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EXEMPLIFICATION OF HEALTH MESSAGES IN THE MEDIA

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TRACY R. WORRELL

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EXEMPLIFICATION OF HEALTH MESSAGES IN THE MEDIA

By

Tracy R. Worrell

A DISSERTATION

Submitted to Michigan State University in partial fulfillment of the requirements for the degree of

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ABSTRACT

EXEMPLIFICATION OF HEALTH MESSAGES IN THE MEDIA

By

Tracy R. Worrell

Research on exemplification demonstrates that exemplars are superior to base-rate information in shaping the perceptions that result from message exposure. Though the extensive body of work in this area suggests that this effect is robust, Krupat et al. (1997) found that there are conditions in which an abstract base-rate may be more influential than a concrete exemplar. The present study attempts to replicate and extend Krupat et al.'s research in a health communication context. It examines the ability of information utility to moderate the relative influence of exemplars versus base-rates under conditions of high and low issue importance.

The paper begins by introducing exemplification theory and explicating concepts dealing with issue importance, information utility, exemplars and base-rates. Logic from this discussion is use to predict that issue importance and information utility will interact to moderate the influence of exemplar discrepancy on perceptions of problem severity and population estimates related to the issue of smoking related anxiety among college students. A uniquely weak exemplification effect was predicted for conditions in which issue importance and information utility were high. An experiment was conducted to test this prediction.

A 2 X 2 X 2 mixed factorial design varied the exemplar discrepancy (extreme, low) and information utility (high, low) in a message on smoking related anxiety presented to respondents who varied on issue importance (high, low). After exposure, respondents were asked to report their perceptions of the problems severity, to estimate its pervasiveness in the population, and to indicate their behavior intentions. Analysis produced a significant three-way interaction, but the pattern of means associated with the interaction was not consistent with predictions. Instead of the uniquely weak exemplification effect predicted for when issue importance and information utility were both high, the effect was unmistakably apparent in this condition. Means associated with the interaction showed a different pattern.

In addition to the reported effect when issue importance and information utility were high, the effect was also apparent when issue importance and information utility were both low, the combination of conditions best suited theoretically for exemplification. Unexpectedly, exemplification effects were absent under conditions where issue importance was low while information utility was high, and where issue importance was high while information utility was low. Thus, the exemplar effect was absent when either issue importance or information utility was high. Discussion makes note of the fact that the results are consistent with earlier evidence indicating that exemplification occurred under both high and low conditions of issue importance; however, the effect was not stable when information utility varied. To my parents: for giving me the support and freedom to accomplish my goals. I never would have had the courage to try if I didn't always know that you'd be there to catch me if I failed.

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Introduction

Which would be more compelling; being told that 68% of college students have anxiety disorders that are linked to smoking or hearing a story of one student's mental difficulties brought on by nicotine? Would one stand out more than the other? One is statistical information; the other is a story from one person's life. Exemplification theory (Zillmann, 2002) examines the role of these two factors, base-rates and exemplars, in communication messages. Much of what currently exists in exemplification research is examining the viewer's consumption and absorption of information put forth by the news media (e.g. Aust & Zillmann, 1996; Berger, 2000; Berger, 2002; Brosius & Bathelt, 1994; Daschmann, 2000; Gibson & Zillmann, 1994; Gibson & Zillmann, 1998; Gunther & Christen, 1999; Newhagen & Reeves, 1992; Perry & Gonzenbach, 1997; Perry & Gonzenbach, 2000; Zillmann, Gibson, Sundar, & Perkins, 1996). These studies predominantly focus on viewer differences attending to, believing, and retaining base-rate versus exemplar information. This study brings exemplification into the health communication message arena examining the role of base-rates and exemplars in antismoking messages targeting young adults.

The premise of exemplification is that individuals not only pay more attention to but are influenced more by exemplars than by base-rate data (Gibson & Zillmann, 1998). News reports often use exemplification to illustrate news issues of large scope through the use of individual examples that are to some degree representative of the larger issue, and through this draw an audience to their stories (Gibson & Zillmann, 1998).

Much of exemplification theory is based on logic arguing that there are evolutionary advantages that stem from the ability to group events together. Humans do

this by sifting through experiences to group those that seem to go together. When they do this, they code the occurrence of events in some basal quantitative manner that allows them to make judgments (most often nonconsciously) of how frequently different events occur (Zillmann, 2000). These judgments are said to be based on two cognitive devices: the availability heuristic and the representativeness heuristic. The availability heuristic tells us that judgments of social phenomena are greatly influenced by the ease with which information comes to mind (Gibson & Zillmann, 1998). According to Rothbart, Fulero, Jensen, Howard, and Birrell (1978) availability heuristics can be a useful tool for assessing frequency or probability of an event. Individuals that employ the availability heuristic evaluate the frequency of events based on the quickness with which pertinent instances come to mind (Zillmann, et al., 1996). The representativeness heuristic is a special case of availability. It stipulates that abstract base-rate information plays little role in quantitative judgments about event populations. Instead, these judgments are based on the sample of more concrete exemplars that are available to the individual at the time of decision making. Exemplification theory is a simple combination of these heuristics. It posits that since exemplars come to mind more easily than base-rates when accessing information, available exemplars will dominate base-rate information when making judgments of event populations.

The two components of exemplification theory, exemplars and base-rates, have been examined both separately and comparatively for decades (e.g. Bar-Hillel, 1980; Bar-Hillel & Fischhoff, 1981; Gilbert & Jones, 1986; Hayes-Roth & Hayes-Roth, 1977). Separately scholars have examined things such as exemplars encoded in memory (Hayes-Roth & Hayes-Roth, 1977), exemplar retrieval from category membership (Castelli, et

al., 2004), and the base-rate fallacy (Bar-Hillel, 1980). Comparatively scholars have focused more on determining if either base-rates or exemplars can alter apprehension (Berger, 2000), affect recall of information (Berger, 2002; Heuer & Reisberg, 1990), and influence the effect of news information (e.g. Aust & Zillmann, 1996; Gunther & Christen, 1999; Zillmann, et al., 1996). In all, empirical evidence from research on exemplification shows that exemplar effects are robust, having been observed to influence a variety of different perceptual and attitudinal outcomes across an assortment of issues in news and political media research examining several different media (for review see Brosious, 2003).

Most research on the influence of exemplars has focused on message effects in a news or political context. The findings from this work generally show that exemplars outweigh base-rate information in terms of their influence on receivers (e.g. Aust & Zillmann, 1996; Brosius & Bathelt, 1994; Gibson & Zillmann, 1998). Yet, Zillmann (2002) contends that it would be premature to conclude that base-rate information is always inconsequential. In fact, one study by Krupat, Smith, Leach, and Jackson (1997) shows a situation in which base-rate information was more influential than an exemplar. In this instance, however, the investigation was set in a product purchase context. Zillmann (2002) interprets this research to suggest that reliable quantitative information can have a greater influence on judgments than an exemplar in situations where the information has great diagnostic significance (in this case for purchasing a car). If Zillmann is correct, understanding the extent to which information utility can act as a moderator of an exemplar's influence would have important theoretical and practical implications for research on message effects. The present study attempts to replicate and

extend Krupat et al.'s (1997) research to examine the importance of information utility in determining the relative influence of exemplars versus base-rate information in persuasive media messages. The Krupat et al. study looked only at information use in evaluating automobiles; the present study attempts to examine the extent to which information utility can moderate the relative influence of exemplars versus base-rate information in other circumstances. The paper begins by explicating concepts and processes related to exemplars, base-rates, and information utility. Based on this discussion, it presents a rationale relating base-rates, exemplars, and information utility and offers several hypotheses to test this logic. These hypotheses are then tested with an experiment examining the effect of information utility on exemplification theory.

Defining Exemplars

An exemplar is an instance of an event population that shares essential features with all other instances from the group of events that is defined by those features. In a sense, exemplars are case reports used to represent characteristics typical of a group of events (Zillmann & Brosius, 2000). For example, a news story reporting on increased anxiety problems caused by smoking might try to make a point about the larger issue of health problems related to smoking by presenting an exemplar. If the story is about smoking the report might describe in detail the story about one particular individual that has anxiety brought on by smoking. The exemplar may be presented in order to convey drama and emotion in ways that verbal or written description of the larger event population or social issue cannot (Aust & Zillmann, 1996). At the same time, questions persist about the extent to which the drama and emotion associated with the particular story correspond to the subject at hand. Even more to the point, one must question the

extent to which objective features of the particular example accurately and completely represent the larger event population.

Commonly, exemplars are illustrative representations of information. This means that rather then give specific information that details an issue, an exemplar will provide a demonstration of an event. They may be looked at as testimonials or qualitative evidence of an event (e.g. using a victim of anxiety or another health related issue brought on by smoking) that adds to more objective information that may be given to quantify an occurrence. Still, in order to function as an exemplar, the particular example must share essential attributes of the larger issue to make it classifiable as a member of the same population of events. In this regard, not all examples function as exemplars. Examples that have no features in common with other events cannot be considered a member of that population of events, and cannot serve as an exemplar for that population (Zillmann, 2002). As such, only events that share several defining features with other events from the population can serve as exemplars. Yet, even when exemplars share some of the primary features of an event population, variation in secondary attributes can have substantial consequence.

Exemplars do not always reliably exemplify phenomena (Zillmann, 2002). This is the case when an exemplar that is being used is atypical of the phenomenon being illustrated along primary or secondary attributes of the event population. Exemplars have been referred to as illustrating a "case in point," which is only beneficial "for the exemplification of a homogeneous event group" (Zillmann & Brosius, 2000, p. 5). In event populations where cases contain considerable variation in secondary features, certain secondary attributes presented in an exemplar have the potential to distort

perception. For example, in the aforementioned smoking illustration, if the particular example used to illustrate the increased anxiety problems brought on by smoking happened to end with the death of a victim, the presence of this atypical but highly salient attribute of anxiety is likely to have a strong influence on receiver perceptions and behavioral intentions. In this case, the influence of the exemplar is likely to be quite different than what we would expect from exposure to messages featuring only the baserate information.

Exemplars are frequently used in conjunction with base-rates as case illustrations of event populations (Brosius & Bathelt, 1994). In these instances exemplars have been found to enhance or detract from given base-rate information as a function of the extent to which the salient features of the exemplar are representative of the event population. As with news reports, exemplars are often added to provide a description of an event being discussed within a report and are chosen for their entertaining qualities (Gibson & Zillmann, 1994). When the collection of included exemplars is selected in a manner that will accurately represent variation in secondary event attributes, we should expect their inclusion to augment the base-rate information. When the included exemplars are not selected in such a manner, this increases the likelihood that exemplars will detract from outcomes consistent with what we might expect from base-rate information.

Defining Base-rates

Whereas exemplars rely on specific case reports to describe and illustrate essential features of an event group that may or may not accurately represent secondary features, base-rates present descriptions limited to certain general features of the event population. Notably, these more limited descriptions are ascertained using systematic

methods expected to produce more reliable representations of the population. Base-rate information often comes in the form of a numerical representation such as the frequency with which an event occurs. Typically it is thought of as quantitative information about population events (Zillmann & Brosius, 2000) or a general description "of the number of people or things in a given social phenomenon" (Zillmann, et al., 1996, p. 427). In the smoking example, base-rate information might quantify the number of smokers diagnosed with anxiety. Such base-rates can be precise (specific percentages) or vague (e.g. in a majority of instances), but in either case they will not include illustrations of the events. Generally speaking, this type of objective base-rate information is less partial and more truthful than exemplars (Zillmann, 2002).

Base-rates are often said to be less illustrative or vivid than exemplar information. The fact that base-rates are less illustrative than exemplars often leads to researchers examining the base-rate fallacy, which is an individual's tendency to ignore objective but abstract base-rate information in favor of less relevant but more concrete exemplars that are readily available in memory (Scheider, 2001). These more entertaining exemplars draw the attention of many individuals despite the fact that they provide representations that are potentially atypical and might actually produce misperceptions of the event population under consideration.

Information utility

Information utility can be understood as the extent to which certain facts or knowledge help people comprehend "happenings of interest" (Festinger, 1957). Knobloch, Carpentier, and Zillmann (2003) suggests that information utility is knowledge that "affords individuals a better orientation in, as well as more effective means of acting

on, their physical and social environments" (p. 92). In other words information utility refers to how useful certain facts are for helping us make decisions in response to different environmental challenges. For example, in consumer decision making research. information that helps a consumer make a difficult product choice could be thought of as having high information utility (Huh, DeLorma, & Reid, 2004). Choices on issues such as which prescription drug to use can pose both challenges that are large or small to different people. In either case, information that relates directly to the health disorder or the drugs under consideration are likely to be seen as particularly useful in the potential purchase decision, whereas information unrelated to the drug or its effects would have little value. Information utility research examines how expectations of message use are formed and modified by attempts to organize available information in order to achieve a specific objective (Wilton & Myers, 1986). Empirical studies of information have found that individuals will assess information on the basis of three features leading to increased utility: (1) the perceived relevance of information to an assigned task, (2) the amount of new information, and (3) the perceived credibility of the information (Moenaert & Souder, 1996; Wilton & Myers, 1986). Wilton and Myers (1986) describe perceived relevance in terms of information that provides an individual with signals that are strong and pertinent to their long-term memory; something particularly important when information is sought to address environmental challenges originating from internal needs. Credibility refers to how "undistorted" information is thought to be (Thayer, 1968), or the believability of stimuli from a source (Wilton & Myer, 1986). If the information provided is from a source that is trustworthy, users will find that information more credible than information from other unknown or unbelievable sources. Finally,

amount of new information refers simply to whether or not an individual has been exposed to the same knowledge previously, and how much of the information is novel.

