Unbiased Presentation of Options in Preference-Based Medical Decisions

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We examine how risks/benefits are presented in actual doctor-patient consultations and influence patient decisions. Sixty-four dyadic, longitudinal interviews with pregnant women and their doctors show patients tend to focus on one preselected option, which biases how delivery choices are presented and understood. New decision aids can improve objective risk assessment.

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Risk Perception and Control in Consumer Healthcare Decisions
Chair: Yimin Cheng, Monash University, Australia

Paper #1: Stigmatized Risk Factors in Health Messages: The Defensive Influence of Moral Identity
Chethana Achar, University of Washington, USA
Lea Dunn, University of Washington, USA
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Paper #2: The Burden of Social Proof
Preyas Desai, Duke University, USA
Mary Frances Luce, Duke University, USA
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Paper #3: The Protestant Work Ethic and Preference for Natural Healthcare
Yimin Cheng, Monash University, Australia
Anirban Mukhopadhyay, HKUST, Hong Kong

Paper #4: Unbiased Presentation of Options in Preference-based Medical Decisions
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SESSION OVERVIEW
Healthcare is a huge industry. In 2012, U.S. healthcare expenditures were $3 trillion and growing by 4% annually (Munro, 2012). Healthcare decisions are extremely important because they are crucially related to people’s physical and mental wellbeing, and even lives. However, in many cases, healthcare decision makers are ordinary consumers who lack domain expertise and are easily influenced by psychological factors. In this special session we investigate (1) what are the novel aspects of healthcare decisions that have been under-investigated in the existing literature (stigma messages, social proof, naturalness, and risk presentation method), and (2) what psychological factors influence consumer reactions to these aspects (moral identity, reactance, the Protestant Work Ethic, and pre-existing preference).

In paper 1, Achar, Dunn and Agrawal examine how and when the presence of stigmatized sources of risk (e.g., unsafe sex) influences health persuasion. Whereas past literature has demonstrated many positive outcomes of moral identity, three studies show that salient moral identity triggers defensive responses (e.g., self-positivity bias) to health appeals that implicate stigmatized behavior. Normalizing the stigmatized behaviors reduces the negative effect of moral identity.

Consumers are defensive not only to stigma-induced egotraights, but also to persuasion by social proof. In paper 2, Desai, Luce and Schwartz find that the effectiveness of social proof in encouraging medical screening tests is short-lived and may be attenuated when the medical test is very threatening. Moreover, high social proof causes more felt pressure and lower confidence in the accuracy of the test, a negative consequence that is rarely seen in other unthreatening contexts.

In paper 3, Cheng and Mukhopadhyay find that the Protestant Work Ethic, a work-related core belief, can spill over and influence naturalness preference in healthcare decisions (e.g., natural childbirth vs. C-section). Combining publicly available data with experimental data, four studies show that individuals (and countries) who believe strongly in the PWE prefer relatively natural healthcare options, due to stronger dislike of external interventions.

While first-time childbirth decisions are influenced by core beliefs, second-time childbirth decisions are further affected by emotional and medical outcomes of previous delivery experiences. In paper 4, Barakshina, Malter and Mastrogiannis studied VBAC versus repeat C-section decisions using 64 longitudinal, dyadic interviews with 40 pregnant women and their physicians. They find that strong pre-existing preferences shaped by fear and other factors biased patients against objective risk/benefit information on delivery choices presented by physicians. Physicians’ own biased preference for different presentation modes exacerbated the problem. Based on these findings, a new patient decision aid was developed to improve objective risk assessment.

The proposed session presents emerging topics in consumer healthcare research and identifies key psychological factors. Our studies examine both hypothetical and real healthcare behavior (Paper 2, Study 3; Paper 3, Study 1; and Paper 4) and employ diverse methodologies (experiments, secondary data, depth interviews). Healthcare is a high-impact area which is relatively under-investigated by consumer researchers. Our session features novel approaches to study consumer healthcare decisions, raises important questions for debate and discussion, and should appeal to a wide range of ACR attendees.

