Change, Change, Change: Evolving Health Guidelines, Preventive Health Behaviors, and Interventions to Mitigate Harm
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Media reports of health research are an everyday occurrence. While informative, when recommendations change, consumers are confused about what health behaviors are best for them. This confusion leads to doubt, and many consumers fail to perform the recommended behavior, but also unrelated health behaviors. Our research considers what types of guideline changes cause these negative reactions (Study 1), what types of psychological processes and traits contribute to these reactions (Study 2), and what types of interventions attenuate these reactions (Study 3). The presentation will focus on the success of these interventions, which are designed to accompany media reports of health research.

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**SYMPOSIUM SUMMARY**

The Effect of Conflicting Information and Natural Primes on Health Related Behaviors
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**SESSION OVERVIEW**

It is becoming increasingly common for consumers to reach for a copy of Newsweek or some other mainstream publication and find information pertaining to health-related behaviors. Pharmaceutical companies are spending large marketing budgets to detail physicians and to advertise their products directly to consumers. Consumers are routinely bombarded with advice as to when to get tested, how much to eat, and which disease symptoms they should be on the look out for. With all of this information and natural priming in the marketplace, there are bound to be conflicting influences. This session looks specifically on the role that conflicting information cues have on health-related behaviors.

This session should appeal to researchers who are interested in how consumers process information from conflicting sources. In the past much of the research on conflict has focused on information from the same domain, e.g., one study says one thing, another study says another. In this session, we focus on the realistic environment where the sources of conflict frequently come from non-comparable sources of information, e.g., a scientific study reports one finding and the medical industry reports something different—behavior indicates one kind of conclusion and physical appearances indicate another. We believe this session presents research that will make important contributions both to further our understanding of consumer behavior as well as to inform policy makers about consumers’ potential reactions to conflicting sources of information in the environment.

In the first paper, “The Branded Physician’s Office: Effects of Exposure to Small Pharmaceutical Promotional Items on Physician Treatment Preferences,” the researchers examine how the conflicting cues offered by the pharmaceutical companies in their branding strategies and recent guidelines put into place by many universities that restrict pharmaceutical company activity in University hospitals affect medical students’ implicit attitudes and decisions to prescribe. In the second paper, “Super Size Me: The Social Influence of Obese Consumers on the Food Choices of Others,” the researchers examine the sometimes conflicting cues between what a person looks like (fat or thin), how much s/he eats (a lot or a little), and the interaction of those effects on what others eat. Finally, in the third paper, “Change, Change, Change: Evolving Health Guidelines, Preventive Health Behaviors, and Interventions to Mitigate Harm,” the researchers examine the role conflicting information sources have on the effectiveness of various medical treatments and screening tests in affecting patient decision-making. Specifically, their focus is on providing appropriate interventions to counter possible avoidance tendencies that may occur as patients try to cope with the stress of the conflict.

Each of the papers in this session has several completed studies. The discussion leader, Punam Anand Keller is a noted expert in how consumers process information in general, as well as specifically in health-related behaviors.

**EXTENDED ABSTRACTS**

“The Branded Physician’s Office: Effects of Exposure to Small Pharmaceutical Promotional Items on Physician Treatment Preferences”
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The relationship between the pharmaceutical industry and physicians has received a great deal of attention in recent years. This attention is due in part to rapid growth in pharmaceutical spending in conjunction with significant increases in pharmaceutical marketing to both physicians and patients. Pharmaceutical companies focus a majority of their marketing efforts on “detailing”—visits to physicians’ offices to encourage prescriptions of the company’s product (IMS Health, 2006). Most of these visits include inducements in the form of branded gifts to physicians and their staff and free drug samples that can be given to patients. These relationships have raised concerns that pharmaceutical companies are inappropriately influencing physician decision-making and that these relationships represent a breach of medical professionalism and patient trust.

The concerns of the public, media and policymakers appear to be warranted based on a series of studies demonstrating that the pharmaceutical industry is effective at influencing physician prescribing through the use of financial inducements or gifts (Wazana, 2000). Much of the research is observational and focuses on gifts of relatively high value such as expensive meals or travel to conferences. This research along with a general belief that large gifts should be the focus of concern has led numerous professional societies and universities to adopt ethics guidelines that discourage gifts valued above a certain level, often in the range of $100 (Coyle et al., 2002; AMA Code of Medical Ethics). Smaller gifts such as pens, branded prescription pads, and other office supplies are typically regarded as trivial and inconsequential.