The present study starts with the assumption that information utility will increase message effectiveness in a health communication context. This expectation is consistent with research from several fields showing that the credibility, relevance and new information in a message govern its influence on attitude and behavior. Persuasion literature shows that the attributes that increase message credibility are likely to reduce counter arguing (Buda & Charnov, 2003) and increase message effect (Thompson, 1975). Investigations on the benefits of new information show that its inclusion makes a message more appealing, and increases the likelihood that the message will be processed and produce persuasion (Trenholm, 1989). Finally, research on relevance not only shows that a message's ability to generate relevant thoughts increases persuasive effects (Trenholm, 1989), but the role of relevance is central to the health context studied here. According to the health belief model, relevance will increase message effects, particularly with regard to health recommendations (Perloff, 2001). People are more persuaded by messages that have costs and benefits that relate to them directly.

The influence of information utility can also be seen in the selective exposure behavior of individuals, where the increased perceived utility of information is thought to result in a greater drive to seek that information (Sears & Freedman, 1967). When physical or social environments confront them with uncertainty, individuals may attempt to seek out information that helps to explain the phenomenon (Berlyne, 1954). In this sense, information utility has been found to be an essential determinant in the selective

exposure of information, and an important factor in attempts to understand the influence of exemplars and base-rate information (Zillmann, 2000).

Issue Importance

Since exemplar discrepancy is thought to result from careless information processing, we might expect that factors promoting more careful scrutiny of messages would eliminate exemplar discrepancy's effect. One factor that comes immediately to mind in this regard is issue involvement. People who are highly involved with an issue should be expected to pay more careful attention to the information contained in messages related to the issue. Issue involvement (what we're calling issue importance is similar to what others call issue involvement) has been found to be an important factor in several areas of media research, particularly in a public safety or health context. For example Millar and Millar's (2000) work on the persuasive influences of message framing shows that issue involvement increases intentions to drive more cautiously after exposure to a safe driving message. Skumanich and Kintsfather's (1996) research on organ donation shows that issue involvement is the strongest determinant of compliance to a persuasive message asking individual's to sign an organ donor card.

Research on issue importance is consistently shown to distinguish people's perceptions and reactions to persuasive messages. This has been found to be the case in the health communication context (Salmon & Atkin, 2003) and many other areas of media influence. By and large, though not without exception, issue importance is found to minimize message effects, with high issue involvement respondents less affected by message factors than those low on involvement. The Elaboration Likelihood Model (Petty & Cacioppo, 1986) explain this as a function of receiver's motivation and ability to

process messages more closely, suggesting that those more involved in a topic will inspect the message more closely. Close scrutiny to a message should increase the receiver's ability to find flaws in evidence and arguments used to persuade. Under these conditions, only a very strong persuasive message should succeed. As such, high issue involvement should minimize message effects in most circumstances. When we apply this reasoning to exemplification logic, we might expect that those less involved would process heuristically and be more affected by exemplification than individuals high on issue involvement. Whereas the careless attention to the type of discrepant exemplars often found in media that fail to accurately represent base-rate data, what Zillmann (2002) calls "misexemplification," might strengthen exemplification, close attention by those highly involved should negate this effect.

It is clear from the logic above that issue involvement alone might be expected to influence behavioral and perceptual reactions to the information presented in a message. Moreover, there is reason to believe that it might moderate the effect that different message factors have on these outcome responses. However, the limited evidence in research on exemplification has failed to show that issue involvement can moderate the effect of exemplar discrepancy. Research by Daschmann (2001, as reported in Brosius, 2003) shows that exemplification effects occur regardless of a recipient's level of involvement with an issue. In fact, they occur even apart from one's prior opinions on an issue. In light of this, we might expect the effects of exemplification are robust. Certainly, we should expect issue involvement to have an independent effect on issue perceptions. However, in light of Daschmann's findings, should we expect it to act as a moderator of exemplification? By itself it seems that we should not expect issue importance to

moderate exemplification, but perhaps this might change when it is considered in combination with variables such as information utility.

The extent to which information utility influences selective exposure can be seen as a function of three message variables related to the concept of issue importance. Although scholars use several different terms to label these variables they are essentially: (1) the magnitude of threat or opportunity, (2) the likelihood that the threat or opportunity will actually occur, and (3) the immediacy of occurrence (Festinger, 1957; Knobloch, Carpentier, & Zillmann, 2003). Prior research suggests that people pay closer attention to stories that are high on these attributes (Knobloch, Carpentier, & Zillmann, 2003). Atkin (1985) suggests that this type of increased attention can be found in selective exposure to media, where issue importance related to needs for guidance and reinforcement promotes selection of media content suited just for this purpose.

If issue importance and information utility can moderate exposure and attention to message features, questions arise concerning the role they play in determining the relative influence of features such as exemplars and base-rate information. Although the general superiority of exemplars over base-rate information might be expected, modifications in reception processes suggest the potential for conditional change in outcome expectations. Before examining the role of base-rates and exemplars, with this in mind, the comparative advantages and disadvantages of each type of message feature needs to be examined.

Comparing the Influence of Exemplar and Base-Rate Information.

Very few studies look at base-rates in isolation when attempting to examine outcomes associated with their use. This is likely due to the fact that receivers often

perceive base-rates as boring and dry, particularly without exemplar information to supplement the simple facts. Yet, the presence of exemplars to supplement base-rates seems capable of reducing the influence of base-rate information. Some research shows that when exemplars are present base-rate information may be underweighted (e.g. Adler, 1997). Other studies have found that even when no exemplars are present, base-rates are often neglected if an individual has direct experience with the issue at hand (e.g. Goodie, 1997).

In general, base-rates have not been examined as often as exemplars, perhaps because of the belief by some scholars that base-rates are virtually ignored when exemplar information is present (e.g. Koehler, 1996). For example, in research by Zillmann et al. (1996) the influence of base-rate information clearly pales compared to exemplars. If researchers expect this pattern to be consistent regardless of other concerns, then it would be of little consequence to examine the influence of base-rates when exemplar influence is present. However, not all scholars agree that this is the case. Although studies show that base-rates are overwhelmed by exemplars in many circumstances (Berger, 2000), it does not appear that they are always ignored. Prior investigations suggest that base-rates are perceived by decision makers as more reliable and can influence decisional confidence more than exemplars (Adler, 1997). Base-rates are perceived as more truthful (Zillmann, 2002), precise (Zillmann et al., 1996), and accurate (Zillmann, Perkins, & Sundar, 1992 (as cited in Zillmann & Brosius, 2000)) than exemplars. Moreover, a variety of factors seem capable of altering the attention people pay to base-rates and thus the influence that could potentially result.

Unlike base-rates, the influence of exemplars is often studied separately, as well as in comparison with base-rates, to determine not only why they may be better than base-rates but also what types of exemplars may have the strongest affect on individuals. Several factors have been identified as potential sources of exemplar's superior strength (Brosius & Bathelt, 1994). For example, some scholars believe the strength of exemplar influence results from the fact that exemplars are often more entertaining and sensational than base-rates (Zillmann et al., 1996) and can convey more human drama than base-rates (Aust & Zillmann, 1996). Zillmann (2002) claimed that exemplar effects would increase over time; however, evidence does not support this. Several studies found that although the effect of exemplars remained stable over time they did not become stronger (e.g. Gibson & Zillmann 1994 & Zillmann, Gibson, Sundar, & Perkins, 1996).

Factors such as these are often held capable of activating mental processes that strengthen an exemplar's affect. For example, some claim that exemplars are more likely to evoke emotions than base-rates (Aust & Zillmann, 1996). Aside from emotional components, exemplars are also more likely to invoke an automatic response in individuals (Castelli et al., 2004) by coming to mind easily. Exemplars can activate and influence an individual's judgments through involuntary cognitive processes without being accessible to conscious recall (Sia et al., 1999). Zillmann et al. (1996) asserts that exemplars operate like ready-made shortcuts that make complex information more understandable. Moreover, these shortcuts are made even more accessible by exemplars that are vivid. Vivid exemplars tend to be more memorable than pallid base-rate data, and this may increase exemplar availability in a manner that makes them more influential (Berger, 2000).

Although most studies seem to focus on the comparative advantages of exemplars over base-rate information, some research suggests several disadvantages to the use of exemplars, particularly in relation to perceptual bias that might result from their use. Frequently, and usually inadvertently, exemplars can present distorted versions of truth (Rodgers, 2003). It has been found that exemplars are at best only somewhat representative of their population and in some cases entirely nonrepresentative (Zillmann, 2002). The ease of their cognitive activation can lead to misjudgments of the frequency with which different elements are present in a population (Zillmann et al., 1996). Such misjudgments are proffered to have far reaching consequences, such as those observed by cultivation researchers who claim that TV images lead people to believe that the world is scarier than it really is and to over exaggerate their own chances to become victims of crime (Berger, 2000). Exemplars are also said to play a role in perpetuating negative stereotypes, and in isolation are frequently found to be inefficient sources of information (see Sherman, 1996).

For the most part, exemplar information has been found to be less reliable than base-rate information. In part, due to the fact that it is seldom collected or presented in a systematic manner (Gibson & Zillmann, 1994). Exemplars are often presented to supplement base-rates without making sure that the exemplar information is representative of the population as a whole. In some cases the exemplar may be only one case out of virtually thousands. As such, though most research has focused on how the advantages of exemplars have outweighed the advantages of base-rate information, the advantages of base-rate information should not be overlooked. Almost by definition, base-rate information is expected to provide more reliable representations of population

characteristics and thought less likely to produce distorted perceptions. As such, we might expect more functional outcomes to result from exposure to base-rate information under conditions where its influence on receivers is strongest. One moderating factor thought to strengthen the influence of base-rate information is information utility. *Information Utility as a Moderator of Base-rate Information's Influence*.

In their research comparing the influence of exemplars and base-rate information on decisions to purchase a car, Krupat et al. (1997) found that whereas base-rate information was regarded as less interesting than exemplars it was rated as significantly more informative. As already mentioned, Krupat et al. also found that this base-rate information was more influential than an exemplar in this purchase decision context; an observation in contrast to most research on exemplification. Can we surmise that the two are interrelated? Is it the case that perception of the base-rate information's informative value was responsible for the observed anomaly? If so, what process might account for this? One possible explanation can be found in an understanding of the relationship between information utility and attentional vigilance.

Knobloch et al. (2003) argue that when information is found to be useful it can activate curiosity and exposure. Such an outcome might alter the perceived level of interest in and subsequent attention given to the information provided. Previous research shows that information utility can affect attention to messages, specifically messages containing the type of objective facts characteristic of base-rate information (Wilton & Myers, 1986). If one argues that the information utility of message components can moderate attention to those components and, subsequently, the influence of those components on outcomes from message exposure, then a case can be made that the

influence of base-rate information should supersede the influence of exemplars in situations where the base-rate information has greater information utility than exemplars. If information is perceived as useful then message receivers would more likely attend to that information than to exemplars.

The reasoning offered here suggests the presence of an important moderator in our understanding of exemplification processes. Instead of envisioning a simple process in which message effects are governed by the influence of exemplars, we might propose a more complex process in which issue importance interacts with information utility to determine the influence strength of both exemplar and base-rate information. The unique predictions offered here are limited to conditions of great issue importance. In cases where issue importance is low, we should expect the influence of exemplars to exceed that of base-rate information regardless of the informational utility found in either of these message features. This prediction stems from the limited receiver attentional vigilance to all message features expected when issue importance is low. Under these circumstances the greater accessibility of exemplars over base-rate information recognized by Zillmann and Brosius (2000) should be constant. However, our predictions might differ when issue importance is high. Under these conditions we expect that message variables facilitating information utility will produce outcomes that contrast with the commonly observed pattern in which the influence of exemplars supersedes that of base rate information. Given conditions of great issue importance, when base-rate information is thought to contain greater information utility than an exemplar, its influence on receiver outcomes should exceed exemplar effects. By contrast, when the

information utility of an exemplar is thought to exceed base-rate information, exemplar influence should dominate.