Stigmatized Risk Factors in Health Messages: The Defensive Influence of Moral Identity

EXTENDED ABSTRACT
Extant research in psychology suggests that social stigma is so threatening that the mere implication of a stigmatized risky behavior may discourage individuals from seeking healthcare solutions (Young et al. 2007). In contrast, research in health suggests that communications that do not sensationalize stigma provide individuals with solution and self-efficacy (Ditto et al. 1988; Block and Keller 1995; Lundgren and McMakin 2013) should be effective. The current research integrates these two literatures and finds a novel moderator to the impact of perceived stigma on health message effectiveness: moral identity. Salient moral identity – individuals' self-concept organized around moral traits (Aquino and Reed 2002) - has generally been shown to have outcomes such as increased charitable behaviors (Reed et al. 2007), time donations (Reed, et al. 2015), ethical behavior (Reynolds and Ceramic 2007), and well-being (Hardy et al. 2013). The current research illuminates that moral identity may not always result in such welfare outcomes. Specifically, we consider the cases where a stigmatized behavior (e.g., engaging in unprotected sex) is implied as a source of health risk.

Our central premise is that there is an inconsistency between a salient moral identity and acknowledgment of engaging in a stigmatized risky behavior. This inconsistency stems from the facet of morality as norm conformity (Forsyth 1985; Aquino and Reed 2002) and the facet of stigma as indicating an undesirable deviation from norms (Arch 1985). Thus, among those with a strong self-concept of being moral, the implication of engaging in a stigmatized behavior (i.e., a behavior that violates a societal norm) will be an ego-threat. In such a scenario, in contrast to the previously documented healthy behaviors (Hardy et al. 2013), moral identity might motivate ego defense against health messages. Unlike previous research in health messaging which shows ego defense being triggered by risk perceptions (Kunda 1987; Raghubir and Menon 1998), this is a case where...
the source of defense against health messages stems from a threat to one’s salient identity, not from threat to one’s health. This research shows contrasting effects of salient moral identity; in general, high (vs. low) moral identity leads to healthy consumption, but backfires when the healthy consumption implies engagement in a stigmatized risky behavior. Further, based on our premise that this ego defense is driven by norm-conformity of moral identity and norm-deviance of stigma, we posit that ‘normalizing’ the stigmatized behavior should attenuate this effect. A series of three experiments establish this moderating effect of moral identity, demonstrate the underlying process, and present an intervention.

**Basic Effect and Underlying Process**

In studies 1 and 2, participants were shown a health message that briefly described three potential factors that could lead to a disease and presented a preventive vaccination. Stigma associated with the infection was manipulated in the third risky behavior listed on the message. The risk factors were: 1) being of age 16 – 45 years, 2) sharing food and beverages with others and 3) not using the hand sanitizer regularly (*low stigma condition*) OR having multiple sexual partners (study 1) or having

In study 2, participants were primed with moral identity to address any concerns about measured personality correlates. A panel of online participants (*n* = 171) were assigned to one of the four conditions in a prime (moral vs. neutral) × message stigma (high vs. low) design. Individuals’ defensive processing of the health message was measured through their perceptions of disease risk to themselves versus an average other. Defensiveness was operationalized in the form of self-positivity (tendency to see self as less susceptible to risk than an average other). As predicted, participants primed with moral (vs. neutral) identity exhibited greater self-positivity bias in their perceptions of disease risk after seeing a high (vs. low) stigma vaccination message, which mediated vaccination intentions.

**Intervention**

We reasoned that use of vernacular phrasing de-stigmatizes a risky behavior by making it appear more ‘normal’. For this purpose, we developed an ‘intervention’ health message which described the same stigmatized behavior in study 2, but used vernacular language to describe it. In study 3, students in an introductory nutrition course were randomly assigned to read a health pamphlet about a disease in a prime (moral vs. neutral) × behavior framing language (formal vs. vernacular) design. Those primed with moral (vs. neutral) identity indicated greater willingness to pay for a vaccination when they were presented a health message that indicated a stigmatized behavior, but used vernacular (vs. formal) language.