While attention has primarily focused on gifts of relatively high value reflecting a belief that influence is proportional to economic value, little is known about the influence of smaller, less valuable branded promotional items on physicians’ clinical preferences. Further, few physicians believe that small branded gifts can influence medical decision-making despite social psychology theory and evidence to the contrary. The goals of the current study are twofold. First we explore any potential influence these smaller marketing trinkets might have on physician decisions. In particular we are interested in measuring the unconscious effects that branded gifts of minimal economic value may have on implicit attitudes and physician prescribing behavior. Second the study will try and assess whether in-place educational policies with regard to pharmaceutical industry activity have any effect on attitudes toward the promoted brands.

To this end, we designed a randomized control experiment to measure the impact that exposure to these brands have on attitudes and how those attitudes affect physician decisions. 180 third and fourth year medical students and internal medicine and family medicine residents at the Penn’s School of Medicine participated in the study. Participants were randomly assigned to either a control condition or a treatment condition where participants were exposed to promotional items for the brand Lipitor. Following exposure,
participants completed a series of vignettes requiring them to report their clinical preferences in lipid management in situations of varying cardiovascular risk and ambiguity. Participants then completed self-report measures and implicit measures of preference and attitudes. Implicit attitudes were measured using the Implicit Association Test (Greenwald, McGhee, & Schwartz 1998), a computer-based categorization task designed to uncover inaccessible or socially undesirable attitudes. The IAT assessed relative implicit attitudes between Lipitor (the promoted brand) and Zocor, a generic equivalent.

Interestingly, participants exposed to branded promotional items for Lipitor demonstrated weaker positive attitudes toward Lipitor compared to Zocor on the IAT (p=0.05). Further, significant differences reflecting the same paradox were found on the most ambiguous cardiovascular risk clinical vignette, with 42.1% of controls choosing to initiate Lipitor therapy compared to 26.1% of the subjects exposed to Lipitor promotional items (p=0.03). No significant effects were evident on the low and high cardiovascular risk clinical vignettes. Explicit preferences showed similar patterns among global attributes although not statistically significant (product superiority: 48% of controls and 36% of treated rated Lipitor over Zocor, p=0.13; product preference: 53% of controls and 41% of exposed rated Lipitor over Zocor, p=0.10).

These results suggest that trainees exposed to pharmaceutical branded promotional items exhibited a boomerang response with weaker preferences toward the marketed product when compared to controls. These findings were evident on implicit measures in the most ambiguous clinical decision. A similar but non-significant pattern on the explicit measures lends support to these findings. In this case, the observed boomerang effect is potentially explained by recent policies at the University of Pennsylvania that severely restrict pharmaceutical marketing on campus. This suggests that strong institutional policies may affect attitudes underlying behavioral responses to marketing. Overall, this study provides evidence that subtle branding within the environment can have significant effects on clinical decisions and treatment preferences, but not necessarily in the direction one would expect. Further studies are currently being conducted to assess responses at other institutions with less stringent policies.

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Obesity and unhealthy food consumption are major public health issues, especially in North American society. Making healthy food choices is an important part of maintaining a healthy body weight. Consumers make over 200 food choices per day (Wansink 2006), and thus it is important to understand the antecedents to unhealthy food choices. However, little research in marketing has examined why consumers make the food choices they do. For instance, once inside a restaurant, what causes one to purchase the burger instead of the salad, or the large fries over the small ones? Such trivial decisions actually have large caloric consequences, as the difference between a 16 oz. McDonald’s Swamp Sludge McFlurry and McDonald’s Low Fat Ice Cream Cone is 560 calories (McDonald’s USA 2006). Portion size has been linked to obesity (Young and Nestle 2002), as people who select larger portions tend to eat more than those given small portions, even if the food is of poor taste or consumers are not hungry (Wansink 2006).