If this understanding is correct, when issue importance is high the ability of messages to influence receivers should vary as a function of the information utility found in different message features. In other words, information utility should moderate the influence of message features (such as exemplars and base-rate information) on message receivers. As the information utility of message features increases, their influence on receiver outcomes should increase. Consequently, factors that determine the information utility of a message should govern the influence of these different message components. Based on prior information utility research, we should expect that the attention to and influence of message features will vary as a function of the perceived relevance, credibility, and amount of new information contained in a message feature. Individuals will assess information as having greater utility as their perception of the relevance, the amount of new information, and the credibility information increases. As such, these features will moderate the influence of message features such as exemplars and base-rate information. These expectations can be represented conceptually as the following set of predictions.

- Issue importance will moderate overall attention to exemplar and base-rate message features. When issue importance is low, attentional vigilance to both message features will be low. When issue importance is high, attentional vigilance to message features will be moderated by informational utility.
- 2. When overall attentional vigilance to exemplar and base-rate message features is low, selection of information used to make judgments about event populations

will be governed by message features affecting the ease with which information is available in memory. In this regard, exemplars of concrete events will be generally more available for access and retrieval from memory than more abstract base-rate information.

3. When overall attentional vigilance to exemplar and base-rate message features is high, attentional vigilance to message features will rise as a function of increased informational utility. In this regard, the perceived relevance, credibility, and amount of new information contained in message features will moderate the selection of information used to make judgments about event populations in the following manner. If the perceived relevance, credibility, and amount of new information is high, attentional vigilance to message features will increase. If the perceived relevance, credibility, and amount of new information is high, attentional vigilance to message features will increase. If the perceived relevance, credibility, and amount of new information is low, attentional vigilance to message features will decrease. Generally in this regard, the perceived relevance, credibility, and amount of new information contained in base-rates will be greater than that for exemplars. As such, base-rates will be selected for use in making judgments about event populations more often than exemplars.

Practical Applications of Information Utility as a Moderator Message Influence.

The logic described above outlines the general process by which information utility should moderate the relative influence of exemplars versus base-rate information. It argues that when issue importance is high, message factors that strengthen the information utility of base-rate information will increase influence of base-rate information compared to that of exemplars. Whereas the logic does not limit itself to any one communication context, the present study is concerned particularly with the use of health information; an area in which we might expect issue importance and information utility to play substantial roles in message exposure. Although it is unlikely to be true in all cases, it is not hard to imagine a health communication exchange where issue importance is elevated by the magnitude of some health threat, the likelihood that the threat will actually occur, or the immediacy of its occurrence. In these situations, the perceived relevance, credibility, and amount of new information contained in a message should moderate the relative strength of exemplar versus base-rate information on receiver outcomes in the manner advocated by the above propositions. When issue importance is pronounced, information utility should moderate the outcome of message exposure such that when the perceived relevance, credibility, or amount of new information contained in a message is high, the influence of base-rate information will supersede the influence of exemplars. On the other hand, when issue importance is nominal, we should expect the often observed pattern in which exemplars have a greater influence than base-rate information.

Issue Importance and Information Utility in the Context of Health Communication

Issue importance and information utility have been issues of central concern in the persuasive health communication literature. Concern over some threat to public health is the essence of many persuasive health communication messages. In similar manner, the importance of information utility can be seen in theoretical research such as the health belief model (HBM) (Rosenstock, 1990) and the extended parallel processing model (EPPM) (Witte, 1992) that focuses on the roles of efficacy and ability. However, the centrality of information importance in theory may seem at odds with strategy apparent in

many public health campaigns that seem to focus more on the use of highly emotional exemplars. While research in this area might suggest that the use of such exemplars is effective with many audiences, the logic presented in this study raises questions concerning the effectiveness of reliance on exemplars under circumstances of acute attentional vigilance. In some health situations, the type of people likely to pay close attention might be the exact audience you are concerned with. Could it be that base-rates play a more important role with these critical receivers? If so, the practical implications for health communication are large, making our understanding of the roles of issue importance and information utility critical.

Issue Importance. As previously mentioned, issue importance is made up of three factors dealing with perceived threat: the magnitude of the threat, the likelihood of occurrence, and the immediacy of occurrence. In health communication research persuasive messages related to health threats have often examined the extent to which fear and efficacy induced by messages promote behavior change in receivers. Much health communication work, particularly work with fear appeals, is concerned with the extent to which the target of a message perceives a particular threat to be severe (magnitude) and perceives himself/herself to be susceptible (likelihood) to the threat (see Witte, 1992). The higher the perceived severity and susceptibility, the greater threat an individual may feel (Witte & Morrison, 2000).

Although the immediacy of the threat is not examined directly in most health communication research, it is often examined indirectly when examining behavior change as part of overall perceived susceptibility. Whether or not an individual believes that a threat is imminent is not studied as much as whether they believe the threat can

happen at all. The present study focuses more specifically on immediacy as a factor of issue importance based on the belief that this aspect of overall perceived susceptibility is an essential determinant of attentional vigilance. If the viewer does not believe that the threat will occur in the near future it is less likely that threat will be perceived as high at the moment of message reception. As such, the moderating influence of threat on selective exposure to message content might be lost.

When a health threat is seen as severe and probable an individual is more motivated to seek information that can help reduce the anxiety created. Under these circumstances, we might expect people to process messages content more closely. Though Daschmann (2001, as reported in Brosius, 2003) shows that exemplification effects are robust, and occur regardless of the recipient's level of involvement, it seems plausible that base-rate information would play a stronger role under some conditions, especially if message content is perceived as high on information utility.

Information Utility. Information utility has been examined on the basis of three factors; the perceived relevance of information, the amount of new information, and the perceived credibility of the information. When examining health communication messages each of these factors have been shown to enhance selection of and/or attention to health communication messages. In research on alcohol intervention, Neighbors, Palmer, and Larimer (2004) found that when individuals believed that the information contained in a persuasive message was relevant they were more likely to attend to message content and be open to the behavioral change it suggested. One possible explanation for this is based on the manner in which information is processed cognitively when its utility is high. It has been found that individuals process health-related

information systematically when the health issue is perceived relevant but process it heuristically when it is not (Rothman & Schwarz, 1998).

Previous research on health communication also shows that credibility can enhance the influence of persuasive messages (McGuire, 2001). Within the health communication literature credibility usually refers to both the source of the message and the evidence provided within it. Messages are perceived as more credible when it appears that the source knows the facts on the relevant health topic and is reporting them honestly (McGuire, 2001). Interestingly in this regard, statistical information such as that often found in base-rate reports has been found to enhance the credibility of evidence within health messages (Atkin, 2001). However, since the present study looks at the influence of base-rates independent from its role here, we focus on other aspects of credibility. There are a variety of factors that can detract from perceived credibility such as evidence of misinformation, inaccurate data, and an untrustworthy source.

The final determinant of information utility deals with amount of new information. This factor is likely to be particularly relevant to many persuasive health messages where campaigns might suffer from the perception that a message presents nothing new. If the logic here related to base-rate influence is correct, health communicators would need to focus on presenting base-rate information in forms that appear to add to the receiver's knowledge base. While at first this might seem like a considerable challenge overcome only by the constant gathering of new information, the variety of methods that can be used to present base-rate information offer message alternatives that should create the perception that a message contains new knowledge. The use of alternative methods for presenting base-rate information should not only make

the amount of new information in a message appear greater, the presentation of abstract information in several different forms should also increase the likelihood that receivers with different learning styles will see the information in a form easier for them to understand. In this manner, the use of different presentation styles might also facilitate the understanding of abstract base-rate information often difficult for some to grasp.

The application of issue importance and information utility to the health communication context allows us to represent the aforementioned predictions as a set of specific hypotheses offered for examination. The first three hypotheses simply posit direct effects of issue importance, information utility, and exemplar discrepancy on outcome variables. The fourth hypothesis considers the interaction among these variables, and how information utility and issue importance combine to moderate the influence of exemplar versus base-rate information. The logic offered before proffers that when issue importance is low, the perceptual reaction of respondents (e.g., population estimates, and perceptions of problem severity/personal vulnerability) concerning a health disorder will be influenced more strongly by the presentation of concrete exemplars of individual experiences with the health disorder than by the presentation of abstract base-rate information about the proportion of people who are diagnosed with the disorder. This would be the case regardless of the information utility of a message. By contrast, when issue importance is high, the effect of base-rates and exemplars on these reactions will be moderated by the information utility (i.e., perceived relevance, perceived credibility and amount of new information) in exemplars and base-rates. The moderation is such that when information utility is high, perceptions will be influenced more strongly by the presentation of abstract base-rate information regarding the proportion of people who are
diagnosed with the disorder than by the presentation of concrete exemplars of individual experiences with the health disorder; whereas when information utility is low, once again, perceptions will be influenced more strongly by concrete exemplars than by abstract base-rate information. Past exemplification research (Gibson & Zillmann, 1994) has observed the strength of exemplar influence by comparing responses to stories with minimal versus extreme exemplar discrepancy (i.e., the extent to which the exemplar and base-rate information differ). The current research uses this approach to examine a set of hypotheses designed to examine the moderation of exemplification effects resulting from the combination of three variables.

Formal Hypotheses

The research and theory above suggest a set of four hypotheses that encapsulate the issues investigated in this study. Hypotheses one to three posit direct effects for the three key variables combined in hypothesis four. Hypothesis four details the interaction predicted in this study, the examination of which is the main focus of this investigation.

The first hypothesis attempts to replicate previous work examining the role of issue involvement on message effects in the field of public safety and health communication (e.g. Millar & Millar, 2000; Skumanich & Kintsfather, 1996).

H1: When exposed to a news story about a health issue problem, respondents who ascribe high importance to the issue (in this case the issue of smoking related anxiety) will give higher ratings of the problem's perceived severity and higher estimates of the percent of the population affected by the problem than respondents who ascribe low importance to the issue.

The second hypothesis attempts to replicate the findings of previous research on the effects of information utility in the field of health communication (e.g., Perloff, 2001).

H2: Exposure to a news story about a health issue problem that contains high levels of information utility (in this case the issue of smoking related anxiety) will lead to higher ratings of the problem's perceived severity and higher estimates of the population affected by the problem than exposure to a news story that contains low levels of information utility.

The third hypothesis extends the extensive research on the effects of exemplar discrepancy in news and political media (cf. Brosious, 2003) to the field of health communication.

H3: Exposure to a news story about a health issue problem that contains high exemplar discrepancy will bias (in the direction of the exemplar) respondents' ratings of the problem's perceived severity, and estimates of the percent of the population affected by the problem more than exposure to a news story that contains low exemplar discrepancy.

The fourth hypothesis uses the logic stated above to predict the manner in which issue importance and information utility combine to moderate the influence of exemplar discrepancy.

H4: Information utility and issue importance will moderate the effect of exemplar discrepancy such that the following will be observed:

a) When issue importance is low, perceptual responses (i.e., population estimates, perceptions of problem severity) to a message containing baserate information with highly discrepant exemplars will show a stronger

bias toward the exemplar than the base-rate information. This will be equally true under conditions in which the information utility of a message is high or low.

b) When issue importance is high, responses (i.e., population estimates, perceptions of problem severity/personal vulnerability) to a message containing base-rate information with highly discrepant exemplars will show a stronger bias toward the base-rate under conditions where the message's information utility is high than under conditions where information utility is low.

Research Question – Will issue importance, information utility, and exemplar discrepancy, individually or in combination, have an affect on behavioral intentions?

Method

Overview

The present study was conducted in two parts: a pilot study followed by the main study. In the main experiment a 2 X 2 X 2 mixed-model design varied issue importance (high, low), information utility (high, low) and the degree to which an exemplar representation differs from base-rate information; hereon referred to as exemplar discrepancy (low, extreme).

The pilot study was conducted in two phases. In the first phase, survey items examined the existing variance inherent in the self-evaluated importance that individuals place on smoking and several other health issues in order to determine if smoking was a viable issue for use in this study or, if it was not, to identify another issue for use in the study. A viable issue is one where we can identify that distinct groups of individuals exists in the population who are high and low on perceived issue importance. In the second phase, once a usable issue had been identified, four different print versions of a health information story were created to vary in terms of information utility (high, low) and exemplar discrepancy (low, extreme). Survey items examined respondent's perceptions of these stories as a manipulation check designed to determine the extent to which the story versions successfully manipulate information utility and exemplar discrepancy.

In the main study, participants took part in an experiment involving a story manipulation and a survey. Respondents read one of four versions of an online story containing information about the dangers of smoking. The four versions of the story were manipulated to represent all combinations of information utility (high, low) and exemplar

discrepancy (low, extreme) factors. Outcome measures examined the influence of exemplar discrepancy under varying conditions of issue importance and information utility on two respondent perceptions: 1) population estimates, the percent of the population suffering from smoking related disorders, and 2) problem severity/personal vulnerability, an individual's beliefs about the social threat worsening and their chances of actually experiencing a threat (Gibson & Zillmann, 1994; Witte, 1992) to smoking related disorders.

