhan-Canli and Maheswaran 2000). (Consumers are also more likely to rely upon a status quo option when making an emotionally difficult trade-off (Luce 1998), which is arguably the case for high-stakes decisions about health care.) Only when conditions exist that clearly justify an alternative (i.e., both a short time-frame and a goal of symptom alleviation) will consumer preference shift toward WM. Accordingly, we hypothesize that:

H2c: Consumers will prefer TCM (vs. WM) when the time-frame is long or the treatment goal is to cure the underlying illness; when the time-frame is short and treatment goal is symptom alleviation, consumers will prefer WM (vs. TCM).

The relationship between symptom and disease is, of course, an uncertain one. Any given

disease exhibits variability in its symptoms; moreover, multiple diseases share the same symptoms. As a result, consumer uncertainty about the cause of symptoms may vary. When uncertainty is low, consumers can easily identify a cause-effect relationship and may tend to prefer WM for its precise remedy. The basic tenet of WM is rigorous identification of cause-effect or disease-symptom relationships (Morgan 1985; Wyngaarden 1985). In contrast, when uncertainty is high, consumers cannot easily identify cause-effect relationships; the same symptom may arise from any number of causes, known or unknown. TCM's theoretical approach tolerates more uncertainty and ambiguity (Ma 1994) and, rather than treating a single ailment or symptom, pays more attention to the whole body (Wang and Liang 1998). Accordingly, we hypothesize that:

H3: Consumer preference for TCM (vs. WM) will increase when uncertainty about the cause of a symptom is high (vs. low).

Further, we investigate whether individual and situational characteristics will moderate the effect of causal uncertainty on remedy preference. Specifically, we examine time-frame as a potential moderator and hypothesize an interaction of uncertainty and time-frame such that consumers will prefer TCM over Western drugs—except when the cause of the illness is certain *and* the time-frame for treatment is short. Our reasoning follows from our earlier argument: as an underlying cure and the cultural status quo, preference will favor TCM except when specific conditions justify an alternative preference for WM (i.e., causal certainty and a short time-frame). Accordingly, we hypothesize that:

H3a: Consumers will prefer TCM (vs. WM) medicine when uncertainty is high or time-frame is long; when uncertainty is low and time-frame is short, consumers will prefer WM (vs. TCM).

Remedy Consequences. Thus far, we have discussed the antecedents of consumer preference for TCM and WM, namely remedy perceptions, illness perceptions, and individual/situational characteristics. We now turn to an exploration of the consequences of such preferences, specifically the effects of TCM/WM on complementary health-protective behaviors that constitute a healthy lifestyle. In TCM, regaining equilibrium in Yin and Yang requires both the consumption of medication as well as specific health-promoting habits (e.g., avoiding certain foods and alcohol) (Compilation Committee 1997, 2003b). For example, patients should avoid "raw, cold, greasy, and irritant foods … when taking medicinal herbs" (Compilation Committee 2003b, 32). Indeed, the Yellow Emperor's manual, the earliest Chinese medicine classic, regards health-protective behavior as one of the necessary conditions to promote healing (Wang and Liang 1998). Accordingly, TCM should be associated with holistic concerns that enhance the perceived importance of, and motivation to engage in, health-protective behaviors. In contrast, prior research suggests that Western drugs may be perceived as "get out of jail free cards" that undermine the perceived importance of, and motivation to engage in, health-protective behaviors, thereby undermining healthy lifestyle intentions (Bolton, Cohen, and Bloom 2006; Bolton, Reed, Volpp, and Armstrong 2008). Accordingly, we hypothesize that:

H4: WM (vs. TCM) will undermine the perceived importance of, and motivation to engage in, complementary health-protective behaviors, thereby reducing healthy lifestyle intentions (i.e., a boomerang effect).

If hypothesis 4 is supported, preference for WM versus TCM will have important consequences for the health and welfare of Chinese consumers that go beyond treatment of the specific illness

for which the remedy is taken.

Empirical Overview

In a series of studies conducted in China, we investigate consumer perceptions and preference for TCM versus WM, and the consequences for a healthy lifestyle. Studies 1A and 1B investigate qualitative and quantitative responses to TCM and WM for a variety of illnesses, providing a preliminary test of the main effects hypotheses for perceptions and preference in hypotheses 1—3. Study 2 examines the joint effects of individual/situational characteristics (time-frame and treatment goal) on preference, further testing hypothesis 2. Study 3 investigates the joint effects of illness perceptions (causal uncertainty) and individual/situational characteristics (time-frame) on preference, further testing hypothesis 3. Finally, study 4 investigates the consequences of TCM versus WM for a healthy lifestyle, testing hypothesis 4. Unless otherwise indicated, all studies were conducted among undergraduate and graduate students at a university in Beijing, who received financial remuneration for their participation. Additionally, a convenience survey of urban adult consumers was conducted to provide some evidence of generalizability to the urban Chinese population. Taken together, the empirical work will provide evidence for the organizing framework in figure 1 in an investigation of the antecedents and consequences of preference for TCM and WM among Chinese consumers.

STUDY 1A

The present research begins with a preliminary study to investigate qualitative and quantitative responses to TCM and WM. The primary objective is to understand consumer perceptions of TCM and WM, providing an empirical test of hypothesis 1. We elicit open-ended definitions of TCM and WM, and the qualitative responses are analyzed for their content. Quantitative responses for remedy perceptions are then measured for a variety of illnesses. We also explore whether providing relative effectiveness and safety information about remedies affects consumer response. As a secondary objective, we also measure consumer preference for TCM and WM remedies and explore the relationship between perceptions and preference, providing empirical tests of hypotheses 2b and 3. And, finally, the present study also provides some evidence for robustness through replication across illness and remedy.

Method

Subjects and Design. The experiment was a 2 (information) × 6 (disease replicate) mixed design. A total of 97 participants (54.6% male) were randomly assigned to each group.

Materials and Procedure. The experiment was conducted in two phases. In the first phase, participants completed a set of open-ended questions as follows: “In your own words, explain what is meant by a TCM versus a Western drug. (What is a TCM? What is a Western drug? How are they similar and/or different? List what come to mind when you think of TCM/Western

drugs.)" The purpose of this question was to elicit consumer definitions of TCM and WM and to investigate drug perceptions via open-ended cognitive responses.

In the second phase, participants read a scenario describing a specific disease and a TCM and a Western drug for this disease. (Disease information was adopted from the Medical Encyclopedia of www.medlineplus.gov.) For exploratory purposes, information about the relative efficacy and safety of TCM and WM was manipulated between the two groups. A sample scenario with the information manipulation shown in square brackets follows:

> "Coronary heart disease is a narrowing of the small blood vessels that supply blood and oxygen to the heart (coronary arteries). As the coronary arteries narrow, the flow of blood to the heart can slow or stop, causing chest pain (stable angina), shortness of breath, heart attack, or other symptoms. Coronary disease usually results from the build-up of fatty material and plaque (atherosclerosis). Assume that there are two brands of drugs for this disease in the marketplace. Drug M is a Western drug and Drug N is a Chinese drug. Both drugs help to relieve the symptoms of this disease. [In independent testing, both were equally safe and effective. / Omitted]."

After reading the scenario, each participant was then asked to indicate relative preference for TCM versus WM. Remedy preference was measured by two items on seven-point scales (anchored by "Drug M/Drug N"). For replication purposes, participants responded for six illnesses (rheumatoid arthritis, coronary heart disease, common cold, kidney stone, insomnia, and diarrhea), and order was randomized. Participants then responded to items measuring remedy perceptions (overall effectiveness, effectiveness and rapidity at curing underlying illness and alleviating symptoms, safety, and side effects), illness perceptions (causal uncertainty, disease severity and newness), and individual/ situational characteristics (symptom and cure treatment goals). (Of focal interest are the previously discussed constructs; other items are included to rule out alternative explanations or to provide further insight into process.) All perceptual ratings

were on seven-point scales (with endpoints "Drug M/Drug N"). Illness and individual/situational ratings were on seven-point scales (with endpoints "strongly disagree/agree). The exact wording of all items is detailed in appendix 1. All stimuli (for this and all subsequent experiments) have been translated into English for publication purposes.

Results

Qualitative Responses. Cognitive responses were coded by two judges blind to hypotheses; inter-coder agreement was 95.2% and disagreements were resolved through discussion. The descriptive results are shown in table 1 and provide qualitative support for hypothesis 1. Consistent with hypothesis 1a, 50.5% of respondents associated WM with faster action (compared to 0% for TCM) and 52.6% of respondents reported that TCM had fewer or no side effects (vs. 1.0% for WM). Most respondents (76.3%) also associated TCM with natural substances and WM with non-natural chemicals (68.0%), which can also be interpreted as evidence corroborating hypothesis 1a. Consistent with hypothesis 1b, 22.7% of the respondents reported that TCM cures the underlying disease (vs. 1.0% for WM; χ^2 (1) = 21.75, $p < .01$). In contrast, 13.4% of the respondents reported that WM relieves symptoms (vs. 3.1% for TCM; χ^2 (1) = 6.81, $p < .01$). Finally, we also note that most respondents believed that both TCM and WM are effective remedies (92.8%).

---

insert table 1 about here

Quantitative Responses. Turning to the scenario-based quantitative responses, responses (in this and all subsequent experiments) were re-scaled so that 0 represents the mid-point (neutrality) and 3 (-3) represents the TCM (WM) endpoint. Recall that participants were either instructed that both drugs were equally safe and effective or received no safety or effectiveness information. Overall effectiveness and safety ratings for each remedy did not differ across condition (all $p > .05$) or from mid-point (all $p > .05$), indicating that TCM and WM do not differ on these dimensions. Such findings help to rule out effectiveness and safety as alternative explanations for differential perceptions and preferences for the two remedies.

Remedy Perceptions. Central to hypothesis 1a, ANOVA of rapidity at alleviating symptoms was a significant function of disease ($F(5, 568) = 4.08$, $p < .01$) but unaffected by information manipulation or their interaction (F's < 1). More importantly, rapidity at alleviating symptoms favored WM over TCM (M = -1.34 (1.50), midpoint t-test $p < .01$). Rapidity at curing the underlying illness was a significant function of disease ($F(5, 569) = 6.59$, $p < .01$) and information manipulation (M_{info} =.04 vs. $M_{no\text{-}info}$ = -.55; $F(1, 569) = 16.38$, $p < .01$) but unaffected by their interaction ($F(5, 569) = 1.75$, $p > .10$). More importantly, rapidity at curing the underlying illness favored WM over TCM (M = -.25 (1.81), midpoint t-test $p < .01$). ANOVA of side effects was a significant function of disease ($F(5, 569) = 2.26$, $p < .05$) and information manipulation (M_{info} = 1.74 vs. $M_{no\text{-}info}$ = 1.30; $F(1, 569) = 15.90$, $p < .01$) but unaffected by their interaction ($F < 1$). More importantly, TCM was associated with fewer side effects compared to

WM (M = 1.52 (1.34), midpoint t-test $p < .01$). These results support hypothesis 1a: overall, participants associate TCM with slower and milder action than WM.