Past research has shown that consumption decisions are influenced by those who are physically present. People are sensitive to the behavior of others in a retail context (Bearden and Etzel 1982; Dahl, Manchanda, & Argo 2001), even if such a person is only physically present but does not engage the consumer in any way (Zhou & Soman 2003; Argo, Dahl, & Manchanda 2005). In a food context, studies have found that social influence can have either a facilitating or attenuating effect on consumption, depending on the context (see Herman, Roth, & Polivy 2003 for an excellent review). They argue that food choice is influenced by a desire to convey a certain impression or adhere to social norms (Leary & Kowalski 1990; Roth et al. 2001). Although, Herman et al. (2003) argue that making a good impression usually means eating less, other research has found that people may eat more, rather than less in the presence of another person (e.g. Conger, Conger, Costanzo, Wright & Matter 1990). Indeed, the social facilitation literature has found that the presence of others can lead to increases in consumption (e.g. de Castro 1990) because the duration of the meal is longer.

Another line of research has examined the impact of obesity on consumption. Priming people with overweight images leads to an increase in quantity consumed (Campbell and Mohr 2008). Christakis and Fowler (2007) found that a person’s chance of becoming obese significantly increased when a close other (e.g., friend, sibling) became obese. Moreover, the effect persisted even if they were not living in the same city; rather, social distance was a better predictor than physical distance. Effects were not seen in neighbors in the same area.

The above lines of research have focused either on how much others eat, or on the social influence of obesity, but little research has examined the influence of the two jointly. In social influence work more generally, the effects of the social “other” have been shown to be moderated by whether the person is a member of an aspirational or dissociative group (Escalas & Bettman 2005; White & Dahl 2005, 2008). Since thin models are seen as an ideal standard in North American society (Durkin & Paxton 2002) and obesity—associated with unhealthy eating and over consumption—is a stigma that most wish to avoid (Johnson 2002), the body type of others should interact with their food choice (indulgent versus moderate) in forming evaluations of them. We propose that these frameworks can be reconciled by examining the person by situation interaction. In other words, we examine how eating with (or simply ordering in the presence of) those who are thin versus obese can impact one’s food intake, but that such effects are moderated by the actual food choices of the other individual.

In Study 1, we test the joint influence of others’ portion selection and their body type on consumption in a 2(thin vs. obese confederate) x 2(confederate takes little vs. takes a lot) between-subjects design. We find that if a confederate first selects a large quantity of snack food, participants chose and consumed more if the confederate was thin versus obese. In contrast, if the confederate selected a small portion, participants chose and consumed more if the confederate was obese versus thin. A sole confederate was employed across both the obese and thin conditions, and to manipulate body type a professionally-constructed obesity prosthesis was used. Identical clothes were tailored in both a size 00 and a 16 to ensure consistency.

In Study 2, a 2(thin vs. obese confederate) x 2(healthy vs. unhealthy food) between-subjects design was employed to examine whether the effect is driven by the pairing of obesity and unhealthy food, or whether it still holds for healthy food as well. We find that regardless of the perceived healthiness of the food, after seeing a confederate select a large amount of food, participants selected and consumed less when the confederate was obese versus thin. As such, evidence suggests that the effects generalize to foods perceived to be healthy, and thus the effects are driven by perceptions over consumption, rather than by perceptions of unhealthy eating.
Study 3 used a scenario methodology where participants imagined they were ordering ice cream and overhear the person in front of them order an extra large ice cream cone. The design was a 2(whether cognitive load: low vs. high) x 2(body image satisfaction: high vs. low) between subjects design that also included a continuous body image satisfaction measure. We tested whether cognitive load and body image satisfaction moderate the effects identified, and find a 3-way interaction such that the participants chose a smaller size when they were low in body image satisfaction and their processing resources were not impaired, suggesting that the process of food choice seems to have a conscious component and such social comparison effects are heightened among those less satisfied with their physical appearance.

“Change, Change, Change: Evolving Health Guidelines, Preventive Health Behaviors, and Interventions to Mitigate Harm”
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Every day, newspapers, magazine, television, and the internet publicize new findings produced by medical researchers. As a result, consumers have become accustomed to learning which foods, dietary supplements, exercise behaviors, and work habits will affect their risk of cancer or cardiovascular disease. Studies are followed by even more studies, and consumers are left with a great deal of information, but also with doubt and confusion about what preventive behaviors are really best for them. Casual conversations reveal this confusion and consumers simply give up trying to find a health regime that fits within the conflicting stream of health guidelines delivered at their front door each morning.