This work makes several interesting contributions to the field. First, we contribute to the understudied topic of stigma in consumer behavior by demonstrating how and when the mere implication of engaging in a stigmatized behavior could influence the effectiveness of health persuasion. Second, we show that moral identity can have a negative influence on health outcomes through a defensive mechanism. Finally, we develop and test a theory-based intervention to reduce the negative interaction of stigma and moral identity.

**The Burden of Social Proof**

**EXTENDED ABSTRACT**

A proliferation of insights from the behavioral sciences has recently been called upon for public service. Appeals to be healthier, wealthier, and more environmentally aware have been bolstered by well-documented phenomena such as framing (Tversky and Kahne-
cal screening test (for Type 2 diabetes) immediately. High versus low social proof was effective in getting people to take the test, however, those in the high proof condition felt significantly more pressured and significantly less confident in the accuracy of the test to diagnose Diabetes than people in the low proof condition (p < .001 for both analyses). This suggests while social proof can increase a desired behavior, it exerts unpleasant influence and can even undermine belief in the accuracy of the test’s results.

Taken together, our results from both hypothetical and real medical testing situations show that social proof has a modest impact on increasing medical testing intentions and actual testing behavior. This power degrades as the situation becomes more threatening and with time. Although it may be possible to capitalize on the limited shelf-life of social proof, changing people’s behavior via this channel of persuasion can lead to feelings of pressure and reduced confidence in the accuracy of the test’s results.

The Protestant Work Ethic and Preference for Natural Healthcare

EXTENDED ABSTRACT

Science and technology have substantially changed the way healthcare is delivered, by introducing numerous new options that never existed before in the world. While herbal remedies have a history as long as mankind, the modern pharmaceutical industry relies more on chemical synthesis, bioengineering, and computer-aided drug design. Similarly, although natural delivery remains the choice of the majority for giving birth, Cesarean section rates in the U.S. increased by about 60% from 1996 to 2009 (Martin et al. 2012).

Consumers may not have the expertise to evaluate the scientific qualities of these modern methods, and it is unclear whether their healthcare decisions are always made rationally. So what determines people’s preferences for natural healthcare? Not much research addresses this question, and the results are mixed. Some researchers have found that consumers have a strong naturalness preference for food but not for medicine (Rozin et al. 2004). In contrast, others have found that worries about new technology make consumers prefer natural health products to those with synthetic additives (Deviech, Pedersen and Petrie 2007). In this paper, we investigate one psychological antecedent of preferences for natural healthcare, namely, belief in the Protestant Work Ethic (Weber 1905).

Sociologist Max Weber first introduced the Protestant Work Ethic (henceforth PWE) to explain the historical rise of western capitalism. Psychologists have since developed psychometric scales to measure PWE (e.g., Mirels and Garrett 1971) and treated PWE as a secular concept that describes the extent to which a person believes in hard work, asceticism, frugality and self-reliance (Cheng, Mukhopadhyay and Sch rift 2017; Furnham 1990; Miller, Woehr and Hudspeth 2002). People high in PWE tend to engage in work-related activities during trips to and from their workplaces (Greenberg 1978) and to blame the unemployed for their laziness (Furnham 1985). Up till now, however, most psychological research on PWE has tested its consequences only in work-related domains (Cheng et al. 2017 as an exception). Because PWE is a core value (Hsu 1972), we suggest it may spill over and influence work-unrelated consumer behaviors, such as naturalness preference in healthcare decisions.

Why would people high in PWE prefer natural healthcare options? An important component of PWE is self-reliance. Previous literature suggests that the strong emphasis on self-reliance makes high-PWE people dislike external intervention. For example, Moen (1978) found that American elderly who were likely influenced by the PWE tended to refuse assistance and social welfare, even though they were old, poor, sick and disable. Similarly, Furnham (1983) found that those believe strongly in the PWE are more likely to oppose taxation externally imposed on them. Because high-PWE people dislike external intervention and naturalness represents the absence of external intervention (Rozin 2005, 2006; Spranca 1992), higher PWE may lead to stronger preference for natural options. In four studies, we tested our central hypothesis that high PWE is associated with stronger naturalness preference. We also provided evidence that this effect is driven by the stronger dislike of interventions among high-PWE people.