Central to hypothesis 1b, a difference score was created (to reflect relative focus on curing the underlying illness versus alleviating symptoms) by subtracting symptom effectiveness from cure effectiveness. ANOVA of this difference score was a significant function of information manipulation (M_{info} = 1.62 (2.14) vs. $M_{no\text{-}info}$ = .83 (2.10), $F(1,569) = 20.18$, $p < .01$) and non-significant for disease condition ($F < 1$) and their interaction ($F < 1$). More importantly, the difference score favored TCM (M = 1.23 (2.15), midpoint t-test $p < .01$), indicating that TCM (vs. WM) is associated with a greater focus on curing the underlying illness than alleviating symptoms. This result supports hypothesis 1b.

As an additional follow-up analysis, we investigated whether consumer schema (i.e., participants' coded cognitive responses) for WM and TCM influence their scenario-based remedy perceptions. First, we contrasted respondents who mentioned the fewer side effects characteristic of TCM against those who did not. Controlling for the information and disease manipulations, respondents with these beliefs showed greater favorability toward TCM than WM on side effects ratings (M_{belief} = 1.79 (1.13) vs. $M_{no\text{-}belief}$=1.23 (1.49); $F(1, 577) = 25.07$, $p < .05$). Second, respondents who associated Western drugs with faster action were contrasted with respondents who did not. Similarly, respondents with these beliefs showed greater favorability toward WM than TCM on rapidity ratings for alleviating symptoms (M_{belief} = -1.54 (1.43) vs. $M_{no\text{-}belief}$ = -1.12 (1.53); $F(1,576) = 11.26$, $p < .01$); rapidity ratings for curing the underlying illness did not differ (M_{belief} = -.15 (1.91) vs. $M_{no\text{-}belief}$ = -.36 (1.70); $F < 1$). Third, respondents

who listed the natural characteristics of TCM or the non-natural characteristics of WM were contrasted with respondents who did not. Here, ANOVA revealed that respondents with natural beliefs showed greater favorability toward TCM than WM on side effects ratings (M_{belief} = 1.62 (1.31) vs. $M_{no\text{-}belief}$ =1.08 (1.42); $F(1, 577) = 19.07$, $p < .05$). Finally, respondents who associated Western drugs with alleviation of symptoms or associated TCM with curing underlying disease were contrasted with respondents who did not. Respondents with these beliefs showed greater favorability toward TCM than WM on relative focus (i.e., curing the underlying illness versus alleviating symptoms) (M_{belief} = 1.73 (2.20) vs. $M_{no\text{-}belief}$ = 1.08 (2.12); $F(1,577) = 5.17$, $p < .05$), as well as a greater inclination to cure the underlying disease as a treatment goal (M_{belief} = 5.47 (1.15) vs. $M_{no\text{-}belief}$ = 5.16 (1.13); $F(1,577) = 6.00$, $p < .05$). Overall, these findings indicate that remedy perceptions are influenced as expected by consumer schema for WM and TCM.

Remedy Preference. In addition to examining remedy perceptions, the current study also explores remedy preference. Descriptive means for drug preference (calculated by averaging the two preference items, coefficient $\alpha = .97$) are shown in table 2. Overall, participants preferred TCM for rheumatoid arthritis and insomnia, and WM for the common cold, coronary heart disease, and diarrhea (midpoint t-tests $p < .05$ for each disease). These preferences were unaffected by the information manipulation (all $p > .10$). Central to testing the main effects of hypotheses 2—3, we conducted a linear regression analysis for preference as a function of remedy perceptions (side effects, symptom rapidity, cure rapidity), illness perceptions

(uncertainty of the symptom causes), and treatment goals.[1] (Indices were constructed by averaging the items for causal uncertainty, symptom goals, and cure goals. Coefficient α's were .81, .84, and .83, respectively.) Results, including covariate coefficients and statistical significance tests, are summarized in table 2. Not surprisingly, respondents preferred drugs that have fewer side effects and faster symptom speed and cure speed ($p < .01$). Central to hypothesis 2, treatment goals affected preference: a goal of curing the underlying illness increased preference for TCM over WM ($p < .01$), whereas a goal of alleviating symptoms reduced preference for TCM over WM ($p < .01$). Central to hypothesis 3, uncertainty also significantly influenced preference, with greater uncertainty increasing preference for TCM over WM ($p < .01$). These results support hypotheses 2b and 3a.

---

insert table 2 about here

Overall, the pattern of results supports our hypotheses. TCM is perceived to have slower action and milder side effects, and greater emphasis on treating the underlying illness versus alleviating the symptoms (hypothesis 1). Moreover, consumers prefer TCM over WM when the goal is treatment of the underlying illness (hypothesis 2b) and when uncertainty about the cause of a symptom is high (hypothesis 3). Although we obtain converging evidence for these hypotheses across both qualitative and quantitative responses, as well as across various instantiations of illness and remedy, several limitations should be noted. First, the open-ended

[1] Regression analyses that included additional covariates (e.g., disease severity, overall effectiveness) yielded a similar pattern of results, indicating that TCM/WM remedy preference is driven by more than risk perceptions and remedy effectiveness (as suggested by traditional health protection models).

questions may have primed participants with stereotypes toward TCM and WM that contaminate subsequent responses to various diseases and remedies. Second, we rely upon regression analysis to test our hypotheses relating perceptions to preference: such evidence is correlational and must be treated with caution. In a subsequent study, we address these points and provide further tests of hypotheses 1—3.

STUDY 1B

The primary objective of the present study is to investigate consumer preference for TCM and WM remedies as a function of treatment goal and uncertainty about the cause of the symptoms. These factors are manipulated to provide a stronger test of causality for the main effects of hypotheses 2 and 3. As a secondary objective, we also measure remedy perceptions for TCM and WM, providing an additional empirical test of hypothesis 1. The present study also provides further variation across illness and remedy by examining a specific symptom, a sore throat, which leads to frequent over-the-counter drug purchase (China Medication 2005). In contrast to study 1A, detailed remedy information is also provided to (arguably) overcome stereotyped responding and to increase external validity inasmuch as such product information is readily available in the marketplace on remedy labels. (The TCM and WM descriptions in this and all subsequent experiments were adopted from remedies in the marketplace and presented in the regulatory label format required on all medicines in China.)

Method

Subjects and Design. The experiment was a 2 (causal uncertainty: high vs. low) × 2 (treatment goal: alleviate symptoms versus cure underlying illness) between-subjects design. A total of 94 participants (45.7% male) were randomly assigned to one of four conditions.

Materials and Procedure. Participants were first presented with the following scenario. The manipulations of causal uncertainty and treatment goal are shown in square brackets.

> "Imagine that you have just survived the busy and tiring midterm week. Unfortunately, you are now suffering from a sore throat. It is swelling and painful. [You are not sure what is causing your sore throat. It could be due to any one of a number of different illnesses that are prevalent right now. / You are quite certain what is causing your sore throat. It is most likely a particular illness that is prevalent right now]. [You decide that the best approach is to treat the symptoms that you are experiencing; that is, to make the sore throat go away. / You decide that the best approach is to treat the underlying cause of the symptoms that you are experiencing; that is, to treat the illness that is causing your sore throat]. You find two suitable drugs in your home medicine chest. The description for each of the drugs is as follows."

	Drug M	Drug N
Category	Western medicine	Traditional Chinese medicine
Action	Antibiotic and antiphlogistic. Relieve the symptoms of pharyngitis and tonsillitis due to streptococcus, acute or chronic tracheitis due to sensitive pathogen, and pneumonitis due to pneumonic pathogen.	Purge fire, reduce heat, subside swelling, and remove toxic material. Relieve sore and swollen gingival, tongue, throat, gingival, and giddy head due to inner heat and excrescent fire.
Active ingredient	Roxithromycin	Radix scutellariae, fructus forsythiae, rhizoma coptidis, flos lonicerae, fructus gardeniae, herba menthae, radix et rhizoma rhei, flos chrysanthemi, radix glycyrrhizae
Usage and	Orally taken. Tablet. Adults: 2 pills	Orally taken. Tablet. Adults: 2 pills

dosage	each time and two times per day	each time and two times per day.

Participants then indicated their relative preference for the two remedies, utilizing the preference items from study 1A (with endpoints "Drug M/Drug N"). On subsequent pages, participants indicated their perceptions of the two remedies (pertaining to rapidity, effectiveness, and side effects), and also indicated their illness perceptions (causal uncertainty, disease severity) and treatment goals (i.e., to alleviate symptoms and to cure the underlying illness). Measurement items are detailed in appendix 1.

Results

Manipulation Checks. Indices were created for causal uncertainty (coefficient $\alpha = .83$), cure and symptom goals (coefficient $\alpha = .81$ and $\alpha = .79$, respectively). ANOVA of the uncertainty index yielded a main effect of uncertainty manipulation ($F(1, 90) = 11.32$, $p < .01$), indicating that participants perceived higher uncertainty under high versus low uncertainty condition ($M_{high} = 4.41$ (1.15) vs. $M_{low} = 3.57$ (1.25)). Similarly, ANOVA of a relative goal index (i.e., a difference score calculated by subtracting the symptoms goal index from the cure goal index) revealed a main effect of treatment goal ($F(1, 90) = 30.41$, $p < .01$), indicating that cure goals (relative to symptom goals) were higher when the treatment goal was curing the underlying illness versus alleviating symptoms ($M_{cure} = .80$ (1.45) vs. ($M_{symptoms} = -.67$ (1.19)). These results

indicate that the manipulations succeeded as intended.[2]

Remedy Perceptions. Analysis of remedy perceptions revealed a pattern of results consistent with study 1A. First, ANOVA of perceptions of action rapidity at alleviating symptoms revealed no effects of the manipulations or their interaction (F's < 1); more importantly, WM (vs. TCM) was associated with faster relief of symptoms (M = -1.26 (1.65), midpoint t-test $p < .01$). Perceptions of cure rapidity were similarly unaffected by the manipulations ($p > .30$) and favored neither TCM nor WM (M = .32 (1.78), midpoint t-test $p > .05$). Second, ANOVA of side effect perceptions also revealed no effect of uncertainty ($F(1, 90) = 1.66$, $p > .20$), treatment goal manipulation or their interaction (F's < 1); more importantly, TCM (vs. WM) was associated with fewer side effects (M = 2.38 (.96), $p < .01$). Third, ANOVA of a remedy focus difference score (cure effectiveness minus symptoms effectiveness) also revealed no significant effects of the treatment goal ($F(1, 90) = 2.20$, $p > .10$), uncertainty manipulation or their interaction (F's < 1); more importantly, TCM was associated with greater cure effectiveness than symptom effectiveness (M = 1.35 (2.64), midpoint t-test $p < .01$). These results support hypothesis 1.