Pilot Study

Participants

All participants within this study were recruited from a communication course at a large Midwestern University. For the first phase of the pilot 52 participants were surveyed. As this study was only used to determine topic viability, little demographic information was collected at this time. Respondents received course credit or extra credit for participation. A student sample was selected because students are members of the target audience for several health issues including that of cigarette smoking. Although college students are a limited sample as far as age is concerned successful health campaigns do target select audiences in order to best present their messages. This experiment used the same technique as successful health campaigns by focusing the messages presented to a target audience. This provides a more realistic test of the assumptions and hypotheses presented than using unspecific, broader groups of individuals.

Procedure

In the first phase of the pilot study, respondents were recruited in class and asked to fill out a survey. Subjects were told that they would be completing a survey about various health issues in order to identify which issues are important to them as college students and to determine their current knowledge of those subjects. A consent form provided repeated this information and explained that participation was voluntary.

Subjects were asked to answer questions regarding a variety of health issues including, sexually transmitted infections, pregnancy, cigarette smoking, binge drinking, drug abuse, and domestic violence. Once the first phase was completed it was determined that cigarette smoking was a viable issue for use. If this had not been the case then another more viable issue would have been selected based on the results of the survey.

The second phase of the pilot study recruited a separate sample of 207 students from another communication course within the same Midwestern University. During this phase respondents were given one of four story versions (that vary information utility and exemplar discrepancy) to read and respond to in a questionnaire. These story versions included; high information utility, extreme discrepancy, n=46; high information utility, low discrepancy, n=49; low information utility, extreme discrepancy, n=56; and low information utility, low discrepancy, n=56.

Along with the stories on smoking, respondents read a story on terrorism and genetic screening. These stories are to be used in the main study to help mask the true nature of the experiment. Once the stories had been read the students were asked questions pertaining to each story's perceived relevance, perceived credibility, and the amount of new information. They were then asked to determine how similar or different

the exemplar is to the base-rate information. Finally, they responded to items intended to pilot test the outcome variables in this study (population estimates of those suffering from smoking related issues and perceptions of problem severity/personal vulnerability to smoking related issues).

Measures

First phase of the pilot study. Items were designed to measure the issue importance respondents ascribe to various health issues, behavioral patterns related to these issues, the perceived credibility of possible information sources, and knowledge of facts related to these issues for possible use as the base-rate for the main study.

Issue importance was measured with a total of 54 items (9 for each issue) designed to assess the perceived magnitude of several health related issues (e.g., sexually transmitted infections, cigarette smoking, drug abuse) along with the likelihood and immediacy of the issue's occurrence. The perceived magnitude of the threat was assessed by responses to items such as "Do you feel personally threatened by the health risks associated with smoking?" Likelihood and immediacy measures included items such as "Do you feel that a college student like you is likely to be affected by smoking" and "I will be affected by smoking soon." Responses to the questions were assessed on a 7-point Likert-type scale from 1 = "not at all" to 7 = "extremely." All the items were scored so higher agreement corresponds with higher issue importance.

Respondent behavior relevant to the health issues was measured by a single item with four response choices repeated for each of the six health issues. For example, "I consider myself a smoker," is followed by response options including "yes," "no," "I don't consider myself a smoker, but I do smoke socially," and "I used to smoke but I quit

_____ years _____ months ago." It is expected that non-smokers will constitute the low issue importance group and smokers will be placed in the high issue importance group. Those individuals that do not currently smoke are expected to not feel a threat from smoking (excluding concerns related to second hand smoke), whereas those that are smokers should score higher in this regard.

Source credibility was assessed by giving subjects a list of 30 possible sources of health information and asking them to rate credibility on a 7-point Likert-type response scale ranging from 1 = "not at all" to 7 = "extremely." Possible sources included the CDC, Surgeon General, *The National Enquirer*, *Newsweek*, and 26 other sources that may be used as channels for health information.

Baseline data related to the amount of new information a potential message might contain was gathered through 27 open-ended items designed to determine respondent knowledge of certain facts pertaining to each health issue. These items include, "What percent of all sexually transmitted infections occur in people 25 or younger?" and "About what percent of smokers under the age of 25 have anxiety problems associated with cigarette smoking?" All items can be found in Appendix A.

Second phase of the pilot study. Respondents within this phase also received course credit or extra credit for participation. Students that participated in the first phase of the pilot study did not participate in this phase. Participants responded to items examining the perceived information utility and exemplar discrepancy contained in stories in order to determine the extent to which the four versions of the smoking story successfully manipulated these factors. The same items were used to assess perceptions of the two additional stories on terrorism and genetic screening. In addition to measures

of information utility and exemplar discrepancy, participants responded to items designed to pilot test the outcome measures in the main experiment. These included measures of population estimates, perceptions of problem severity, and personal vulnerability regarding a health disorder.

Confirmatory factor analysis (CFA) was used to test the content validity of all multiple (three or more) item measures. Scale items were retained if they passed an internal consistency test, involving (a) a check of face validity and (b) an examination of factor loadings and errors. Items with poor face validity and factor loadings of less than .60 and/or greater errors in association with other items than what would be expected by sampling error were dropped. All items failing to meet these criteria were dropped from scale construction. The reliability of each scale was assessed using Chronbach's Alpha (α).

Perceptions of high and low levels of information utility were measured with (14) items included to assess the perceived relevance, credibility, and the amount of new information contained within each story. Perceived relevance (five items) and credibility (six items) were measured with questions like, "The story on smoking and anxiety applies directly to my life," "I believe that cigarette smoking can cause anxiety." Again responses were collected on a 7-point Likert scale from 1 = "not at all" to 7 = "extremely." Amount of new information (three items) was assessed by asking subjects to report whether they knew the information provided in the story prior to reading the story and if the story added to their knowledge.

Exemplar discrepancy was judged by (three) items asking the subjects to rate how similar the information in the exemplar is to the base-rate. These items included questions

such as, "On a scale of 1 to 7 rate how different you think the example about anxiety is from the statistical information." One question on behavior was also included to assess if there is a difference between smokers and non-smokers.

The outcome measure included five items. The first item was designed to assess population estimates concerning the percent of the population suffering from smoking related ailments: "What percent of college student smokers have anxiety problems?

_____%" Responses to the four items assessing problem severity/personal vulnerability were collected on a 7-point Likert scale from 1 = "not at all" to 7 = "extremely." These include items such as: "How severe is the problem of smoking related anxiety among college students," and "How likely do you think it is that smoking related anxiety might become a problem for you?" Behavioral intentions and outcomes regarding smoking behavior were measured with four items using the same 7-point Likert scale. These include items such as; "How likely is this information about anxiety to affect your current smoking behavior," and "How likely is it that you will seek more information on health problems associated with smoking." All items can be found in Appendix B.

Main Study

Participants

The main study had a total of 220 participants recruited from the same Midwestern University through an online database. None of the individuals that participated in the main study participated in either of the earlier pilot studies. Respondents received course credit or extra credit for participation. Participants were assigned to one of four groups; high information utility/low exemplar discrepancy, n =54, high information utility/extreme exemplar discrepancy, n = 54, low information

utility/low exemplar discrepancy, n = 55, and low information utility/extreme exemplar discrepancy, n = 57. The majority of participants were female (52%) and were Caucasian (75%). Fifteen percent were African American, 4% Chicano-Latino, 1% Asian/Pacific Islander, .5% Middle Eastern, .5% Native American and the remaining 4% recorded themselves as Other. The mean age was 19.67 (SD = 1.54) and the majority of participants were either freshman or sophomores (76%).

Procedure

Subjects were told that they were participating in a study examining the health behaviors of college students. A consent form explained the purpose of the study to the participants informing them that participation is voluntary and they may discontinue the study at any time without penalty. Students were asked to not place their name on the questionnaire.

Subjects were told that they were going to read a series of news articles about social issues. Subjects were told little about the study so they were not sensitized to the true purpose of the study. They were also told that after the stories they would be asked various questions concerning their views on the topics addressed within the stories. Respondents were recruited using an online database (Experimetrix) and were asked to access a website (<u>www.surveymonkey.com</u>) in order to participate in the study. There was a consent form for participants to sign (by typing their name) prior to beginning the experiment that again reminds them that participation is voluntary.

Participants were randomly assigned to read one of the four different versions of the smoking story induction that varies information utility and exemplar discrepancy. The last two stories dealt with two relevant social issues selected to be one high and one low

on issue importance; terrorism and genetic screening. After reading the stories participants were directed to fill out a brief questionnaire designed to measure the outcome variables in this study (population estimates of those suffering from smoking related issues, and perceptions of problem severity/personal vulnerability to smoking related issues) and to act as a manipulation check on information utility. After subjects finished the survey they were directed to a page containing information debriefing them on the exact nature of the study. This debriefing informed each subject of the facts pertaining to cigarette smoking and made them aware that they were exposed to an extremely discrepant exemplar that might have been misleading. Subjects were also given a website link to access (<u>www.anti-smoking.org</u>) which contains further information about the dangers of smoking as well as steps on how to effectively quit.

Stimulus Materials

Four versions of the online message induction were created to manipulate an informational message about the dangers of smoking. All stories were centered on the presentation of the same base-rate statistic; however, message features were altered to vary the perceived information utility and exemplar discrepancy of the message. Story one represented the high utility/low discrepancy condition, the story was constructed to make both the base-rate information and exemplars appear high on information utility in terms of perceived credibility, relevance and amount of new information. For example, in the high information utility version the source of the information was clearly labeled as one that was established as credible from the pilot study (e.g. the CDC, and being reported in *The U.S. News & World Report*). In addition, the story included information that scored high in the pilot study for relevance and newness. Exemplars were

constructed to appear consistent with the base-rate information presented. For example, the exemplar described a group of college students where the individuals that are smokers are having anxiety issues.

Story two represented the high utility/extreme discrepancy condition. This story contains the same message structure used to make the base-rate information and exemplars appear high on information utility; however, in this version the exemplar included with the story contains attributes that are extremely uncharacteristic of the norms suggested in the base-rate information. For example, this story is about a college student smoker that has no apparent anxiety issues.

Story three represents the low utility/low discrepancy condition. This version maintains the message discrepancy presentation used in story one, however, it was constructed to make both the base-rate information and exemplars appear to have little information utility. In the low information utility conditions each of the three factors was manipulated to reduce credibility, relevance. Credibility was reduced by choosing one of the sources from the pilot study (e.g. *The National Enquirer*, as well as using an "unnamed source") that scored low in credibility. Low relevance was manipulated by using information that is not pertinent to college students. For example, the base-rate and exemplars in the report were altered so that they were based on a population of people who are senior citizens. Amount of new information was not altered as part of the information utility manipulation. The decision to leave amount of new information unchanged was made in order to avoid the validity threats associated with potential confounds that might be introduced by this type of change. Altering the amount of new information would require changing some of the basic facts used in each story. This was

thought a likely source for confounds. The addition of a manipulation check following the outcome measure in the main study was included in order to guarantee that information utility was successfully manipulated in spite of the fact that amount of new information remained unchanged. Finally, story four represented low utility/extreme discrepancy. This version maintained the information utility presentation from story three and the message discrepancy presentation used in story one.

The two stories being used to shield the true nature of the experiment deal with terrorism and genetic screening. Both of these are issues that are relevant to society and are plausible as news stories that would be read with a story associated with cigarette smoking. The stories were the same for each participant regardless of condition. The information given in each of these stories also contained base-rate and exemplar information so the format of each of the three stories is similar. All stories can be found in Appendix C.

Measures

Experiment. Following the reading of the stories participants completed a questionnaire that included: 1) measures of the two main outcomes variables in this study (population estimates, and perceptions of problem severity/personal vulnerability,), 2) items designed to act as a manipulation check on information utility, 3) measures of the issue importance respondents ascribe to smoking, and 4) items assessing issue perceptions relevant to the other stories in the experiment. These last items were included to disguise the questionnaires true purpose.

The outcome measures included two sets of questions. Population estimates and problem severity/personal vulnerability were assessed with the same five items used to

measure these variables in phase two of the pilot study. Behavioral outcomes were measured using four items. The first two items replicate the items used in phase two of the pilot study. Two additional items using the same response scale included questions asking: "How likely are you to quit smoking or not start based on the information about anxiety?" and "How likely do you think others would be to quit smoking based on this information about anxiety?" These measures were used to examine if there were differences between smokers and non-smokers.

The manipulation check on information utility replicated the 14 items used in phase two of the pilot study to measure the credibility (six items), relevance (four items) and amount of new information (four items) for each of the three stories read by participants. Assessment of perceptions relevant to the other stories was made by modifying the 14 items used to measure credibility, relevance, and amount of new information. Two sets of 14 items were adapted so that they pertained to the issues found in the two stories. A manipulation check of issue importance was assessed for each of the stories that respondents read. The issue importance questions included nine items for each health issue: three each for magnitude, likelihood and immediacy. The form of these items matched those used in the pilot test asking participants to respond to items such as "Do you feel personally threatened by the health risks associated with smoking" (magnitude), "Do you feel that a college student like you is likely to be affected by smoking" (likelihood), and "I will be affected by smoking soon" (immediacy).