Study 1 used publicly available survey data to test whether country-level PWE predicted country-level Cesarean-section rates. We obtained C-section rates from UNICEF and WHO reports, and assessed country-level PWE using 13 questions in the World Values Survey. Regression analysis was performed on 41 countries with no missing data between 2005 and 2009. As predicted, countries with higher PWE have significantly lower C-section prevalence. This effect held when GDP per capita and religiosity were statistically controlled for.

As C-section and natural delivery differ in multiple dimensions other than naturalness, study 2 was designed to disentangle these dimensions. Childless women who planned to have children in the future (N=137) imagined being pregnant and expecting babies. Participants read short descriptions of vaginal deliveries and C-sections. In the three framing conditions, participants read one additional sentence, “It is commonly believed that vaginal deliveries are more NATURAL than C-sections are... vaginal deliveries are more PAINFUL than C-sections are... vaginal deliveries require more EFFORT from mothers.” PWE was measured using a scale (Mirels and Garrett 1971). Only in the “naturalness salient condition”, women with higher PWE evaluated vaginal delivery as better for their and their baby’s health than C-section. Higher PWE did not predict stronger preference for vaginal delivery in the other two conditions. This result suggests that high-PWE women’s preference for vaginal delivery was due to their preference for naturalness rather than their preference for effort or pain.

Studies 3a and 3b directly manipulated the degree of external intervention to test the underlying mechanism. Study 3a asked MTurkers (N=133) to evaluate the relative efficacy of ginseng harvested in the wild versus farmed on farmlands. Farming ginseng was framed as involving either high or low external intervention. PWE was measured as before. Higher PWE is associated with less favorable efficacy judgment for farmed ginseng only when farming ginseng involved high external intervention, but not low external intervention. Study 3b (MTurkers=122) replicated study 3a. Higher PWE was associated with less favorable efficacy judgment of lab-synthesized paclitaxel (a chemotherapy medicine) relative to tree-derived paclitaxel only when the lab synthesis process was framed as involving high external intervention, but not low external intervention.

Although naturalness is a ubiquitous concept in branding and promotion, it has only started to be researched recently (Rozin 2005, 2006; Rozin Fischler and Shields-Argeles 2012; Rozin et al. 2004) and most studies are in domain of food. Existing research has successfully documented an overall pattern of preference for naturalness, and the current research contributes by identifying important individual heterogeneity in these preferences as a function of the Protestant Work Ethic. Our findings have practical implications as well. For example, international healthcare organizations should put more effort in educating individuals (and countries) low in PWE about the benefits of natural childbirth. Pharmaceutical companies that emphasize natural manufacturing processes may want to target consumers high in PWE.
Unbiased Presentation of Options in Preference-based Medical Decisions

EXTENDED ABSTRACT

Healthcare services are associated with higher uncertainty and more serious risks for consumers, compared to other credence services (Mitra, Reiss, Capella 1999; Ngamvirakit and Beise-Zee 2013). Among medical services, some treatment decisions are more risky and uncertain than others. The classification of medical decisions into evidence-based and preference-based is directly related to uncertainty (Edwards and Elwyn 2009). While a patient (at least formally, in U.S. healthcare) makes the decision on her treatment, the choice between available options is clearer when medical evidence supports one treatment over another. Yet, for many decisions, patient choices are preference-based, meaning one option is not definitively better than another. In such instances, a patient’s personal values, preferences and beliefs may heavily influence the final choice.

Due to logistical and resource constraints, many studies in consumer behavior, medical decision-making, and patient counseling examine the patient or physician perspective, but rarely a 360-degree view. Perception of risk by patients and physicians and confirmation bias on both sides have been studied broadly in consumer behavior, mostly in experiments using student or online subject pool samples (Khan and Kupor 2017; Mittal and Griskevicius 2016; Yan and Sen-gupta 2013). Research using participants who have actually made the focal medical decisions is rare (exceptions include Thompson 2005; Morris et al. 1994).