[2] For completeness' sake, the uncertainty index was unaffected by treatment goal or its interaction with the uncertainty manipulation (F's < 1). Similarly, the relative goal index was unaffected by the uncertainty manipulation ($F(1,90) = 2.47$, $p > .10$) or its interaction with treatment goal condition ($F < 1$). We also note that, as intended, the uncertainty manipulation did not affect disease severity ($F < 1$); moreover, overall effectiveness was unaffected by uncertainty ($F < 1$) or treatment goal ($F(1,90) = 1.12$, $p > .25$) manipulations or their interaction ($F(1,90) = 1.42$, $p > .20$), and, importantly, favored neither TCM nor WM (M = .02 (1.84), midpoint t-test $p > .05$). These results help rule out risk perceptions and remedy effectiveness (implicated in traditional health protection models) as alternative explanations for our results.

Remedy Preference. ANOVA of remedy preference (coefficient α = .93) revealed effects of uncertainty ($F(1, 90) = 3.50$, $p = .07$) and treatment goal ($F(1, 90) = 6.00$, $p < .05$); the interaction was non-significant ($F < 1$).[3] Higher (versus lower) uncertainty increased preference for TCM over WM ($M_{high} = .95$ (1.74) vs. $M_{low} = .28$ (2.01); moreover, preferences under higher uncertainty favored TCM (midpoint t-test $p < .01$). A cure (versus symptom) treatment goal also increased preference for TCM over WM ($M_{cure} = 1.04$ (2.05) vs. $M_{symptom} = .15$ (1.66)); moreover, preferences under a cure goal favored TCM (midpoint t-test $p < .01$). This pattern of results supports hypotheses 2b and 3a.

Overall, the results of study 1B are supportive. Consumers perceive TCM (vs. WM) to have slower action and milder side effects and greater focus on treating the underlying illness versus alleviating the symptoms. As uncertainty about the cause of symptoms increases, consumers increasingly prefer TCM (vs. WM). When the treatment goal is cure of the underlying illness (vs. alleviation of symptoms), consumers increasingly prefer TCM (vs. WM). These results support hypotheses 1, 2b, and 3a.

Discussion

The findings thus far support our hypotheses for differences in consumer perceptions that influence preference for TCM and WM. In study 1A, consumer perceptions systematically

[3] Analyses that included additional covariates (e.g., disease severity, overall effectiveness) yielded a similar pattern of results, again helping to rule out risk perceptions and remedy effectiveness as alternative explanations of the observed differences in remedy preference.

differed for the health remedies: TCM (versus WM) was perceived to have slower action, fewer side effects, and a focus on curing the underlying illness (versus alleviating symptoms), across a variety of remedies. The qualitative and quantitative evidence of remedy perceptions in study 1A received further quantitative support for specific instantiations of TCM and WM remedies in study 1B. Moreover, preference was influenced by treatment goals and illness perceptions (i.e., causal uncertainty), with correlational evidence across a variety of remedies in study 1A further supported by the causal evidence based on manipulations of treatment goals and uncertainty in study 1B. Taken together, these results provide support for the main effects hypotheses in hypothesis 1—3. Consumers appear to match the remedy to the illness, preferring TCM over WM when causal uncertainty about symptoms is high and when the goal of treatment is to cure the underlying illness (matching the perception that TCM cures while WM alleviates symptoms). More generally, the pattern of observed results is consistent with the framework in figure 1, which proposes that illness and remedy perceptions, in combination with individual/situational characteristics (such as treatment goals), drive remedy preference.

STUDY 2

We turn now to pursuit of a more nuanced understanding of how individual and situational characteristics might, in combination with remedy perceptions, drive preference. Studies 1A and 1B indicate that remedy perceptions for TCM versus WM differ in terms of action rapidity and treatment focus (i.e., underlying cure vs. alleviation of symptoms). The

primary objective of the present experiment is to examine how individual and situational characteristics (specifically, treatment goal and time-frame constraints) combine to affect preference for TCM versus WM, providing an empirical test of hypothesis 2. Specifically, we hypothesize that consumers will prefer TCM (vs. WM) when the time-frame is long or the treatment goal is to cure the underlying illness; when the time frame is short and the treatment goal is symptom alleviations, consumer preference will shift toward WM (vs. TCM). We utilize a scenario that manipulates treatment goal and time-frame within the context of a specific symptom and detailed remedy information (for insomnia, a frequent complaint of Chinese university students).

Method

Subjects and Design. The experiment was a 2 (time-frame) × 2 (treatment goal) between-subjects design. A total of 152 participants (50% male) were randomly assigned to one of four conditions.

Materials and Procedure. Participants first read a scenario as follows. The manipulations for time-frame and treatment goal are shown in square brackets.

> "Imagine that you are having difficulty falling asleep and are waking up frequently during the night. It has been troubling you for several days. You have had this problem before, and it was probably due to neurasthenia. You are faced with making a very long drive [3 days / 3 weeks] later. You do not want the sleeping problem to affect your ability to drive. [You decide to treat the symptoms that you are experiencing; that is, to

overcome insomnia and have a deep sleep. / You decide to treat the underlying cause of the symptoms that you are experiencing; that is, to treat the illness that is causing your sleeping disorder]. You find two suitable drugs in your home medicine chest. The description for each of the drugs is as follows."[4]

	Drug M	Drug N
Category	Western medicine	Traditional Chinese medicine
Major Action	Helps to fall asleep quickly and remain sleepy for 7-8 hours.	Balances mood and alleviates anxiety. Aids sleep and improves sleep quality.
Active ingredient	Zolpidem	Gastrodin
Side Effects	Can be habit-forming if taken frequently. May cause side effects such as drowsiness, headache, and dizziness.	May cause side effects such as headache, upset stomach, and dry mouth or throat.
Usage and dosage	Orally taken. Tablet. Taken as needed at bedtime.	Orally taken. Tablet. Adults: 1-2 pills each time and three times per day.

Participants then indicated their preference between the two drugs. Participants also rated their remedy perceptions (overall effectiveness and speed, cure and symptom effectiveness, side effects, and safety), illness perceptions (causal uncertainty and disease severity) and also completed manipulation checks items (for treatment goals and time-frame). The exact wording of all items is detailed in appendix 1.

Results

Manipulation Checks. Indices were created for time-frame (coefficient $\alpha = .87$), cure and symptom goals (coefficient $\alpha = .70$ and $\alpha = .73$, respectively). ANOVA of the time-frame index yielded a main effect of time-frame manipulation ($F(1, 148) = 24.91$, $p < .01$), indicating longer

[4] The diagnosis of neurasthenia has been curtailed in the West but is still common in China.

time-frame perceptions in the long (versus short) time-frame condition (M_{long} = 4.85 (1.32) vs. M_{short} = 3.74 (1.44)). Similarly, ANOVA of a relative goal index (i.e., a difference score calculated by subtracting the symptoms index from the cure index) revealed higher cure goals (relative to symptom goals) when the treatment goal was curing the underlying illness versus alleviating symptoms (M_{cure} = .50 (1.14) vs. $M_{symptom}$ = -.97 (1.67); $F(1, 148) = 40.26$, $p < .01$). These results indicate that the manipulations succeeded as intended.[5]

Remedy Preference. ANOVA of remedy preference (coefficient α = .81 revealed significant effects of time frame ($F(1, 148) = 26.50$, $p < .01$), treatment goal ($F(1, 148) = 25.02$, $p < .01$), and their interaction ($F(1, 148) = 4.39$, $p < .05$).[6] Under a treatment goal of alleviating symptoms, a shorter time-frame dramatically shifts preference from TCM to WM (M_{long} =.63 (1.49) vs. M_{short} = -1.17 (1.63); $F(1, 72) = 24.49$, $p < .01$). Under a treatment goal of curing the underlying disease, preference favors TCM, especially for a longer time-frame (M_{long} = 1.35 (1.27) vs. M_{short} =.59 (1.70); $F(1, 76) = 4.93$, $p < .05$). This pattern of results, illustrated in figure 2, supports hypothesis 2c. As expected, consumers prefer TCM to Western medicine—except when the treatment goal is to alleviate the symptoms and the time-frame is short.

---

[5] For completeness' sake, time-frame index was not a significant function of treatment goal ($F(1,148) = 3.73$, $p > .05$) or its interaction with time-frame condition ($F < 1$). Similarly, the relative goal index was a function of time-frame manipulation (M_{long} = .07 (1.50) vs. M_{short} = -.49 (1.65); $F(1,148)$, $p < .05$) but unaffected by its interaction with treatment goal ($F < 1$). The latter seems reasonable inasmuch as a shorter time-frame increases the perceived importance of relieving symptoms over curing the underlying illness. We also note that, as intended, the manipulations did not affect disease severity (F's < 1); moreover, overall effectiveness was unaffected by treatment goal ($F(1, 148) = 1.53$, $p > .20$) or time-frame manipulations or their interaction (F's< 1), and, importantly, favored neither TCM or WM (M = .26 (1.68), midpoint t-test $p > .05$). These results again help rule out risk perceptions and remedy effectiveness (implicated in traditional health protection models) as alternative explanations for our results.

[6] The pattern of results remains consistent with the inclusion of covariates (e.g., overall effectiveness, disease severity, side effects, uncertainty) in the analysis.

---
insert figure 2 about here

STUDY 3

Thus far, our evidence suggests that drug preference is a function of remedy perceptions, illness perceptions, and individual/situational characteristics. Study 2 focused on two individual/situational characteristics—treatment goals and time-frame—and demonstrate that they interact to influence remedy preference. To provide further support for our conceptual framework, the present study investigates whether illness perceptions (i.e., causal uncertainty) and individual/situational characteristics (i.e., time-frame for treatment of the illness) interact to drive remedy preferences. Specifically, we predict that consumers will prefer TCM (vs. WM) medicine when uncertainty is high or time-frame is long; when uncertainty is low and time-frame is short, consumers will prefer WM (vs. TCM). Hypothesis 3a is tested by describing a scenario that manipulates causal uncertainty and time-frame within the context of a specific symptom and detailed remedy information (for a sore throat).

Method

Subjects and Design. The experiment was a 2 (causal uncertainty) × 2 (time-frame) between-subjects design. A total of 100 participants (38% male) were randomly assigned to one

of four conditions.

Materials and Procedure. Participants first read a scenario as follows. Manipulations of causal uncertainty and time-frame are shown in square brackets.