The questions for the two additional stories on terrorism and genetic screening were modified for the different topics. The additional items measured the demographics of the sample population. These included asking questions in regards to gender, current

GPA, and household income. The final two questions of the questionnaire assessed whether or not respondents discovered the true nature of the story. The question asked was, "While completing this experiment I believe that I have detected the purpose of the study." If the answer given was "Yes" participants were asked to name what they believed the purpose to be. All items can be found in Appendix D.

Results

Pilot Study Phase One

The first part of the pilot study was conducted with several goals in mind including: 1) to determine if there are two distinct groups (high, low) in the perceived issue importance associated with the six health topics in order to identify one for use in the main experiment, 2) to measure the perceived credibility of 30 information sources, 3) to measure knowledge of facts related to the six health issues in order to determine if the target population will already be familiar with base-rates for the issues that would be used in the main study, and 4) to identify behavioral patterns related to these health topics as possible markers of individuals scoring high or low on the issue importance of each topic.

High versus Low Issue Importance. The main purpose of the first phase was to identify a single topic for use in the main study. The experiment in the main study called for an issue on which there existed distinct groups of individuals in the population who scored high and low on perceived issue importance. Once identified as such, respondents could be assigned one of the two issue importance conditions (high, low). For the purposes of this study, issue importance was defined as the extent to which respondents perceived a health topic to be threatening along the three dimensions of issue importance identified earlier, the perceived magnitude of threat along with perceptions of the likelihood and immediacy of the threat affecting them personally. In order to identify an issue for use in the study, respondent scores on questions measuring the perceived magnitude, likelihood and immediacy associated with each of the six pilot tested issues were examined. For an issue to satisfy the requirements of the study, participant responses would need to show a pattern which demonstrated that two distinct groups (high and low) of people existed in the population. Evidence of two distinct groups was defined operationally here as a situation where there existed a sufficient number of respondents who scored high (5 or above on the 7-point scale) or low (3 or below on the scale) on all items used to measure each of the three dimensions of issue importance.

Respondents answering inconsistently or giving a neutral response of 4 to any item were considered neither distinctly high nor low. As such, an issue was considered high on importance for the respondent if he/she scored high for each separate attribute of issue importance (magnitude, likelihood, and immediacy) as well as on overall issue importance (i.e., a score of between 15 and 21) and was considered low on importance if the respondent scored in low for each separate attribute as well as on overall issue importance (i.e., a score of between 3 and 9). The list of potential topics in the questionnaire included: sexually transmitted infections, unplanned pregnancy, smoking, drug use, drinking alcohol, and domestic violence.

As a first step in examining the six potential issues; scores on the individual dimensions and the overall measure of issue importance were inspected to determine the percentage of respondents that fell into the categories established as low and high. As shown in Table 1, although there is no single issue for which a large percent of respondents fall within both the high and low groups across all indicators of issue importance, smoking and STI show a substantial number of respondents falling within both high and low groups on two of the three individual dimensions (magnitude and likelihood). Moreover, on the third dimension (immediacy) as well as the overall issue

importance, smoking and STI show a large percent of respondents falling within the low issue importance group and at least some respondents, though smaller in number, falling within the high issue importance group. These distributions appear considerably superior to other issues such as pregnancy and domestic violence where no respondents fall in the high category on the immediacy dimension of issue importance, or drug use and alcohol where only 2 % of respondents fall in the high category on both the immediacy and overall dimensions of issue importance.

Table 1

Health	Magnitude		Likelihood		Immediacy		Overall	
Issue							Issue	
							Impo	rtance
	High	Low	High	n Low	High	Low	High	Low
STI	25%	37	15	44	4	88	8	55
Pregnancy	29	35	21	52	0	92	2	47
Smoking	29	35	17	58	4	85	8	57
Drug Use	12	62	4	79	2	94	2	80
Alcohol	13	37	13	44	2	85	2	56
Domestic	8	79	4	83	0	94	0	85
Violence								

Percent Scoring High and Low on Issue Importance for Six Pilot Issues

Upon initial inspection, smoking and STI seem somewhat indistinguishable in their suitability for use in this study. However, additional examination of the means and standard deviations of participant responses to these issues led to the selection of one issue. Based on the possibility that the unusually high standard deviation observed for STI scores on the likelihood dimension of issue importance might indicate the presence of outliers that could distort the results of the main experiment, the decision was made to use smoking for the current investigation. Notably, the percent of respondents categorized as high on overall issue importance was smaller than hoped. This appears to result from the low scores on immediacy observed for smoking as well as all other health issues examined. In order to address potential problems associated with this issue, the manipulation of news stories in the main study was modified specifically to facilitate the sense of immediacy in respondents by focusing on how smoking affects college students suddenly and unexpectedly while they were enrolled as students. The means and standard deviations computed on measures of magnitude, likelihood and immediacy for all issues can be seen in Table 2.

Table 2

Health	Magnitude		Likelihood		Immediacy		Overall	
Issue							Issue	
							Impor	tance
	Mear	n SD	Mean SD		Mean SD		Mean SD	
STI	3.82	1.55	4.58	6.31	1.91	1.16	10.33	7.15
Pregnancy	3.71	1.78	3.31	1.39	1.96	.91	8.92	3.22
Smoking	3.91	1.73	3.30	1.51	2.08	1.32	9.20	3.49
Drug Use	3.72	9.09	2.50	1.19	1.59	1.04	6.59	2.89
Alcohol	3.26	1.36	3.37	1.11	2.22	1.02	8.85	2.70
Domestic	2.11	1.46	2.12	1.17	2.24	4.55	6.45	2.81
Violence								

Descriptive Statistics on Issue Importance for Six Pilot Issues

Determining Perceptions of Credibility. After identifying smoking as the topic for use in the main study, descriptive statistics were computed on the perceived credibility scores of 30 pilot tested information sources (see Appendix E). This was done in order to identify their potential for use in the main experiment's manipulation of information utility. Information utility is expected to vary from high to low (in part) as a function of credibility. Of the nine news media included in the pilot test the U.S. News & World Report ranked the highest on credibility with 60% of respondents stating that the magazine was credible (i.e., choosing 5 or higher on the 7-point Likert scale) as a news

source for health information; M = 4.46, SD = 1.4. The most credible source for health information among the 21 individuals and organizations pilot tested was the Center for Disease Control with 98% of respondents stating that the organization was credible as a source; M = 6.5, SD = .75. The news media scoring lowest in credibility for health information was The National Enquirer, with 94% of people ranking them low (i.e., choosing 3 or lower on the 7-point Likert scale) on credibility and no respondents choosing higher than the neutral point; M = 1.2, SD = .75. The least credible individual or organization was the "unidentified source" with 90% of respondents ranking this source as low on credibility, M = 1.59, SD = 1.05. Tests on credibility scores for The U.S. News & World Report and The National Enquirer showed that these media were significantly different from each other; t(51) = 15.42, p < .001, two-tailed. Similar tests on credibility scores for the Center for Disease Control and an unnamed source showed that these sources were also significantly different, t(51) = 27.31, p < .01, two-tailed. Based on these results, it was decided to use a statement by the Center for Disease Control appearing in the U.S. News & World Report for the high credible source, and a statement by an unnamed source appearing The National Enquirer for the low credible source in the main study.

Determining Knowledge for Manipulation of Base-Rates. Participant responses to questions pertaining to information about smoking were examined to identify facts with which respondents were unfamiliar. This was done to aid in the development of base-rate manipulations used in the main study. Descriptive statistics for questions measuring respondent knowledge of base rates associated with all pilot tested issues can be found in Appendix F. When examining only the question pertaining to smoking, response to the question "About what percent of smokers under the age of 25 have anxiety problems associated with cigarette smoking?" indicates that knowledge about this issue is generally flawed. No respondent correctly identified the number of college student smokers that suffer from anxiety as 30% (National Institute on Drug Abuse, 2001). By and large, responses varied greatly from each other as well as from the actual figure, M = 40.00, SD= 25.08. This observation not only reinforced the notion that sample knowledge of this issue is poor, but also that the error in these perceptions is unsystematic. Important here is the implication that respondents as a group had no real idea about the base-rate for this issue. If respondents had shown considerable knowledge of base-rates associated with the issue, or if the same erroneous belief was strongly shared among respondents, the ability to manipulate perceptions of this issue in the main study (and thus, its suitability for use) would have been greatly damaged. Knowing this wasn't the case not only reinforced the choice of smoking related anxiety as the issue for the main study, but also gave the researcher great freedom in choosing the best base-rate to use in the main study.

A figure of 68% was selected for use as the base-rate in the main study. Selection of this figure was based on the following logic. The goal of the main experiment was to examine the extent to which exemplar discrepancy would override the influence of baserate information. As such, the ability to unambiguously manipulate exemplar discrepancy was an important consideration. Since pilot-study students, on average, already perceived the base-rate for smoking-related anxiety to be somewhat low (M = 40%), setting a low base-rate for the main experiment (such as the correct 30% figure) might impede efforts to manipulate exemplar discrepancy. The 68% figure was decided on because it was thought to be distant enough from the average figure observed, but not so high as to seem

improbable to respondents. As a side note, no respondent in the pilot study selected 68% as the number of college student smokers that suffer from anxiety.

Smoking Behaviors Related with Issue Importance. Data were inspected to determine whether or not smoking behaviors were related to perceptions of issues importance. If so, these behaviors might be useful markers of individuals scoring high or low on these issues. Since only two of the respondents within the sample were smokers, it was difficult to determine the extent to which smoking predicted these perceptions. *Pilot Study Phase Two*

Analyses in phase two of the pilot study functioned as: 1) a manipulation check to determine if the four experimental versions of the smoking story successfully manipulated perceived information utility (high, low) and exemplar discrepancy (low, extreme), and 2) a reliability check on outcome measures including population estimates (percent of the population suffering from smoking related disorders), problem severity/personal vulnerability (beliefs that social threat is worsening and chances of experiencing smoking related disorders), and behavioral intentions regarding smoking behavior.

Information Utility Induction Check. The manipulation check on information utility began by examining the reliability of the 14 items used to measure the perceived relevance, amount of new information, and perceived credibility of the four manipulated news stories (i.e., perceived information utility). Two of the four items measuring perceived relevance failed the initial CFA test and were dropped. The remaining two items were averaged to create a measure of perceived relevance ($\alpha = .87$). Of the six credibility items, only one failed the initial CFA test and was dropped. The five items

were averaged to create a measure of perceived credibility ($\alpha = .83$). All three items for new information met the criteria for factor loadings and passed the tests for error. These items were averaged to create a measure of new information ($\alpha = .90$). The complete set of questions with factor loadings and excluded items for all three scales are shown in Appendix G.

An induction check was performed by conducting 2X2 ANOVA on the items measuring the perceived relevance, credibility, and new information found in the stimulus messages in order to examine the strength of the information utility manipulation (low, high), and to determine if the second manipulated message variable, exemplar discrepancy (low, extreme), unintentionally influenced these responses either alone or through its interaction with the information utility manipulation. The first ANOVA was conducted on responses to the items measuring relevance. The analysis produced a significant main effect for information utility, F(1,207) = 28.55, p < .01, $\dot{\eta}^2 =$.12. The means associated with this effect show that individuals in the high information utility condition (M = 3.98) scored higher than those in the low information utility condition (M = 2.89). The higher score indicates that perceived relevance was higher for those in the high information utility group. The main effect for exemplar discrepancy was also significant, F(1,207) = 6.64, p < .05, $\dot{\eta}^2 = .03$. The pattern of means shows that information in the low discrepancy condition (M = 3.65) was perceived as more relevant than information in the extreme discrepancy condition (M = 3.12). The interaction between information utility and exemplar discrepancy was trivial, F < 1.

The second ANOVA was performed on the items measuring perceived credibility. This analysis produced a significant main effect for information utility, F(1,207) =

186.87, p < .01, $\dot{\eta}^2 = .48$. The means associated with this effect show that individuals in the high information utility condition (M = 5.02) scored higher than those in the low information utility (M = 3.13). The higher score indicates that credibility of information was higher for those in the high information utility group. The main effect for exemplar discrepancy and the interaction between information utility and exemplar discrepancy were trivial, F < 1.

A third 2X2 was conducted examining new information. The analysis produced a significant main effect for information utility, F(1,207) = 44.26, p < .01, $\eta^2 = .18$. The means associated with this effect show that individuals in the high information utility condition (M = 3.79) scored higher than those in the low information utility condition (M = 2.67). The higher score indicates that new information was higher for those in the high information utility group. The main effect for exemplar discrepancy was non-significant, F(1,207) = 2.79, p = .10, $\eta^2 = .01$, and the interaction between information utility and exemplar discrepancy was trivial, F < 1.