Our research considers what types of changes to health guidelines cause consumers to have a negative reaction (Study 1, completed), what types of psychological processes and traits contribute to this negative reaction (Study 2, completed), and what types of interventions might attenuate these reactions (Study 3, currently in the field). All of our studies present health guidelines through mock newspaper articles to adults. Our guideline involves the cardiovascular effects of pyridoxine (Vitamin B6).

In Study 1, we observe that consumers react more negatively to a guideline that first communicates a positive effect (i.e., pyridoxine protects against cardiovascular disease) and then reverses to describe a negative effect (i.e., pyridoxine increases risk of cardiovascular disease) than to non-conflicting guidelines or guidelines moving from negative effects to positive effects. We also find three corresponding and troubling reactions to the guidelines. First, consumers reduced their intention to monitor pyridoxine, even though the guideline suggests, from either a positive or negative perspective, that monitoring would be helpful. Second, consumers reported less faith in health guidelines and health professionals. Third, consumers exhibited a negative spillover to healthy behaviors not implicated by the guideline change. Specifically, they reported reduced intentions to engage in unrelated heart-healthy behaviors (e.g., cholesterol monitoring).

Study 2 examined potential moderators and mediators of these negative reactions. In terms of moderators, we observe a guideline change x scientific literacy interaction. Scientific literacy refers to a consumer’s understanding of the nature of science, its role in society, and an appreciation of what science can and cannot do (Laugksch 2000). We find that consumers who score low on a scientific literacy scale exhibit the negative spillover effects described above, while consumers scoring high on the same scale actually have a positive reaction to changing guidelines. We suspect this difference emerges because high scientific literacy consumers value new information because this reaffirms their faith in scientific progress. Low scientific literacy consumers overreact and exhibit the troubling spillovers. More specifically, we find that low scientific literacy consumers follow a process moving from the changing guideline to less faith in health guidelines and health professionals, which leads to less monitoring of cardiovascular threats. Tests for moderated mediation show that this pathway does not unfold for scientifically literate consumers. Similarly, consumers higher in objective health knowledge do not exhibit the negative spillover effects associated with changing guidelines. While the underlying processes for scientific literacy and objective knowledge seem similar, the two measures are not highly correlated in our sample. Finally, further additional tests show that an external (physician) health locus of control (Lau and Ware 1981) protects against the negative spillover effects. It appears that consumers who look to their doctors for medical advice show less erosion in faith in health professionals, and hence fewer spillovers following changing guidelines.

In Study 3, which is in the field at this writing, we test the effect of four interventions designed to attenuate these effects. All of these interventions are based on reasonable frames that will help consumers put the changing health guideline information into perspective, a process we believe some consumers may do naturally. The perspective may come from: (1) appreciating the larger body of scientific literature (relevant to our scientific literacy moderator in Study 2); (2) considering all of the factors that are important to cardiovascular health (relevant to our objective knowledge moderator in Study 2); (3) asking your doctor for assistance (relevant to external-physician locus of control in Study 2); and (4) understanding the goals and constraints of media. We designed these interventions not only to disrupt the negative effects of changing guidelines, but also with an eye toward their practical use in media reports of health research.

Subjects will receive one of five intervention treatments. Four groups will receive one of four “Before You Act” boxes that corresponding to one of the contexts described above. For example, box (2) notes, “Remember that your cardiovascular health is influenced by a number of factors, including genetic and lifestyle risks. Hence, you should consider how a change in behavior fits with all your heart-healthy behaviors in order to determine the best course of action. Keeping these behaviors in mind will help you put this one action in perspective.” Likewise, box (4) notes, “Remember that the news can only cover medical findings at a general level and can not cover all studies on a topic. Hence, you should be aware that they will choose to selectively report on findings they consider newsworthy. Keeping their goals and constraints in mind will help you put this information in perspective.” We expect each intervention, relative to the no-intervention control group, to dampen the spillover effects observed in Study 2. We also expect that the aforementioned interactions between changing guidelines and scientific literacy, objective health knowledge, and external locus of control will be weakened as a result of the interventions. If effective, these results will point to important remedies to the problem of changing health guidelines for consumers.