> "Imagine that you have just survived the busy and tiring midterm week. Unfortunately, you have a sore throat. It is swelling and painful. [You are certain that the cause of your sore throat is tonsillitis. / You are not certain whether the cause of your sore throat is tonsillitis or something else. There are several other possible causes, all comparable in seriousness to tonsillitis.] You have a classroom presentation to make [2 days / 10 days] later. You need to obtain some relief by then. You find two suitable drugs in your home medicine chest. The description for each of the drugs is as follows."

Participants received the same detailed remedy information as in study 1B. Participants then indicated their remedy preference, remedy and illness perceptions, and completed manipulation check items for causal uncertainty and time-frame. Measures for these items are detailed in appendix 1.

Results

Manipulation Checks. Indices were created for causal uncertainty (coefficient $\alpha = .82$) and for time-frame perceptions (coefficient $\alpha = .90$). ANOVA of causal uncertainty revealed a main effect of the uncertainty manipulation ($F(1, 96) = 4.54$, $p < .05$), indicating that participants perceived higher causal uncertainty under high versus low uncertainty condition ($M_{high} = 4.00$ (1.33) vs. $M_{low} = 3.44$ (1.31)). Similarly, ANOVA revealed longer time-frame perceptions in the long (versus short) time-frame condition ($M_{long} = 4.37$ (1.62) vs. $M_{short} = 3.65$ (1.80); $F(1, 96) =$

4.74, $p < .05$), as expected. These results indicate that the manipulations succeeded as intended.[7]

Remedy Preference. ANOVA of remedy preference (coefficient α = .91) revealed significant effects of time-frame (($F(1, 96) = 9.94$, $p < .01$), uncertainty ($F(1, 96) = 4.98$, $p < .05$), and their interaction ($F(1, 96) = 3.37$, $p = .07$).[8] When causal uncertainty is high, time-frame has no effect ($M_{long} = .76$ (1.37) vs. $M_{short} = .33$ (1.44); $F(1, 45) = 1.20$, $p = .28$). When causal uncertainty is low, a shorter time-frame shifts preference toward WM ($M_{long} = .63$ (1.90) vs. $M_{short} = -.98$ (1.72); $F(1, 51) = 9.29$, $p < .01$). These results, illustrated in figure 3, support hypothesis 3a. As expected, consumers prefer TCM to WM—except when uncertainty is low and time-frame is short.

---
insert figure 3 about here

Discussion

Studies 2 and 3 provide a more nuanced understanding of the interplay of remedy perceptions, illness perceptions, and individual/situational characteristics (i.e., treatment goal and time-frame) on remedy preference. In study 2, treatment goal and time-frame interact to drive

[7] For completeness' sake, the uncertainty index was unaffected by time-frame or its interaction with uncertainty (F's < 1). Similarly, the time-frame index was unaffected by uncertainty and its interaction with time-frame (respectively, $F < 1$ and $F(1, 96) = 1.69$, $p > .15$). Moreover, disease severity and overall effectiveness of the remedy were not significantly affected by our manipulations (F's <1).

[8] With covariates (e.g., overall effectiveness, disease severity, side effects), the interaction reaches traditional levels of significance ($F(1, 84) = 4.81$, $p < .05$). A covariate approach again helps to rule out alternative explanations.

remedy preference: consumer appear to prefer the remedy that matches their individual situation. In study 3, causal uncertainty and time-frame interact to drive remedy preference. Consumers appear to prefer the remedy that matches perceptions of the illness and the individual situation (also observed in study 1). Preference shifts from TCM to WM when both conditions (symptom goal and short time-frame in study 2, causal certainty and short time-frame in study 3) match perceptions of WM (rapid action and symptom alleviation). Although we manipulated these factors via hypothetical scenarios, it seems plausible that such variation would occur naturally in the real world, as well as being amenable to marketing influence (reserved for the general discussion).

STUDY 4

Thus far, our evidence indicates that consumer preference for TCM and WM is affected by remedy perceptions (such as action rapidity and treatment focus), illness perceptions (such as causal uncertainty), and individual/situational characteristics (such as treatment goals and time-frame). This pattern of findings supports hypotheses 1—3 in the organizing framework in figure 1. In a final experiment, we turn our attention from antecedents of preference to downstream consequences of the consumption of TCM versus WM. Specifically, we examine the effects of TCM versus WM on complementary health-protective behavior, providing an empirical test of hypothesis 4.

Consistent with hypothesis 4, we posit that WM (vs. TCM) will undermine the perceived

importance of, and motivation to engage in, complementary health-protective behaviors, thereby reducing healthy lifestyle intentions (i.e., a boomerang effect). Furthermore, we investigate whether a corrective intervention designed to increase the perceived importance of a healthy lifestyle will 'undo' the boomerang of WM by motivating health-protective behaviors (Bolton et al. 2008). Such an intervention is not expected to affect healthy lifestyle intentions for TCM inasmuch as complementary behaviors are already perceived as important for TCM. Accordingly, we predict an interaction of health remedy (TCM/WM) and intervention (present/absent) such that:

> **H4 (corollary):** Compared to TCM, WM will undermine the perceived importance of, and motivation to engage in, complementary health-protective behaviors, thereby reducing healthy lifestyle intentions. In the presence of the corrective intervention, the boomerang of WM will be mitigated.

Hypothesis 4 and its corollary are tested by describing a scenario that manipulates health remedy (TCM vs. WM) and corrective intervention (present/absent) within the context of a specific symptom and detailed remedy information (for high blood pressure).

Method

Subjects and Design. The experiment was a 2 (remedy: TCM vs. WM) × 2 (intervention: present vs. absent) between-subjects design. A total of 132 participants (36% male) were randomly assigned to one of four conditions.

Materials and Procedure. Participants read a short scenario followed by a description of

either a TCM or WM drug.

> "Wang is 40 years old, 1.78 meters tall, and weighs 90 kilograms (somewhat overweight for a man of this age and height). He smokes about 15 cigarettes per day and drinks regularly (1-2 servings of alcohol per day). Wang has recently been diagnosed with high blood pressure. To help with this problem, his doctor recommends that he take the following medicine:

In the WM condition, participants read about a Western remedy as follows (with the intervention manipulation, emphasizing the importance of complementary health-protective behaviors, shown in square brackets):

Category	Western medicine
Action	The drug is indicated for the treatment of hypertension, chronic stable angina, and confirmed or suspected vasospastic angina.
Active ingredient	Amlodipine besylate
Usage and dosage	Orally taken. Tablet. Usual dose for adults is 5-10 mg once daily.
[Additional info]	[This drug works best if accompanied by a low-fat and low-salt diet, along with regular exercise. Smoking and excessive alcohol intake are not recommended / omit]

In the TCM condition, participants read about a Traditional Chinese remedy as follows (omitting the intervention manipulation, which was the same for both remedies):

Category	Traditional Chinese medicine
Action	The drug is indicated for the treatment of coronary arteriosclerosis, angina pectoris, hypertension, and hyperlipaemia.
Active ingredient	Radix salviae miltiorrhizae, radix notoginseng, and bormel
Usage and dosage	Oral or sublingual medication. 1 bag each time, 3 times daily.

Participants then responded to a series of questions to gauge Wang's intentions to lead a healthy lifestyle when taking the remedy, motivation and ability to lead a healthy lifestyle, as well as the perceived importance of a healthy lifestyle to good health. Participants also indicated perceptions of the remedy, perceptions of the illness, and treatment goals. Measurement items are detailed in appendix 2.

Results

For ease of reporting, indices were constructed to reflect: (1) healthy lifestyle behaviors, the average of thirteen behavioral measures (α = .91); (2) motivation, the average of five motivational items (α = .89); (3) ability, the average of five capability items (α = .90); and (4) importance of healthy lifestyle behaviors, the average of five importance items (α = .93). The descriptive results are shown in table 3 and figure 4.[9]

---

insert table 3 and figure 4 about here

Behavioral Index. ANOVA of the behavioral index revealed effects of remedy ($F(1, 128) = 13.96$, $p < .01$), intervention ($F(1, 128) = 5.52$, $p < .05$), and their interaction ($F(1, 128) = 4.92$, $p < .05$). In the absence of the intervention, the behavioral index was higher for TCM than WM ($M_{TCM} = 4.63$ (1.04) vs. $M_{WM} = 3.66$ (.80), $F(1, 60) = 16.92$, $p < .01$). In the presence of the intervention, the behavioral index did not differ ($M_{TCM} = 4.66$ (.85) vs. $M_{WM} = 4.41$ (1.04), $F(1, 68) = 1.21$, $p > .10$). These results indicate that 1) WM (vs. TCM) boomerang on a healthy lifestyle and 2) an intervention mitigates the boomerang of WM (vs. TCM) on healthy lifestyle behaviors—providing support for hypothesis 4 and its corollary.

[9] An analysis of remedy perceptions was also conducted. Consistent with H1, the TCM (vs. WM) remedy was perceived to have milder and slower action and to focus more on curing the underlying illness than alleviating symptoms. Details are omitted for brevity's sake as the focus of the current study is H4 and its corollary.

Psychological Mechanisms. Central to hypothesis 4, motivation and importance indices yielded a similar pattern of results. First, ANOVA of the motivation index revealed effects of remedy ($F(1, 128) = 4.81$, $p < .05$) and its interaction with the intervention ($F(1, 128) = 4.24$, $p < .05$). Specifically, motivation ratings favored TCM over WM in the absence of an intervention ($M_{TCM} = 4.63$ (1.17) vs. $M_{WM} = 3.82$ (.88), $F(1, 60) = 9.44$, $p < .01$); motivation ratings for TCM vs. WM did not differ in the presence of an intervention ($M_{TCM} = 4.37$ (1.17) vs. $M_{WM} = 4.34$ (1.10), $F < 1$). Second, ANOVA of the importance index revealed effects of remedy ($F(1, 128) = 11.89$, $p < .01$), the intervention ($F(1, 128) = 14.48$, $p < .01$), and their interaction ($F(1, 128) = 9.56$, $p < .01$). Specifically, importance ratings favored TCM over WM in the absence of an intervention ($M_{TCM} = 5.88$ (1.00) vs. $M_{WM} = 4.68$ (1.34), $F(1, 60) = 15.97$, $p < .01$); in the presence of an intervention, importance ratings for TCM vs. WM did not differ ($M_{TCM} = 6.01$ (.80) vs. $M_{WM} = 5.94$ (1.03), $F < 1$). As expected, the ability index was unaffected by the manipulations (F's < 1), which also helps to rule out halo effects.[10] These results indicate that 1) WM (vs. TCM) undermines perceived importance of, and motivation to engage in, a healthy lifestyle and 2) an intervention mitigates the boomerang of WM (vs. TCM) on perceived importance and motivation. The evidence again supports hypothesis 4 and its corollary.