Exemplar Discrepancy Induction Check. The strength of the exemplar discrepancy induction was measured with two items. Inspection to determine whether or not the two items formed a single scale indicated that combining the items would be unreliable ($\alpha = .40$). As such, the induction check was performed by conducting a 2X2 ANOVA on the two separate items to examine the strength of the exemplar discrepancy manipulation (low, extreme) on responses to these items and, in addition, to determine if the second message variable manipulation, information utility (low, high), unintentionally influenced these responses either alone or through its interaction with the exemplar discrepancy discrepancy manipulation. The first ANOVA was conducted on responses to the item

measuring whether the example given was "representative of the statistical information presented." The analysis produced a significant main effect for exemplar discrepancy, F(1,207) = 42.44, p < .01, $\dot{\eta}^2 = .17$. The means associated with this effect show that individuals in the extreme discrepancy condition (M = 3.53) scored higher than those in the low discrepancy condition (M = 2.72). The higher score indicates disagreement with the statement, and showed that respondents in the extreme discrepancy condition felt the example was less representative of the base-rate (i.e., more discrepant) than those in the no discrepancy condition. The main effect for information utility and the interaction between information utility and exemplar discrepancy were trivial, F < 1.

The second ANOVA was performed on the item measuring the extent to which respondents felt that the example about anxiety differed from the statistical information. The analysis produced a significant main effect for exemplar discrepancy, F(1,207) = 32.25, p < .01, $\dot{\eta}^2 = .14$. The means associated with this effect show that individuals in the extreme discrepancy condition (M = 4.98) scored higher than those in the low discrepancy condition (M = 3.82). This observation corroborated findings from the first analysis indicating that the examples in the extreme discrepancy condition were perceived as more discrepant from the base-rate than those in the no discrepancy condition. The main effect for information utility was again, non-significant, F(1,207) = 1.11, p = .29, and the interaction between information utility and exemplar discrepancy were trivial, F < 1

Overall, the findings associated with the induction checks point to a successful manipulation of information utility and exemplar discrepancy. The main effects for the information utility manipulation on measures of perceived relevance, credibility and

amount of new information, and for the exemplar discrepancy manipulation on the two items measuring perceived discrepancy indicate that the four news stories are capable of creating the conditions needed to represent the populations desired for testing in the main experiment. Although the main effect of the exemplar discrepancy manipulation on perceived relevance showed that the extreme exemplar discrepancy reduced the perceived relevance of a message, this finding is nether surprising or of great concern. It can be understood simply as an indication that exemplars inconsistent with the rest of a story are understood as less relevant to the story than are exemplars that are consistent with the story. More important are the observations that a) the information utility induction successfully influenced perceived information utility (i.e., perceived relevance, credibility and amount of new information), and that b) the exemplar induction did not interact with the information utility induction to alter perceived information utility. As such, the four stories were deemed acceptable for use in this study.

Reliability of Outcome Measures. Responses to items used to measure the two outcome variables (perceptual and behavioral outcomes) were inspected to determine the quality of the data collected and to identify any abnormalities that might suggest problems. Perceptual outcomes were assessed with two measures. The first, population estimates, was measured with a single item asking respondents to state the "percent of college student smokers that have anxiety problems." Examination of scores on this item revealed no irregularities. The second, problem severity, was measured by a four-item scale. Behavioral outcomes were measured with four items. Analysis of the multi-items measures for problem severity and behavioral outcomes began by conducting confirmatory factor analysis (CFA) on each set of items and computing reliabilities on

the resulting scales. One of the four items measuring problem severity failed to meet the established factor loadings criteria and was dropped. When this item was removed the reliability for the three-item scale was $\alpha = .87$. The complete set of questions with factor loadings and excluded items for the scale are shown in Appendix H. Analysis on the behavioral outcome measures revealed that the items were not reliable when combined to a single scale (CFA showed each item meeting the selected criteria of .60, however, $\alpha = .50$). As such, the four items were retained as single-item indicators for analysis. Each item was a 7-point scale with 1= "not at all" and 7 = "extremely." The complete set of questions and items for the behavior outcomes are shown in Appendix I along with factor loadings and descriptive statistics of each item.

Main Study

Prior to the hypothesis tests, measures and manipulations used in the main study were examined to inspect for abnormalities and determine data quality. Confirmatory factor analysis (CFA) and reliabilities were computed to examine the measurement quality of scales used to quantify issue importance, information utility, and outcome variables. Additionally, *t*-tests and ANOVA were conducted to examine the strength of the information utility induction.¹ The results of these analyses are reported along with accompanying descriptive statistics.²

Measurement Quality. Inspection of data quality began by conducting confirmatory factor analysis (CFA) on items measuring the issue importance respondents

¹ No induction check on the exemplar discrepancy manipulation was conducted as part of the main study. This was done based on consideration of the facts that 1) the pilot study provided clear evidence that the induction successfully manipulated exemplar discrepancy, and 2) any attempt to measure the strength of the exemplar discrepancy induction as part of the main experiment would be biased by the experimental procedure. ² No analyses were conducted on participant responses to questions related to terrorism and genetic

² No analyses were conducted on participant responses to questions related to terrorism and genetic screening. These items were included only as a ruse to hide the studies focus on smoking related beliefs and behaviors.

ascribe to smoking (the perceived magnitude, likelihood, and immediacy of threat) and computing reliabilities on the three resulting scales. The findings were inspected to determine the quality of the data collected and to identify any abnormalities that might suggest problems. All three items for both the magnitude scale ($\alpha = .82$) and the likelihood scale ($\alpha = .72$) met the established factor loadings criteria and passed the tests for error. These items were averaged to create measures of magnitude and likelihood for each respondent. One of the three items measuring immediacy failed the initial CFA test and was dropped. The remaining two items were averaged to create a measure of immediacy ($\alpha = .84$). Descriptive statistics for the three scales can be seen in Table 3. The complete set of questions with factor loadings and excluded items for all three scales are shown in Appendix J.

Table 3

Descriptive Statistics j	for Issue Im	portance Scale
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Variable	1	I	Mean	SD
	Low	High		
Magnitude	48	68	4.05	1.51
Likelihood	74	44	3.59	1.35
Immediacy	172	23	1.88	1.15
Overall	98	52	9.50	3.29

The quality of items in the three subscales used to measure the perceived information utility of the news stories on smoking-related anxiety (i.e., relevance, amount of new information, and perceived credibility) were again examined for internal consistency using CFA. The results for credibility and new information replicated the findings from phase two of the pilot study. The three items measuring new information once again met established criteria and were averaged to create a scale with reliability of a = .89. Analysis on the six items measuring perceived credibility also matched those of the pilot study. The identical item failed the initial CFA test and was again dropped. The remaining five items were averaged to create a measure of perceived credibility ($\alpha = .79$). The results for perceived relevance produced a slightly different outcome from the pilot study. Whereas one of the four items fell just short of meeting established criteria for scale inclusion in the pilot study, all four items met these established criteria here and were aggregated to create scale reliable at $\alpha = .77$. The complete set of questions with factor loadings and excluded items for all three scales are shown in Appendix K.

Finally, CFA and reliability analyses were also conducted on scales used to measure the outcome variables. One of the four items measuring perceived problem severity failed the initial CFA test and was dropped. The remaining three items were averaged to create a measure of perceived problem severity ($\alpha = .88$). The complete set of questions with factor loadings and excluded items for problem severity are shown in Appendix L. Population estimates were measured with a single item, and no reliability estimates were computed. One of the four items measuring behavioral intentions failed the CFA test and was dropped. The remaining three items were averaged to create a measure of behavioral intention ($\alpha = .77$). The complete set of questions with factor loadings and the single excluded item for behavior outcomes are shown in Appendix M.

Information Utility Induction Check. Following the approach used in the pilot study, the strength of the information utility induction was examined with independent samples *t*-tests conducted on each of the three information utility subscales. Corroborating findings in the pilot study, the results show that respondents assigned to the high information utility conditions scored higher on all the information utility

subscales including perceived relevance, credibility, and new information (see Table 4). Once again, though the information utility of the news stories was not unusually high in either condition, the significant differences observed across all three dimensions of information utility increases confidence that the induction varied information utility as intended.

Table 4

	N	Mean	SD	t- value
HIGH	103	3.84	1.34	3.38**
LOW	112	2.88	1.46	
HIGH	103	4.61	.96	9.69**
LOW	111	3.28	1.03	
HIGH	108	3.86	1.06	3.29**
LOW	110	3.31	1.39	
	HIGH LOW HIGH LOW HIGH LOW	N HIGH 103 LOW 112 HIGH 103 LOW 111 HIGH 108 LOW 110	N Mean HIGH 103 3.84 LOW 112 2.88 HIGH 103 4.61 LOW 111 3.28 HIGH 108 3.86 LOW 110 3.31	N Mean SD HIGH 103 3.84 1.34 LOW 112 2.88 1.46 HIGH 103 4.61 .96 LOW 111 3.28 1.03 HIGH 108 3.86 1.06 LOW 110 3.31 1.39

Results of t-tests on Information Utility Subscales.

** *p* < .01

Descriptive Statistics. The descriptive statistics for all measures are shown in

Table 5. Table 6 shows the correlations among these variables and inductions.

Table 5

	N	Mean	SD	Minimum	Maximum
Age	219	19.66	1.54	18	28
Sex	219	1.53	.50	1	2
Grade ²	216	1.88	.99	1	4
Race ³	219	1.59	1.42	1	7
GPA	214	2.95	.59	.06	4.0
Income ⁴	210	3.69	2.16	1	7
Issue Importance ⁵	218	1.88	.87	1	3
Information Utility ⁶	220	1.51	.50	1	2
Exemplar Discrepancy ⁷	220	1.50	.50	1	2
Population Estimate	214	55.09	20.71	0	100
Problem Severity ⁸	218	3.94	1.26	1	7
Smoking Behavior ⁹	169	1.19	.39	1	2
Behavior Outcome (1) ¹⁰	206	7.78	3.52	1	19

Means and Standard Deviations for Study Variables

Coded as a dichotomous variable with 1 = male and 2 = female.

² Coded as a discrete variable with 1 = Freshman, 2 = Sophomore, 3 = Junior, and 4 = Senior

³ Coded as a discrete variable with 1 = Caucasian, 2 = African-American, 3 =

Asian/Pacific Islander, 4 = Chicano-Latino, 5 = Middle Eastern, 6 = Native American, and 7 = Other

⁴Coded as a discrete variable with 1 = Below \$25,000, 2 = \$25-50,000, 3 = \$50-75,000, 4 = \$75-100,000, 5 = \$100-150,000, 6 = \$150-200,000, and 7 = \$200 and above

⁵Issue importance, (1=low, 2 = high),

⁶Information utility (1=low, 2 = high)

⁷Exemplar Discrepancy (1=low, 2=extreme)

⁸Coded as 1 = "not at all" and 7 = "extreme"

⁹Coded as a dichotomous variable with 1=non smoker and 2 = smoker

¹⁰Merged behavioral intentions measure behavior items coded as 1 = "not at all" and 21 = "extreme"

Table 6

		_												
		1	2	3	4	5	6	7	8	9	10	11	12	13
1.	Age	1.00												
2.	Sex	08	1.00											
3.	Grade ²	.74 ^b	02	1.00										
4.	Race ³	.01	.04	03	1.00									
5.	GPA	09	.07	.14	17 ^a	1.00								
6.	Income ⁴	23 ^b	07	14	11	.04	1.00							
7.	Issue Importance ⁵	09	02	01	01	09	.03	1.00						
8.	Information Utility ⁶	00	01	.03	.10	09	.13	14	1.00					
9.	Exemplar Discrepancy ⁷	16 ^a	.05	15 ^a	.00	.01	.01	.02	.01	1.00				
10.	Population Estimate	.03	00	.05	12	01	01	.04	31 ^b	11	1.00			
11.	Problem Severity ⁸	02	.17 ^a	01	.04	.08	07	.09	15	20 ^b	.35 ^b	1.00		
12.	Smoking Behavior ⁹	.05	.04	.02	.00	12	.02	.13	01	.10	01	31 ^b	1.00	
13.	Behavior Outcome (1) ¹⁰	.02	.06	03	04	08	15 ⁸	.11	05	15 ^a	.07	.43 ^b	.03	1.00

Zero-Order Correlations between Study Variables

^a Significant at p < .05 for two-tailed *t*-test.

^b Significant at p < .01 for two-tailed *t*-test.

Coded as a dichotomous variable with 1 = male and 2 = female.