In our research, we interview both patients and their physicians in the clinic immediately following consultations. Consumer behavior scholars have long noted the need to empirically study doctor-patient interactions (Friedman and Churchill 1987) but few consumer studies have ever studied the actual interaction. Obtaining the perspective of each decision participant adds real-life context and dynamic complexity of the environment where physicians and patients interact. Direct examination of the patient-physician dyad enhances theoretical understanding, provides more actionable, relevant recommendations and can improve the interaction process.

Specifically, we examine three important aspects of the decision-making process. First, in the initial interaction between provider and patient, does either party have a pre-existing preference towards one option (driven by experience, subjective information, or personal beliefs)?

Second, how are the risks/benefits of alternatives presented by the provider, and is this presentation biased by a pre-existing preference? Medical uncertainty can be presented in three ways: verbal, visual, and experiential. In the verbal approach, patients will vary in how they understand verbal probabilities. Stating probabilities linguistically or numerically were found to yield different perceptions of risk (Budescu, Weinberg and Wallsten 1988). Patient risk was better understood as frequencies than percentages (Ancker et al. 2006; Fagerlin et al. 2007; Waters et al. 2016). An even more effective way to communicate low, yet considerable probabilities, is the experiential approach (Sandman et al. 1994), in which a physician references life situations from a familiar environment (to perceive riskiness of a “3% risk,” ask the patient whether she would board a plane if it had a 3% chance of being hijacked).

Third, how is risk/benefit information perceived and processed by a medical services consumer: Are the explained risks and benefits heard and understood, and how are they interpreted?

In sum, our study focuses on two key research questions: How do pre-existing preferences influence a patient’s ability to perceive risk/benefit information for treatment options, and which risk presentation method used in actual consultations yields minimally biased, well-informed patient choice?

We employ a grounded theory approach in a clinical field setting. Our study domain is childbirth decisions, specifically delivery decisions by women following a previous C-Section. These women must choose between a repeat Cesarean or attempted natural childbirth (VBAC), a decision defined by the medical community as preference-based (Bernstein et al. 2012).

Methodology. We report 64 longitudinal, dyadic in-depth interviews, which elicit both patient and physician perspectives on the decision process. Initial interviews were conducted with 40 pregnant women at a Women’s Health clinic in Chicago, all of whom had a C-Section on a previous delivery and now faced a choice of repeat C-section or VBAC. Interviews were conducted immediately after a regular routine pregnancy visit with an OB/GYN physician. A second patient interview was conducted closer to delivery to obtain a “decision journey” perspective, and to track how the delivery decision evolved during the pregnancy. Each patient interview was matched to a brief interview with the counselling physician immediately after the patient visit.

Our findings compare patient and physician perspectives. First, we turn to the patient view. Many patients showed a strong pre-existing delivery preference, which made them less receptive to understanding and processing risk/benefit information provided by the physician. This, in turn, prevented an unbiased consideration of both options. We find that pre-existing preference for one delivery option (C-section or natural) formed early in or even prior to pregnancy, shaped mainly by fear factors from the previous C-section delivery experience (fear of anesthesia, fear of longer recovery, etc.).

From the physician perspective, the main finding involves how physicians choose to present decision options to patients. Each physician has a preferred method of risk presentation, not a holistic approach. The effects of different tactics used by physicians to present risk/benefit information are compounded by the patient’s varying understanding of risks. As a result, most patients develop a clear understanding of the benefits of their preferred delivery option, while never fully understanding or outright disregarding the benefits of the alternative option.

Our research has theoretical and practical implications. On a theoretical level, we contribute to understanding how pre-existing patient preference (driven by need to cope with fear associated with previous experience, as discussed in Luce 2005) is expressed by patients, and what approaches to presenting risks and benefits will result in a less biased choice. On a practical level, we use the findings to develop a decision aid that offers a comprehensive visual approach to more easily present and compare risks and benefits across both delivery options. Our future research will focus on improving the decision aid via a series of experiments (O’Connor et al. 2007) testing its effect on healthcare decisions and emotional outcomes.

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Session Overview
http://www.forbes.com/sites/danmunro/2012/01/19/u-s-healthcare-hits-3-trillion/

Paper 1


Paper 2


Paper 3


Paper 4


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