[10] Prior research in the United States found that drug marketing undermined both motivation and ability to engage in a healthy lifestyle (Bolton et al. 2008). Compared to supplements, drugs were associated with poor health that undermined self-efficacy and perceived ability to engage in a healthy lifestyle. In the context of WM versus TCM, we do not anticipate that ability will play a mediating role inasmuch as TCM and WM do not have differential associations with poor health (which in turn would undermine relative ability perceptions). The null effect for perceived ability is therefore supportive. In China, WM versus TCM boomerangs via a single motivational mechanism, because TCM/WM differentially activate only one of the two mechanisms identified in Bolton et al. (2008). As such, the present research provides further support for the boomerang effect of remedy marketing and its generalizability across culture.

Mediation. An analysis was conducted to test whether perceived importance and motivation mediate the effects of health remedy and the intervention on healthy lifestyle behaviors. As reported previously, the remedy × intervention interaction is significant for healthy lifestyle and the proposed mediators, importance and motivation (which are close correlates). When the importance index is included as a covariate in the model for healthy lifestyle, importance is a significant predictor ($F(1, 124) = 42.14$, $p < .01$) and renders the interaction non-significant ($F(1, 124) = 1.22$, $p > .25$). Similarly, when the motivation index is included as a covariate in the model for healthy lifestyle, motivation is a significant predictor ($F(1, 124) = 97.55$, $p < .01$) and renders the interaction non-significant ($F(1, 124) = 1.84$, $p > .15$). This evidence supports the proposed mediation.

Overall, the pattern of results is supportive. WM (vs. TCM) undermines perceived importance of, and motivation to engage in, health protective behaviors, thereby reducing healthy lifestyle behaviors. An intervention enhanced perceived importance and motivation to engage in complementary behaviors, thereby mitigating the boomerang of WM (vs. TCM). Evidence for the mediating role of importance perceptions and motivation is two-fold: a mediational analysis is supportive and an intervention that targets the mediating process is also effective (cf. Spencer, Zanna, and Fong 2005). These results lend further support to the boomerang effect of remedy marketing, mediating processes and corrective interventions (Bolton et al. 2006, 2008), and their generalizability across culture.

GENERAL DISCUSSION

The present results support our hypotheses. Consumers perceive TCM (vs. WM) to have slower action, milder side effects, and greater focus on treating the underlying illness versus alleviating the symptoms. As a result, consumers prefer TCM (WM) to cure the underlying illness (alleviate symptoms) and when the time-frame is longer (shorter). Illness perceptions also affect remedy preference: consumers increasingly prefer TCM (WM) when the cause of symptoms is uncertain (certain). Studies 1A and 1B provide both qualitative and quantitative evidence to support these findings. Moreover, individual/situational characteristics and illness perceptions interact to predict remedy preferences. Specifically, preference for TCM (over WM) is reduced when individual/situational characteristics and illness perceptions favor WM (specifically, a short time-frame and symptom alleviation goal in study 2, and a short time-frame and causal certainty in study 3). Finally, perceptions and preference for TCM and WM are shown to have consequences for a healthy lifestyle: WM (versus TCM) reduces the perceived importance of, and motivation to engage in, complementary health-protective behavior, thereby undermining a healthy lifestyle (study 4). Taken together, the empirical work provides evidence for the organizing framework in figure 1 that illustrates antecedents and consequences of consumer preference for health remedies.

Limitations. We note several limitations of the present set of experiments. First, we utilize self-report measures and rely upon other research that has established the link between preferences, intentions, and actual behavior. Self-report data do, however, allow us to investigate

process by measuring perceptions—of remedies and illnesses, for example—that drive consumer preference. Second, studies 1B—4 provided specific instantiations for the health remedies that may not generalize to other domains and stimuli. Looked at another way, however, doing so provides a more realistic and conservative test inasmuch as consumer perceptions (and treatment manipulations) must be sufficient to overcome the realistic and detailed product information that was provided. Third, study 1A uses an impoverished set of stimuli that provides only minimal remedy information and may not generalize to more specific instantiations and other domains. However, doing so allows us to examine consumers' spontaneous reactions, relatively uncontaminated by specific aspects of the stimuli. Fourth, we attribute our results to differential remedy perceptions (action rapidity, symptom versus cure focus) for TCM and WM. Although it remains possible that TCM and WM differ on other dimensions that could account for our findings, we examined and ruled out various other potential differences (e.g., overall effectiveness, disease severity) and employed manipulations (treatment goals, time-frame) that clearly map onto the hypothesized dimensions. Finally, our research used convenience samples of university students and makes no claims to representativeness of the general population. However, our findings were consistent across studies that provided variation in both illnesses and remedies.

Consumer Survey. To provide some evidence for generalizability across population, a survey was conducted using convenience sampling of adult consumers in Beijing. A total of 123 Chinese adults were intercepted at a railway station and a university and were asked to complete

a paper-and-pencil survey. Respondents were 54.5% male, ranged in age from 18 to 60 (with 62.6% in the age range 25-34), came from rural and urban backgrounds (30.5% rural), had either graduated high school or held a university degree (41.3% high school), and the majority were employed (full-time 81%, part-time 7.4%). Monthly income ranged from less than 1000 RMB to over 6000 RMB (with a median of 3001-4000 RMB per month).

---

insert table 4 about here

Table 4 reveals the survey items and pattern of responses. As expected, the majority of respondents have consumed both TCM (95.9%) and WM (98.4%), supporting our assumption that both remedies are widely available in (urban) China. For remedy perceptions, the majority of respondents i) perceive TCM as slower and milder with fewer side-effects; and ii) associate TCM with curing the underlying illness and WM with alleviating symptoms. Overall preference differs little for TCM versus WM but causal (un)certainty shifts preference towards WM (TCM). Moreover, remedy preferences for specific illnesses are consistent with the pattern obtained in study 1A, suggesting comparability of our convenience sample and student samples. And, finally, a healthy lifestyle (such as a special diet) is deemed more important when taking TCM versus WM for high blood pressure. These results are consistent with hypotheses 1—4 and provide some evidence for the generalizability of our findings to a broader (urban) population in China. Although further research is clearly required to overcome the limitations of the survey method and provide a more nuanced understanding of consumer perceptions and preferences in the broader population, the present findings are encouraging.

Theoretical Implications

Although it is difficult to briefly summarize prior research in the health domain, we have argued that health-protection models primarily focus on risk perceptions, self-efficacy and response-efficacy as drivers of health-protection. These factors have proven quite useful for predicting specific health-protective behaviors (e.g., stopping a risky behavior like smoking, adopting a health-protective behavior like sunscreen, and adhering to a medication regime). Although extending these models to preference among treatment remedies seems possible and would presumably implicate risk perceptions and remedy effectiveness as key drivers of relative remedy preference, our research indicates that these explanations cannot account for our findings. Moreover, our research identifies other antecedents of remedy preference (remedy and illness perceptions, individual and situational characteristics) that do not map easily onto prior models and research, limiting their usefulness to address the present research questions, and thus highlighting our contribution to the health marketing literature.

Lay Theories of Medicine. The present research also answers the call to better understand commonsense psychology (Heider 1958) and the lay theories that guide human behavior (Molden and Dweck 2006). We argue that consumers hold "lay theories of medicine" that guide their preferences and behaviors in the health domain. These lay theories of medicine incorporate beliefs about illnesses and symptoms (a form of lay diagnosis that may feature causal

un/certainty) and beliefs about health remedies (including how remedies work with, for example, TCM delivering a mild, slow cure of the underlying illness and WM delivering a fast, powerful short-term fix of the symptoms). Based on these lay theories, consumers construct preferences that are consistent with their individual and situational characteristics (such as treatment goals and time constraints). Indeed, China is an especially appropriate setting for our investigation because of the dual theories of medicine that operate side-by-side in the culture. Interestingly, other traditional cultures have also incorporated Western medicine—witness, for example, Maori and Pakeha illnesses and treatments among the New Zealand Maori—leading to "medical pluralism" (Cameron and Moss-Morris 2004, 102). Although the United States (and much of western society) is currently dominated by the Western biomedical model of medicine, the growth in complementary and alternative medicines points to the increasing importance of understanding the lay theories that guide consumer health care preferences and choices (Thompson and Troester 2002). We also note that Western and Traditional Chinese medicines vary across culture, both among consumers of medicine and medical practitioners (Payer 1996), suggesting that a cross-cultural approach to understanding lay theories of medicine may be merited.

Country of Origin (COO) Effects. The present research also appears relevant to the literature on COO effects, with TCM/WM serving as a cue to the "culture of origin" of the remedy (arising from Traditional Chinese medicine or Western theories of medicine). Prior research proposes cognitive, affective and normative aspects to the COO effect (Verlegh and

Steenkamp 1999): COO serves as a cognitive signal of quality, carries with it affective associations, and may also have normative implications (e.g., “buy domestic”). From a cognitive standpoint, COO may bias subsequent product information processing (Hong and Wyer 1990) and drive inferences about other product attributes (e.g., via matching of product and country images; Roth and Romeo 1992). Our results appear consistent with this cognitive processing perspective: COO drives inferences about the remedy (e.g., action rapidity, treatment focus) that affect subsequent preference in ways that appear to go beyond a traditional quality signaling perspective. Moreover, prior research suggests that COO effects are not dependent upon actual origin in another country (Leclerc, Schmitt, and Dubé 1994; Verlegh and Steenkamp 1999) and, indeed, most TCM and WM consumed in China is also manufactured in China (Zeng 2006). Importantly, however, our research suggests that COO effects will be dependent upon individual and situational characteristics—with relative preference depending upon treatment goals, time-frame and illness perceptions. Moreover, we also observe effects of remedy consumption on subsequent healthy lifestyle intentions—indeed, the TCM/WM label may prime lay theories of medicine that guide consumer preference and behavior well beyond the COO literature’s traditional focus on product evaluations. Although the present research has adopted a cognitive perspective, future research is merited to investigate whether affective and normative responses are also implicated in consumer response to TCM and WM marketing.