² Coded as a discrete variable with 1 = Freshman, 2 = Sophomore, 3 = Junior, and 4 = Senior

³ Coded as a discrete variable with 1 = Caucasian, 2 = A frican-American, 3 =

Asian/Pacific Islander, 4 = Chicano-Latino, 5 = Middle Eastern, 6 = Native American, and 7 = Other

⁴Coded as a discrete variable with 1 = Below \$25,000, 2 = \$25-50,000, 3 = \$50-75,000, 4

= \$75-100,000, 5 = \$100-150,000, 6 = \$150-200,000, and 7 = \$200 and above

⁵Issue importance, (1=low, 2=high),

⁶Information utility (1=low, 2=high)

⁷Exemplar Discrepancy (1=low, 2=extreme)

⁸Coded as 1 = "not at all" and 7 = "extreme"

⁹Coded as a dichotomous variable with 1=non smoker and 2 = smoker

¹⁰Merged behavioral intentions measure, behavior items coded as 1 = "not at all" and 21 = "extreme"

Placement of Respondents into Conditions of High and Low Issue Importance. After inspecting the data for quality assurances, the first step in analysis of the main study was to determine the placement of respondents into categories of smoking-related anxiety issue importance (high, low). Based on this outcome, the second step in analysis was to test hypotheses explicating the comparative influence of exemplar versus base-rate information and the manner in which information utility is predicted to moderate this influence. No analyses were conducted on participant responses to questions related to terrorism and genetic screening since these items were included only to hide the study's focus on smoking related beliefs and behaviors.

Once the three scales were computed, the distribution of respondents was examined to determine whether or not there existed distinct groups of individuals in the population who scored high and low on the perceived importance of smoking-related anxiety issues. Duplicating the pilot study, evidence of two distinct groups was defined operationally as the existence of a sufficient number of respondents who scored high (5 or above on the 7-point scale) or low (3 or below on the scale) for each separate attribute of issue importance (magnitude, likelihood, and immediacy) and a sufficient number who scored high (between 15 and 21) or low (between 3 and 9) on overall issue importance. As shown in Table 7, although the number of respondents fitting the categorization of high on immediacy is again somewhat limited, the number of respondents falling into the high and low dimensions of all other categories is substantial. Most importantly, a substantial number of respondents fall into both the low and high categories of overall issue importance, with a noticeable improvement over the pilot study in the high issue importance category.

Table 7

Variable	N		Mean	SD	
	Low	High			
Magnitude	48	68	4.05	1.51	
Likelihood	74	44	3.59	1.35	
Immediacy	172	23	1.88	1.15	
Overall Importance	98	52	9.50	3.29	

Descriptive Statistics for High and Low Issue Importance

Tests on Four Hypotheses. The four hypotheses were tested using a 2X2X2 ANOVA to examine the effect of issue importance (high, low), information utility (high, low), and exemplar discrepancy (extreme, low) on perceptions of problem severity scores and population estimates. Results for effects on problem severity show main effects for issue importance [F (1,147) = 29.18, p < .01, partial $\dot{\eta}^2 = .17$], information utility [F $(1,147) = 4.33, p < .05, partial \dot{\eta}^2 = .03$], and exemplar discrepancy [F(1,147) = 6.00, p]<.05, partial $\dot{\eta}^2$ = .04] along with significant effects for the interaction between information utility and issue importance [F (1,147) = 7.67, p < .01, partial $\dot{\eta}^2 = .05$] as well as between information utility, issue importance, and exemplar discrepancy [F](1.147) = 3.97, p < .05, partial $\dot{n}^2 = .03$]. All other effects for problem severity were trivial [F < 1]. The means and standard deviation associated with these analyses are reported in Tables 8 and 9. Results for the effect on population estimates show a main effect for information utility [F (1,143) = 6.36, p < .05, partial $\dot{\eta}^2 = .05$]. The main effect for exemplar discrepancy $[F(1,143) = 3.80, p = .054, partial \dot{n}^2 = .03]$ as well as the interaction between information utility and issue importance [F(1,143) = 3.88, p = .051,partial $\dot{\eta}^2 = .03$] were substantial, though falling right at instead of below the .05 level of significance. The main effects for issue importance [F (1,143) = 2.17, p = .14, partial $\dot{\eta}^2$ =

.02] as well as the interaction between issue importance and exemplar discrepancy [F (1,143) = 2.46, p = .12, partial $\dot{\eta}^2$ = .02] were notable though failing to meet the .05 standard. All other effects were trivial [F < 1]. The means and standard deviation associated with these analyses are reported in Table 10 and 11.

Table 8

Variable		Mean	SD	95%
				Confidence
				Intervals
Information Utility	High	4.35	1.06	4.11-4.65
	Low	3.68	1.36	3.63-4.25
Issue Importance	High	4.75	1.08	4.39-5.00
	Low	3.61	1.19	3.46-3.89
Exemplar	Extreme	3.72	1.28	3.68-4.23
Discrepancy	Low	4.25	1.22	4.16-4.68

Means Associated with Perceptions of Problem Severity Main Effects

Table 9

Means Associated with Perceptions of Problem Severity Interaction Effects

Information	Issue	Exemplar	Mean	SD	95%
Utility	Importance	Discrepancy			Confidence
					Intervals
High	Low	Low	4.21	.88	3.74-4.67
_		Extreme	4.06	1.13	3.61-4.51
		Total	4.13	1.06	3.81-4.46
	High	Low	5.13	.87	4.59-5.68
		Extreme	4.13	1.06	3.46-4.81
		Total	4.73	1.05	4.20-5.20
Low	Low	Low	3.56	1.22	3.15-3.97
		Extreme	2.87	1.08	2.47-3.27
		Total	3.21	1.18	2.93-3.50
	High	Low	4.78	1.26	4.16-5.39
		Extreme	4.75	1.05	4.14-5.36
		Total	4.76	1.13	4.33-5.20
Table 10

Variable		Mean	SD	95% Confidence Intervals
Information	High	61.84	14.57	55.90-65.97
Utility	Low	49.84	23.71	47.28-56.86
Issue Importance	High	60.02	17.35	53.41-64.79
	Low	53.16	22.04	49.92-57.91
Exemplar	Extreme	52.72	21.95	47.97-58.20
Discrepancy	Low	58.01	19.42	55.22-64.64

Means Associated with Population Estimates Main Effects

Table 11

Means Associated with Population Estimates Interaction Effects

Information	Issue	Exemplar	Mean	SD	95%
Utility	Importance	Discrepancy			Confidence
	_				Intervals
High	Low	Low	62.86	12.80	54.40-71.31
		Extreme	60.77	13.55	52.51-69.04
		Total	61.79	13.08	55.90-67.73
	High		67.47	10.65	57.46-77.48
		Extreme	52.67	22.38	39.74-65.59
		Total	61.92	17.23	51.89-68.42
Low	Low	Low	46.31	24.82	38.70-53.91
		Extreme	45.73	26.23	38.13-53.34
		Total	49.84	23.71	40.64-51.40
	High	Low	63.08	11.94	51.89-74.28
		Extreme	53.17	21.30	41.97-64.36
		Total	58.13	17.63	50.21-66.04

Hypothesis One: The Effect of Issue Importance. The first hypothesis predicted that there would be a main effect of issue importance on problem severity and population estimates. The importance respondents ascribed to the issue of smoking related anxiety was predicted to increase scores on both outcome variables. Support for this hypothesis was found in the results for problem severity. Consistent with predictions, smoking related anxiety was rated as a more severe problem by respondents scoring high on issue importance (M = 4.75) than those scoring low (M = 3.61). Notably, though falling short of accepted standards, the pattern of means for population estimates was also in the predicted direction. Estimates by those who judged the issue as more important exceeded estimates by those who judged the issue less important (M = 60.02% and 53.16% respectively).

Hypothesis Two: The Effect of Information Utility. The second hypothesis predicted that there would be a main effect of information utility on problem severity and population estimates. The level of information utility contained in each news article was predicted to increase scores on these variables. Support for this hypothesis was found in outcomes for both variables. The main effect on problem severity showed that respondents exposed to the high information utility message (M = 4.35) considered the problem to be more severe than those in the low information utility group (M = 3.68). Similarly, the effect on population estimates shows that respondents in the high information utility group (M = 61.84) gave higher estimates of the percent of college student smokers with anxiety problems than those in the low information utility group (M = 49.84).

Hypothesis Three: The Effect of Exemplar Discrepancy. The third hypothesis predicted that there would be a main effect of exemplar discrepancy on problem severity and population estimates. Since the extreme discrepancy message in this study used exemplars that underrepresented the extent of the problem stipulated by the base-rate (and epitomized in the low-discrepancy message), exemplar discrepancy was predicted to reduce scores on both outcome variables. Support for hypothesis three can be seen in the

results for problem severity. Consistent with this hypothesis, the problem was rated as less severe by respondents in the extreme exemplar discrepancy group (M = 3.72) than those in the low discrepancy group (M = 4.25). Similarly, the pattern of means for population estimates was also in the predicted direction. Respondents exposed to the extremely discrepant exemplar gave lower estimates of the percent of college student smokers with anxiety problems (M = 52.72%) than those exposed to the low-discrepant exemplar (M = 58.01%).

Hypothesis Four: Issue Importance, Information Utility, and Exemplar Discrepancy. The final hypothesis predicted an interaction effect of issue importance, information utility, and exemplar discrepancy on perceptions of problem severity and population estimates. Issue importance and information utility were predicted to moderate the effect of exemplar discrepancy on both variables such that the effect of exemplar discrepancy would be weakened when both issue importance and information utility were high. Since the exemplar discrepancy in this study underrepresented the extent of smoking anxiety, the weakened effect of exemplar discrepancy should be observed by the unique failure of the exemplar discrepancy induction to reduce scores on outcome variables when both issue importance and information utility were high. Although the three-way interaction predicted by this hypothesis was found significant for measures of problem severity, the pattern of results was not consistent with the failure to observe an exemplar discrepancy effect under the unique conditions predicted. Nevertheless, the patterns observed in this three way interaction for problem severity as well as the two-way interactions of information utility and issue importance for measures of problem severity and population estimates are informative.

The Three-Way Interaction of Information Utility, Issue Importance and

Exemplar Discrepancy. The means associated with the three-way interaction of issue importance, information utility, and exemplar discrepancy on perceptions of problem severity are diagramed in Figure 1. This figure shows distinct patterns for respondents scoring high and low on issue importance.

Figure 1

Perceptions of Problem Severity for Respondents High and Low on Issue Importance



Among respondents low on issue importance, evidence of the exemplar discrepancy effect is apparent only for those exposed to the low information utility message (see Figure 1). This is indicated by the observation that problem severity scores in the extreme discrepancy group are noticeably lower (M = 2.87) than those in the lowdiscrepancy group (M = 3.56). By comparison, for those exposed to the high information utility message, problem severity scores in the extreme discrepancy group (M = 4.06) differ little if at all from those in the low-discrepancy group (M = 4.20).

Conversely, among respondents high on issue importance, the pattern of means shows that the effect of exemplar discrepancy is strongest when information utility is high (see Figure 1). Here again, exemplification is indicated by the fact that problem severity scores in the extreme discrepancy group (M = 4.13) are noticeably lower than those in the low-discrepancy group (M = 5.13). By comparison, for those exposed to the low information utility message, problem severity scores in the extreme discrepancy group (M = 4.75) differ little if at all from those in the low-discrepancy group (M = 4.78). Evidence that the effect of exemplar discrepancy is stronger when both issue importance and information utility are high is in sharp contrast to hypothesis four's prediction that exemplification would be weakened by these conditions, and the expectation that the unique failure of exemplar discrepancy to reduce perceptions of problem severity would be observed under these conditions.

The Two-Way Interaction of Information Utility and Issue Importance. The pattern of means associated with the significant interaction of issue importance and information utility on perceptions of problem severity can be seen in Figure 2. Inspection of these means shows that the respondents in the low issue importance, low information utility group (M = 3.21) considered the problem to be less severe than those in all other conditions including low issue importance, high information utility (M = 4.13), high issue importance, high information utility (M = 4.73), and high issue importance, low information utility (M = 4.76).

Figure 2

Interaction effect of information utility and issue importance on perceptions of problem severity



A similar pattern can be seen in the means seen in estimates of the percent of college student smokers with anxiety problems (see Figure 3). Inspection of these means shows that respondents in the low issue importance, low information utility group (M = 46.02%) gave much lower estimates of the pervasiveness of smoking related anxiety than those in the low issue importance, high information utility group (M = 61.79%), the high issue importance, high information utility group (M = 61.92), and high issue importance, low information utility (M = 58.13).

Figure 3

Interaction effect of information utility and issue importance on population estimates



Research Question: The influence of Exemplar Discrepancy on Behavior

Intentions. The last analysis examined the research question asking if message factors could influence behavioral intentions. A 2X2X2 ANOVA was conducted on the combined behavioral intentions scale to determine if the three message factors (information utility, issue importance, and exemplar discrepancy) had any separate or combined influence on behavioral intentions. The analysis produced a main effect for issue importance, F(1,140) = 38.50, p < .01, $\dot{\eta}^2 = .23$. Respondents in the low issue importance group (M = 6.58) were less likely to believe their behavior would be affected by the information than those in the high issue importance group (M = 10.43). No other effects were significant. The main effect for exemplar discrepancy produced, F(1,140) = 2.00, p = .16. The interaction between issue importance and exemplar discrepancy produced, F(1,140) = 1.52, p = .22. All other effects were trivial, F < 1.