Marketing Implications

The present research adds to the extant research on health marketing and health-related behavior—topics of considerable interest to marketers, consumers and consumer welfare advocates, health care professionals, and government regulatory agencies. Our research provides evidence for lay theories of medicine that may not map onto the theories of medicine held by practitioners or empirical evidence in the medical literature. (Indeed, literature comparing health outcomes for TCM and WM is scant and the normatively correct preference is unclear, although we suspect that the remedy perceptions driving consumer preference lack validity and/or empirical scrutiny.) From a managerial perspective, understanding remedy and illness perceptions helps predict consumer preferences across individuals and situations. As a result, marketers may be able to leverage their understanding of consumer lay theories of medicine to improve remedy marketing. For example, in the Chinese marketplace, WM is perceived as a quick fix of symptoms that has unwelcome side effects. Marketers may attempt to change these perceptions (e.g., persuading consumers of the curative powers of WM) or perhaps turn these perceptions to advantage (e.g., emphasizing the importance of a fast recovery, associating power with effectiveness). From a consumer perspective, decisions in the health domain are important for individual health and the welfare of society as a whole. Consumers may be driven by lay theories to make health care choices that do not maximize health outcomes—for example, choosing health remedies out of potentially inaccurate perceptions of their action rapidity or treatment focus, or neglecting health protective behaviors when consuming WM (vs. TCM). Thus, our findings add to the growing debate over the regulation of health marketing, the role of direct-to-consumer advertising, and marketing efforts to promote a healthy lifestyle.

FIGURE 1: AN ORGANIZING FRAMEWORK FOR UNDERSTANDING REMEDY PREFERENCES (IN A TCM/WM CONTEXT)

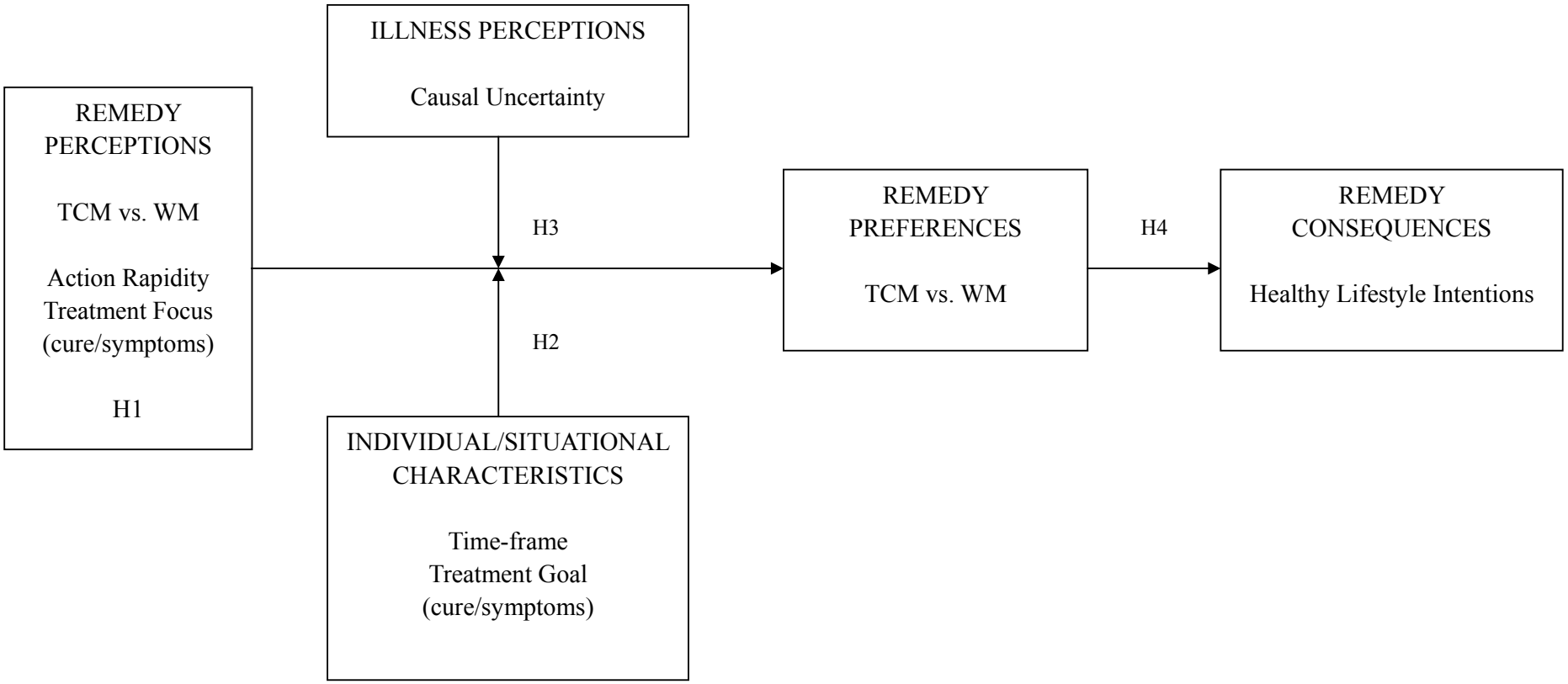
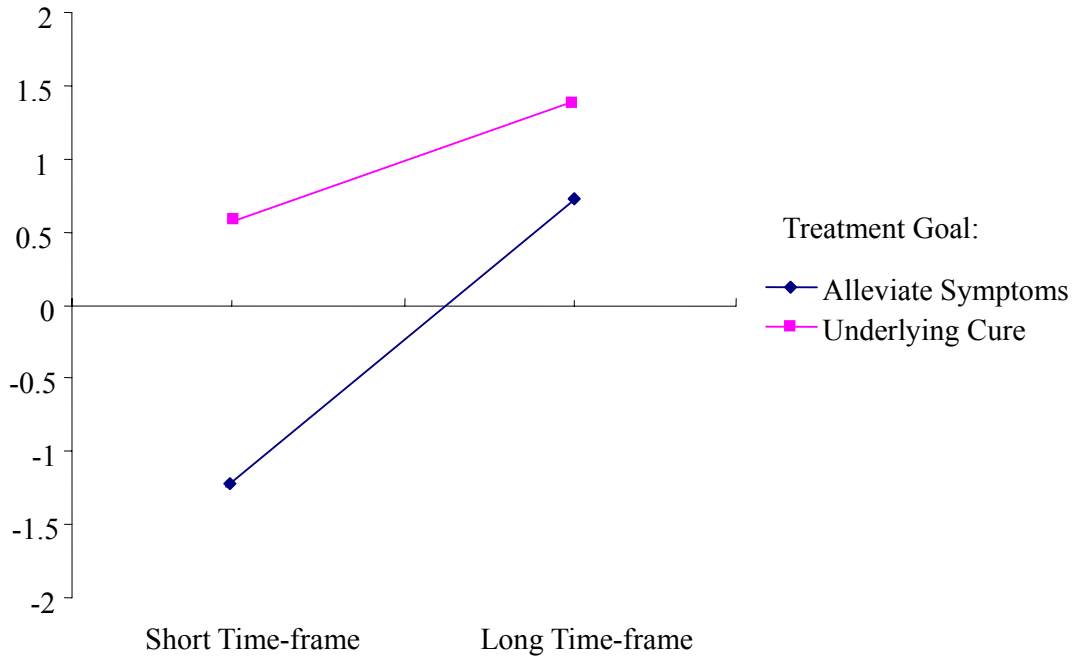
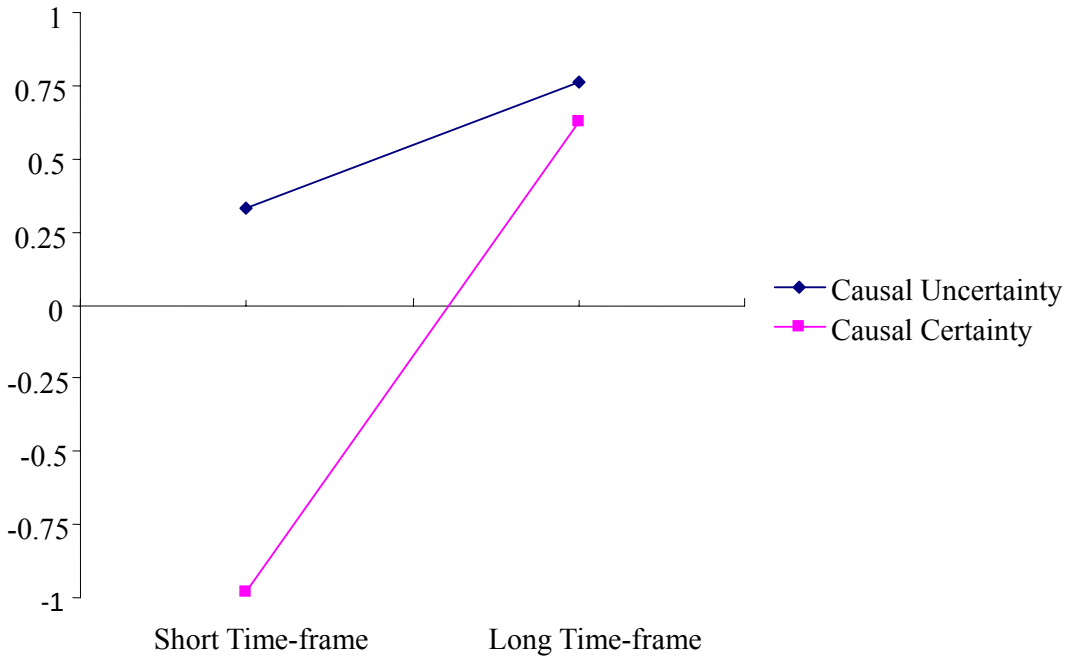


FIGURE 2: REMEDY PREFERENCE AS A FUNCTION OF TREATMENT GOAL AND TIME-FRAME (STUDY 2)



Note: Positive (negative) ratings indicate preference for TCM (WM).

FIGURE 3: REMEDY PREFERENCE AS A FUNCTION OF CAUSAL UNCERTAINTY AND TIME-FRAME (STUDY 3)



Note: Positive (negative) ratings indicate preference for TCM (WM).

FIGURE 4: HEALTHY LIFESTYLE INDEX AS A FUNCTION OF REMEDY AND INTERVENTION (STUDY 4)

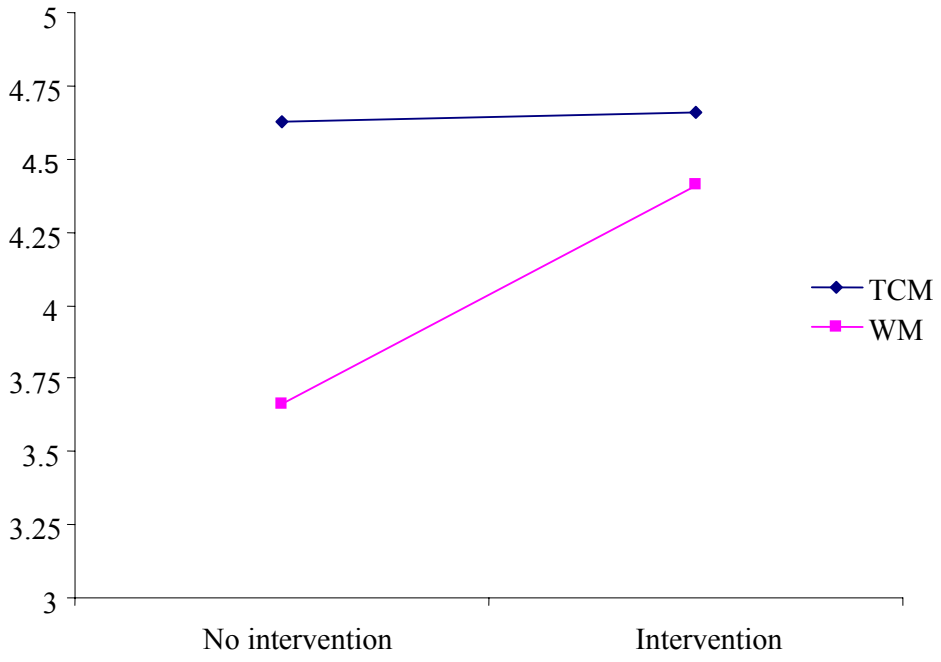


TABLE 1: QUALITATIVE REMEDY PERCEPTIONS FOR TCM AND WM (STUDY 1A)

COGNITIVE RESPONSE	TCM (%)	WM (%)
Faster action	0	50.5
Fewer/no side effects	52.6	1.0
Natural substance	76.3	0
Non-natural chemical	1.0	68.0
Cures underlying disease	22.7	1.0
Alleviates symptoms	3.1	13.4
Effective	92.8	92.8

Note: % of respondents who ascribed the cognitive response to TCM and/or WM.

TABLE 2: REMEDY PREFERENCE ACROSS ILLNESS (STUDY 1A)

Disease replicate	Overall Preference			
Rheumatoid arthritis	**+1.29 (1.53)**			
Common cold	**-.76 (1.74)**			
Coronary heart disease	**-1.00 (1.68)**			
Kidney stone	-.12 (1.77)			
Diarrhea	**-.79 (1.73)**			
Insomnia	**+1.68 (1.35)**			
Linear Regression Predictor	**B**	**Std. Error**	**t**	**Sig.**
Information manipulation	.13	.14	.90	.37
Few side effects	.25	.05	4.66	.00
Symptom rapidity	.36	.05	7.42	.00
Cure rapidity	.20	.04	4.62	.00
Symptom goal	-.25	.06	-4.00	.00
Cure goal	.26	.06	4.27	.00
Causal uncertainty	.21	.52	4.06	.00

Note: For overall preference, positive (negative) numbers favor TCM (WM); means in bold are significantly different from zero midpoint ($p < .05$). The linear regression is of focal interest for testing main effects of hypotheses 2—3.

TABLE 3: HEALTHY LIFESTYLE AS A FUNCTION OF REMEDY AND INTERVENTION (STUDY 4)

Remedy	Intervention	N	Healthy Lifestyle Index	Perceived Importance Index	Motivation Index	Perceived Ability Index
TCM	Present	36	4.66 (.85)	6.01 (.80)	4.37 (1.17)	4.45 (1.31)
TCM	Absent	32	4.63 (1.04)	5.88 (1.00)	4.63 (1.17)	4.73 (1.35)
WM	Present	34	4.41 (1.04)	5.94 (1.03)	4.34 (1.10)	4.44 (1.22)
WM	Absent	30	3.66 (.80)	4.68 (1.34)	3.82 (.88)	4.40 (1.00)

TABLE 4: REMEDY PERCEPTIONS, PREFERENCE, AND HEALTHY LIFESTYLE INTENTIONS FOR A CONVENIENCE SAMPLE OF ADULT BEIJING CONSUMERS

	N	TCM	WM	No difference
Imagine that you are sick and need to take a medicine to help you recover. You can take either a Traditional Chinese medicine or a Western medicine for your illness. (Assume that you can afford either one and that both work well.) In general, which medicine do you prefer?	113	44.2	35.4	20.4
Which medicine focuses more on treating the underlying cause of your illness?	118	81.4	14.4	4.2
Which medicine focuses more on alleviating your symptoms?	120	24.2	70.8	5.0
Which medicine works faster?	122	12.3	85.2	2.5
Which medicine is milder?	118	83.9	12.7	3.4
Which medicine has more side effects?	111	9.0	82.9	8.1
Which would you prefer if you are uncertain about what is causing your symptoms? That is, your symptoms could be due to several different illnesses, and you are not sure which illness.	93	49.5	29.0	21.5
Which would you prefer if you are certain about what is causing your symptoms? That is, your symptoms are due to one particular illness, and you know this illness.	94	33.0	43.6	23.4
Imagine that you have high blood pressure and need to take a medicine to help manage this problem. In this case, with which medicine will it be more important to also eat a special diet?	108	49.1	35.2	15.7
Which medicine would you prefer to take for the following illnesses?				
Arthritis	108	65.7	32.4	1.9
Coronary heart disease	107	25.2	71.0	3.7
Common cold	119	25.2	70.6	4.2
Kidney stone	103	32.0	62.1	5.8
Insomnia	116	50.9	39.7	9.5
Diarrhea	119	15.1	76.5	8.4

Note: Numbers reflect percentage of respondents who ascribed their response to TCM, WM, and No difference. Variation in sample size arises from missing data (respondents who skipped items or preferred not to respond). A similar pattern of results was obtained in a convenience sample of adult respondents in Nanjing (omitted for brevity's sake).

APPENDIX 1: SUMMARY OF MEASUREMENT ITEMS (STUDIES 1—3)

CONSTRUCT	WORDING OF MEASUREMENT ITEMS	STUDY
Remedy Preference	Which drug would you prefer to take? Which drug do you think is more appropriate to take in this situation?	E1ab, E2, E3
Remedy Perceptions		
Overall effectiveness	Overall, which drug will be more effective?	E1ab, E2, E3
Symptom effectiveness	Which drug will be more effective at alleviating the symptoms?	E1ab, E2, E3
Cure effectiveness	Which drug will be more effective at treating the underlying disease?	E1ab, E2, E3
Overall action rapidity	Which drug do you think will act faster?	E2
Symptom rapidity	Which drug do you think will act faster to alleviate the symptoms?	E1ab, E3
Cure rapidity	Which drug do you think will act faster to treat the underlying disease?	E1ab, E3
Safety	Which drug do you think is safer?	E1ab, E2, E3
Side-effects	Which drug do you think has fewer side effects?	E1ab, E2, E3
Illness Perceptions		
Causal uncertainty	The cause of this <symptom> is certain (reverse coded). It would be easy to pinpoint the disease causing these symptoms (reverse coded).	E1ab, E2, E3
Disease severity	This disease (sore throat for E1b) is severe. This disease (sore throat for E1b) is a serious health problem.	E1ab, E2, E3
Disease newness	This disease is quite new (i.e., has become more prevalent in modern times).	E1a
Individual/Situational Characteristics		
Symptom goal	Making the symptoms go away is my primary concern in drug choice. I am trying to treat the symptoms of this illness. It is important to quickly relieve the symptoms of this disease.	E1ab, E2
Cure goal	Making the disease go away is my primary concern in drug choice. I am trying to treat the illness causing these symptoms. It is important to address the underlying disease quickly.	E1ab, E2
Time-frame	The time for my treatment is sufficient. I have adequate time to recover.	E2, E3

APPENDIX 2: SUMMARY OF MEASUREMENT ITEMS (STUDY 4)

CONSTRUCT	WORDING OF MEASUREMENT ITEMS
Healthy lifestyle behavioral index (on seven-point scales with endpoints "very unlikely/very likely")	Assume that Wang decides to take the medicine and does so as instructed. Please indicate how likely Wang will also do the following. Wang will… … live a healthy lifestyle? … eat a low-fat diet. … reduce salt in his diet. … be careful to avoid high-fat foods. … use salt in his diet cautiously. … exercise regularly. … work in physical activity as part of his day. … not change his eating habits (reverse-coded). … not change his exercise habits (reverse-coded). … try to stop smoking. … continue to smoke as usual (reverse-coded). … reduce his alcohol intake. … continue to drink as usual (reverse-coded).
Motivation index (on seven-point scales with endpoints "not at all motivated/very motivated")	Continue to assume that Wang is taking the medicine. How motivated is Wang… … to live a healthy lifestyle? … to follow a healthy diet? … to exercise regularly? … to stop smoking? … to stop drinking?
Ability index (on seven-point scales with endpoints "not at all capable/very capable")	How capable is Wang of… … living a healthy lifestyle? … following a proper diet? … exercising regularly? … stopping smoking? … stopping drinking?
Perceived importance index (on seven-point scales with endpoints "unimportant/important")	Assuming that Wang is taking the medicine, how important are the following to his good health: … a healthy lifestyle? … a proper diet? … regular exercise? … stopping smoking? … stopping drinking?
Remedy Perceptions	
Symptom effectiveness	This medicine is effective at treating the symptoms of the disease.
Cure effectiveness	This medicine is effective at treating the underlying disease itself.
Safety	This medicine is safe. This medicine is risky (reverse-coded).
Mildness	This medicine is harsh (reverse-coded).

	This medicine is mild.
Side effects	This medicine has many side effects (reverse coded).
Action rapidity	This medicine acts quickly.
	This medicine takes time to work (reverse-coded).
Illness Perceptions	
Disease severity	Wang's illness is serious.
Causal uncertainty	The cause of Wang's illness is certain (reverse coded).
Individual/Situational Characteristics	
Symptoms goal	Wang's goal is to treat the symptoms of his disease.
Cure goal	Wang's goal is to treat the underlying cause of his disease.

Note: Remedy perceptions, illness perceptions, and individual/situational characteristics were measured on seven-point scales with endpoints "disagree/agree".

REFERENCES

Bettman, James R., Mary Frances Luce, and John W. Payne (1998), "Constructive Consumer Choice Processes," *Journal of Consumer Research*, 25 (December), 187-217.

Bolton, Lisa E., Joel B. Cohen, and Paul N. Bloom (2006), "Does Marketing Products as Remedies Create "Get Out of Jail Free Cards"?," *Journal of Consumer Research*, 33 (June), 71-81.

_____, Americus Reed II, Kevin G. Volpp, and Katrina Armstrong (2008), "How Does Drug and Supplement Marketing Affect a Healthy Lifestyle," *Journal of Consumer Research*, forthcoming.

Burson, Katherine A. (2007), "Consumer-Product Skill Matching: The Effects of Difficulty on Relative Self-Assessment and Choice," *Journal of Consumer Research*, 34 (June), 104-10.

Byrne, Molly, Jane Walsh, and Andrew Murphy (2005), "Secondary Prevention of Coronary Heart Disease: Patient Beliefs and Health-related Behaviour," *Journal of Psychosomatic Research*, 58 (5), 403-15.

Cameron, Linda D. and Rona Moss-Morris (2004), "Illness-Related Cognition and Behaviour," in *Health Psychology: An Introduction,* ed. Adrian A. Kaptein and John. A. Weinman, Oxford, UK: Blackwell Publishers, 84-110.

Chan M. F., E. Mok, Y. S. Wong, T. F. Tong M. C. Day, C. K. Tang, and D.H. Wong (2003), "Attitudes of Hong Kong Chinese to Traditional Chinese Medicine and Western Medicine: Survey and Cluster Analysis," *Complementary Therapies in Medicine*, 11 (June), 103-9.

China Materia Medica Annual Review (2005), *Gross Production Value of China Pharmacy Industry in 2004* (in Chinese). Beijing, China: State Food and Drug Administration of the People's Republic of China.

China Medication (2005), *Report for Individual Purchase at Drug Stores in Beijing 2005* (in Chinese). Beijing, China: State Food and Drug Administration of the People's Republic of China.

China Nonprescription Medicines Association (2004), "2003 Drugstore and OTC Purchase Report (in Chinese)," [http://en.cnma.org.cn/newEbiz1/EbizPortalFG/portal/html/index.html] (accessed June 11, 2007).

Chung, Vincent, Eric Wong, Jean Woo, Sui Vi Lo, and Sian Griffiths (2007), "Use of Traditional Chinese Medicine in the Hong Kong Special Administrative Region of China," *Journal of Alternative and Complementary Medicine*, 13 (3), 361-67.

Compilation Committee (1997), *China Medicine Encyclopedia* (in Chinese), Shanghai, China: Shanghai Science and Technology Press.

Compilation Committee (2003a), *Basic Theory of Traditional Chinese Medicine* (in Chinese), Shanghai, China: Publishing House of Shanghai University of Traditional Chinese Medicine.

Compilation Committee (2003b), *Science of Chinese Materia Medica*, Shanghai, China: Publishing House of Shanghai University of Traditional Chinese Medicine.

CTR Market Research (2006), "Top 5 Categories in Adspend," [http://www.ctrchina.cn/en/about/index.html] (accessed July 29, 2007).

Duhacek, Adam (2005), "Coping: A Multidimensional, Hierarchical Framework of Responses to Stressful Consumption Episodes," *Journal of Consumer Research*, 32 (June), 41-53.

The Economist (2002), "Business: Potions and Profits; Traditional Chinese Medicine," 364 (July), 66.

Frosch, Dominick L., Stephen Kimmel, and Kevin G. Volpp (2007), "What Role Do Lay Beliefs about Hypertension Etiology Play in Perceptions of Medication Effectiveness?," *Health Psychology*, forthcoming.

Gurhan-Canli, Zeynep and Durairaj Maheswaran (2000), "Cultural Variations in Country of Origin Effects," *Journal of Marketing Research*, 37 (August), 309-17.

Hagger, Martin S. and Sheina Orbell (2003), "A Meta-Analytic Review of the Common-Sense Model of Illness Representations," *Psychology and Health*, 18 (2), 141-84.

Heider, F. (1958), *The Psychology of Interpersonal Relations*, New York, NY: Wiley.

Hong, Sung-Tai and Robert S. Wyer Jr. (1990), "Determinants of Product Evaluation: Effects of the Time Interval between Knowledge of a Product's Country of Origin and Information about its Specific Attributes," *Journal of Consumer Research*, 17 (December), 277-88.

Horne, Robert (1999), "Patients' Beliefs about Treatment: The Hidden Determinant of Treatment Outcome?," *Journal of Psychosomatic Research*, 47 (6), 491-95.

_____ and John Weinman (2002), "Self Regulation and Self-Management in Asthma: Exploring the Role of Illness Perceptions and Treatment Beliefs in Explaining

Non-Adherence to Preventer Medication," *Psychology and Health*, 17 (1), 17-33.

_____, _____, and Matthew Hankins (1999), "The Belief about Medicines Questionnaire: The Development and Evaluation of a New Method for Assessing the Cognitive Representation of Medication," *Psychology and Health*, 14 (1), 1-24.

Huang, Zhaosheng (2002), *Chinese Materia Medica* (in Chinese), Beijing, China: People Healthcare Press.

Kang, Jian-Tso, Chin-Feng Lee, Chieh-Fu Chen, and Pesus Chou (1994), "Factors Related to the Choice of Clinic between Chinese Traditional Medicine and Western Medicine," *Journal of the Formosan Medical Association*, 93 (3), 49-55.

Keller, Punam A. (2006), "Regulatory Focus and Efficacy of Health Messages," *Journal of Consumer Research*, 33 (June), 109-14.

Kiebert, G. M., A. M. Stiggelbout, J. Kievit, J. W. H. Leer, C. J. H. van de Velde, and H. J. C. J. M. de Haes (1994), "Choices in Oncology: Factors that Influence Patients' Treatment Preference," *Quality of Life Research*, 3(3), 175-82.

Lam, T. P. (2001), "Strengths and Weaknesses of Traditional Chinese Medicine and Western Medicine in the Eyes of Some Hong Kong Chinese," *Journal of Epidemiology and Community Health*, 55 (October), 762-5.

Lau, Joseph T. F., Edward M. F. Leung, and H. Y. Tsui (2001), "Predicting Traditional Chinese Medicine's Use and the Marginalization of Medical Care in Hong Kong," *American Journal of Chinese Medicine*, 29 (3-4), 547-58.

LeClerc, France, Bernd H. Schmitt, and Laurette Dubé (1994), "Foreign Branding and its Effects on Product Perceptions and Attitudes," *Journal of Marketing Research*, 31

(May), 263-71.

Lee, Rance P. (1980), "Perceptions and Uses of Chinese Medicine among the Chinese in Hong Kong," *Culture, Medicine, & Psychiatry*, 4 (December), 345-75.

Leventhal, Howard, Dan Meyer, and David Nerenz (1980), "The Common Sense Representation of Illness Danger," in *Contributions to Medical Psychology*, ed. Stanley Rachman, Oxford, England: Pergamon Press, 7-30.

Li, Kong (1996), *Handbook of Chinese Medicine Classic* (in Chinese). Beijing, China: Publishing House of Chinese Materia Medica.

Liang, Ching-Chu (1999), "The Development and Examination of the Chinese-Western Beliefs Scale," *Nursing Research* (in Chinese), 7 (5), 445-458.

Llewellyn, Carrie D., Alexander H. Miners, Christine A. Lee, Christine Harrington, and John Weinman (2003), "The Illness Perceptions and Treatment Beliefs of Individuals with Severe Haemophilia and Their Role in Adherence to Home Treatment," *Psychology and Health*, 18 (2), 185-200.

Luce, Mary Frances (1998), "Choosing to Avoid: Coping with Negatively Emotion-Laden Consumer Decisions," *Journal of Consumer Research*, 24 (March), 409-33.

Ma, Boying (1994), *History of Chinese Medicine Culture* (in Chinese), Shanghai, China: Shanghai People Press.

Manber, Rachel, Andrea S. Chambers, Sabrina K. Hitt, Cynthia McGahuey, Pedro Delgado, and John J. B. Allen (2003), "Patients' Perception of Their Depressive Illness," *Journal of Psychiatric Research*, 37 (July-August), 335-43.

Molden, Daniel C. and Carol S. Dweck (2006), "Finding "Meaning" in Psychology: A Lay

Theories Approach to Self-Regulation, Social Perception, and Social Development," *American Psychologist*, 61 (April), 192-203.

Morgan, Williams L. Jr. (1985), "Clinical Approach to the Patient," in *Cecil Textbook of Medicine,* eds. James B. Wyngaarden and Lloyd H. Smith Jr., Philadelphia, PA: W. B. Saunders Company, 56-60.

Needham, Joseph and Gwei-Djen Lu (2000), "Medicine in Chinese Culture," in *Science and Civilisation in China*, Vol. 6, Pt. 6, ed. Nathan Sivin, Cambridge, England: Cambridge University Press, 38-66.

Osterberg, Lars and Terrence Blaschke (2005), "Adherence to Medication," *New England Journal of Medicine*, 353 (August), 487-94.

Payer, Lynn (1996), *Medicine & Culture*, New York, NY: Henry Holt and Company.

Piron, Francis, Chan W. Ching, Esme C. A. Peng, and Ho L. Ching (2000), "Consumers' Perceptions of Chinese vs. Western Medicine," *Advances in Consumer Research*, 27(1), 125-30.

Qiu, Jane (2007), "China Plans to Modernize Traditional Medicine," *Nature*, 446 (April), 590-1.

Qu, Jiecheng (2005), *When Chinese Medicine Meets Western Medicine: History and Idea* (in Chinese), Beijing, China: Sanlian Libraire.

Roth, Martin S. and Jean B. Romeo (1992), "Matching Product Category and Country Image Perceptions: A Framework for Managing Country-of-Origin Effects," *Journal of International Business Studies*, 23 (3), 477-97.

Sivin, Nathan (1987), "Reflections on the Situation of Medicine in the People's Republic of

China," *American Journal of Acupuncture*, 18 (4), 325-43.

Spencer, Steven J., Mark P. Zanna, and Geoffrey T. Fong (2005), "Establishing a Causal Chain: Why Experiments are Often More Effective than Mediational Analyses in Examining Psychological Processes," *Journal of Personality and Social Psychology*, 89 (6), 845-851.

Thompson, Craig J. and Maura Troester (2002), "Consumer Value Systems in the Age of Postmodern Fragmentation: The Case of the Natural Health Microculture," *Journal of Consumer Research*, 32 (September), 235-48.

Verlegh, Peeter W. J. and Jan-Benedict E.M. Steenkamp (1999), "A Review and Meta-Analysis of Country-of-Origin Research," *Journal of Economic Psychology*, 20 (October), 521-46.

Wang, Qingxian and Xiaozhen Liang (1998), *Medicine Classic: Yellow Emperor's Manual and Chinese Culture* (in Chinese), Kaifeng, China: Publishing House of Henan University.

Weinstein, Neil D. (1993), "Testing Four Competing Theories of Health-Protective Behavior," *Health Psychology*, 12 (June), 324-33.

Wyngaarden, James B. (1985), "Medicine as A Science," in *Cecil Textbook of Medicine*, eds. James B. Wyngaarden and Lloyd H. Smith Jr., Philadelphia: W. B. Saunders, 4-6.

Yu, E. C. L. (2001), "Essential Traditional Chinese Medicine: Western Scientific Medicine Perspective," *The Hong Kong Practitioner*, 23 (January), 20-27.

Zeng, Youxiang (2006), "Chinese Medicine—Old Industry with New Business Opportunities," *The Fortune Time* (in Chinese), 2 (5), 4-5.