Discussion

Not surprisingly, the investigation found that both issue importance and information utility were important determinants of perception and intention following exposure to the report on smoking related anxiety. Similarly, and more notably for the study at hand, the results show an effect for exemplar discrepancy consistent with the body of literature from previous research on news and political media. This observation should be of particular interest to scholars who study the use of media to inform and shape behavior in the field of public health. Most notable, however are the findings associated with the two-way and three-way interactions observed for issue importance, information utility, and exemplar discrepancy's effect on population estimates of smoking related anxiety and perceptions of problem severity. Though not consistent with the predictions set forth in hypothesis four, the pattern of findings associated with these interactions suggest insights and raise questions about exemplification that have important consequences for theory and practice. This section elaborates on these findings and examines their implications for understanding the effect of base-rates versus exemplars and the conditions that moderate their influence in a health communication context. It ends with a discussion of the limitations of this research and suggestions for future directions.

The Influence of Message Features on Problem Perceptions

Issue Importance

Hypothesis one predicted that when individuals were exposed to a news story about a health issue problem, respondents who ascribed high importance to the issue (here smoking related anxiety) would give higher ratings of the problem's perceived

severity and higher estimates of the percent of the population affected by the problem than respondents who ascribed low importance to the issue. The analysis on the influence of issue importance produced a significant main effect on perceptions of problem severity and a notable main effect on population estimates.

The patterns of findings associated with these results are consistent with hypothesis one. Individuals ascribing higher importance to the issue of smoking related anxiety gave significantly higher ratings of the problem's perceived severity than respondents who ascribe low importance to the issue. Although the findings for population estimates fell short of the criteria set for rejecting the null hypothesis, the data patterns were in line with predictions. Those within the high issue importance group gave higher estimates of the percent of smokers affected by anxiety

These findings are consistent with the notion that individuals high on issue importance will respond differently to messages then those that are low. As Salmon and Atkin (2003) stated, a message must be involving to an individual in order for there to be a message effect. When the information was presented to those high on issue importance, individuals were more inclined to perceive the problem of smoking related anxiety as more severe than those low on issue importance. This pattern was also seen in the means for population estimates, though the differences did not reach levels of significance.

These findings indicate that issue importance alone can influence perceptual reactions to the information presented in a message containing exemplars. If we interpret this in line with logic from the Elaboration Likelihood Model suggesting that the more an issue is perceived as important the more likely individuals are to attend to a message, the heightened perceived severity observed here might indicate the presence of a strong

message. Otherwise, closer scrutiny might have lead to the type of counter arguing that should reduce perceptions of severity. This rationale calls attention to the ELM's ability to help explain how issue importance can influence message effects in the health communication domain in general, and specifically with anxiety caused by smoking.

The results replicate prior work showing that issue importance can be used to forecast people's perceptions and reactions to persuasive messages (Millar & Millar, 2000). Moreover, by reproducing this finding on perceptions of smoking related anxiety, they strengthen the view that issue importance has critical implications for research in health communication. In line with Skumanich and Kintsfather's (1996) research on organ donation showing that issue importance predicts the persuasive effect of a message, these findings suggest that factors strengthening involvement can facilitate the intended message effect. Though the increased perceptions of problem severity and population estimates found among those within high issue importance comes as no surprise in this instance, we should not overlook the importance here of its independent effect or its potential to shape the effect of other forces.

Information Utility

Hypothesis two predicted that exposure to the news story on smoking related anxiety would lead to higher ratings of the problem's perceived severity and higher estimates of the population affected by the problem when the story contained high levels of information utility. The analysis on the influence of information utility produced significant main effects both on perceptions of problem severity and population estimates. The means associated with both effects were in line with hypothesized directions. Exposure to a message high on information utility produced higher estimates

of the percent of the population effected by smoking-related anxiety problems, and increased perceptions the problem's severity. These outcomes support the notion that the information utility contained in a news story can increase perceptions of a problem's severity and its pervasiveness throughout a population. The results replicate and extend the findings of researchers such as Thompson (1975), Trenholm (1989), and Perloff (2001) to the area of health communication, and show that individuals are affected more strongly by credible and relevant messages that contain new information than by messages low on these attributes.

In line with the counter arguing explanation above, the findings are consistent here with research suggesting that increased information utility stemming from source credibility can minimize counter arguing with the evidence and assertions found in a message (Buda & Charnov, 2003). Perhaps respondents in the low information utility group discounted information given within the news story. In this case, we should expect the population estimates and perceptions of problem severity they report to be unaffected by evidence in the story, and to locate closer to the 40% average estimate observed in the pilot study among respondents never exposed to the message. The outcomes are also consistent with research suggesting that information utility results in longer exposure and attention to messages (Knobloch et al 2003; Sears & Freedman, 1967; Wilton & Myers, 1986). Along similar lines of reasoning as the Elaboration Likelihood logic arguing that increased attention should limit the effect of weak messages, longer exposure may have promoted greater cognitive processing of the information presented within the news story. In this case, the strong evidence presented in the message may have resulted in

higher estimations of college student smokers suffering from anxiety and higher perceptions of problem severity.

According to Knobloch et al. (2003), information utility influences individual responses to stories such that when information is found to be useful it can activate curiosity and exposure. This type of outcome might alter the perceived level of interest in and subsequent attention given to the information provided. If this is the case, information utility might alter the level of issue importance that individuals bring to an exposure setting. The importance of this possibility should not be overlooked. It suggests the potential for information utility, a message factor, to interact with issue importance during an exposure setting in a manner that would change this critical recipient attribute. For health communication professionals, this finding suggests that messages should be constructed with information utility in mind. Effectiveness can be maximized by designing messages containing credible information that the target audience considers relevant and new.

Exemplar Discrepancy

Hypothesis three predicted that exposure to a news story about a health issue problem that contains high exemplar discrepancy will bias (in the direction of the exemplar) respondents' ratings of the problem's perceived severity and estimates of the percent of the population affected by the problem. These ratings were predicted to exceed those of respondents exposed to a news story that contains low exemplar discrepancy. The analysis on the influence of exemplar discrepancy produced one significant main effect on perceptions of problem severity and a substantial main effect on population estimates.

The pattern of findings associated with these results is consistent with hypothesis three. Exposure to a message with extremely discrepant exemplars produced lower estimates of the percent of the population effected by smoking-related anxiety problems and decreased perceptions the problem's severity. Since the discrepant exemplars used in the news story showed cases in which the problem was less severe than the summary base-rate information reported, the lowered estimates and reduced perceptions show predicted change in the direction of the exemplar.

These findings are consistent with the exemplification theory and the notions that individuals are more likely to pay attention to exemplars than base-rate information. The premise of exemplification is that individuals not only pay more attention to but are influenced more by exemplars than by base-rate data (Gibson & Zillmann, 1998). It appears that when the exemplar and base-rate information presented were extremely different participants were more likely to attend to the exemplar information than the base-rate, especially for perceptions of problem severity. When the base-rate and exemplar were different (in this case meaning that the accompanying exemplars portrayed cases without anxiety) perceptions of problem severity declined (as did population estimates).

The results replicate earlier exemplification research demonstrating that the perceptions of respondents exposed to news stories are more strongly influenced by concrete exemplars than abstract base-rate information, and extends this research to areas of health communication to show that whereas individuals might consciously believe that base-rate information is more reliable, perceptions are likely to be swayed by a few examples that deviate from statistical facts. The consequence of extending

exemplification theory to the field of health communication should not be overlooked. Exemplification research on news and political media has shown the importance of this phenomenon to everyday life. It demonstrates that individuals often base their assessment of social reality more strongly on attributes of the exemplars selected for inclusion in media reports than statistical representations of information. This has been found problematic when the exemplar is atypical and chosen for its entertaining or sensational qualities, a common occurrence within news stories. The same can be expected in health communications, where the ramifications might be of equal if not greater consequence. Evidence here suggests that exemplars used in messages designed to educate or influence perceptions of public health issues will play an important role in recipient response. Decisions to include exemplars selected for their typicality versus their entertaining and sensational nature should be made with this understanding in mind. Health communicators should be made aware of how exemplars affect the responses and use this knowledge when considering message construction. Their decisions should vary as a function of their goals. Are exaggerated perceptions consistent with the message designer's objectives? In this case the entertaining and attention-grabbing qualities of extremely discrepant exemplars may be desirable. At the same time, health communicators should be aware that the simple inclusion of statistical base-rate information is unlikely to correct errant perceptions that can result from the use of distorted exemplars.

Interactions of Issue Importance, Information Utility, and Exemplar Discrepancy

As in all cases, the manner in which main effects are interpreted and understood is qualified by the observation of an interaction. In the present study, evidence of main

effects was observed for all three of the focal predictor variables. The question then becomes one of understanding the conditions under which we might expect the effect of each predictor to vary as a function of conditions created by the presence of the other factors. The main effects tell us that ascribing greater importance to an issue increases perceptions of problem severity, population estimates, and behavior intent, and that both the presence of exemplars and the information utility contained in a message can have an effect on perceptions of problem severity and population estimates. Do the moderating conditions created by different combinations of issue importance, information utility, and exemplification strengthen, weaken or even invert the independent effect observed for each variable. The two-way and three-way interaction observed for perceptions of problem severity suggests that complex processes may be at work, and calls for close inspection. Perhaps the best way to understand the manner in which these factors interact is to consider the patterns associated with these interactions.

The two way interaction between issue importance and information utility on both perceptions of problem severity (see Figure 2) and population estimates (see Figure 3) are informative here. Mean scores associated with the effect on problem severity show that whereas issue importance increases perceived severity, the effect of information utility on these perceptions is seen mostly (if not exclusively) among those low on issue importance. When issue importance was high, increased information utility failed to heighten perceptions of problem severity. The finding is even more striking on estimates of the percent of the population affected by smoking anxiety. Once again, the effect of information utility is seen, for all intents and purposes, only when issue importance is low. Moreover, the effect of high information utility on low issue importance respondents

is so strong that it all but eliminates any influence of issue importance on this measure. This can be seen in the population estimates for those high and low on issue importance. where means are essentially equal when information utility is high (M = 61.92 and M =61.79 respectively). Notably, the population estimate here for low issue importance respondents exposed to the high information utility message (M = 61.79) actually comes up to and slightly exceeds estimates for high issue importance respondents exposed to the low information utility message (M = 58.13). This shows clearly that the effect of issue importance is all but eliminated by a high information utility message, an observation whose understanding might have important implications for health communicators. Why is it the case that a message with high information utility can alter the way low issue importance respondents react to a health message? Did the information utility in the message change the respondent's perception of issue importance? Did it affect respondent reactions through some other mechanism without changing perceived issue importance? Is something unique to the issue at hand? The data at hand do not allow us to examine these questions, but their answers seem pertinent to health communication specialists.

Of course, before we become too focused on the two-way interaction, we need to consider how the three-way interaction between issue importance, information utility, and exemplar discrepancy might influence our understanding of the processes at work. As already stated, the three-way interaction did not produce results consistent with hypothesis four's prediction that we would see a uniquely weak exemplification effect when issue importance and information utility were high. How can this be understood?

Both issue importance and information utility show their expected separate effects on perceived severity under all conditions except one. Perceived severity scores were lower than expected for respondents high on issue importance who were exposed to a message containing high information utility only in the extreme exemplar discrepancy condition. All other means were consistent with predictions that issue importance and information utility would increase perceived severity. However, these factors failed to increase perceived severity when the message contained extremely discrepant exemplars. This aberration, it seems, is responsible not only for the three-way interaction between issue importance, information utility, and exemplar discrepancy, but also the two-way interaction between issue importance and information utility. As such, it deserves greater attention. What does this outcome tell us? How can it be understood? Hypothesis four predicted that exemplification would be uniquely weak when issue importance and information utility are high, but the data suggest an exemplar effect occurred precisely under these conditions.

Previous research shows that exemplification effects are robust. Daschmann's (2001, as reported in Brosius, 2003) report suggests that these effects are even strong enough to overcome any modifying influence from prior opinions and recipient involvement. Brosious (2003,) maintains that message recipients in media settings seldom attend closely enough to messages or think carefully enough about the information in them to comprehend base-rate information and how it differs from an exemplar. As a result, judgments are biased by use of a representativeness heuristic which accounts for the occurrence of exemplification. If Brosious is correct, we might try to interpret patterns showing when exemplification effects did or did not occur in the

present data as indicators of attentional vigilance. In this case, the absence of exemplification would denote conditions in which awareness and deliberation were high enough to overcome heuristic bias. Given the presence of the three-way interaction, it seems that the conditions governing this bias can result from a complex combination of factors.

The observations in this study suggest that exemplar effects may depend on the information utility in a message. Notably, our results are consistent with Daschmann's (2001, as reported in Brosius, 2003) claim that exemplification can occur in respondents who are both high and low on issue involvement. However, the stability of exemplification across levels of issue involvement changes when information utility is considered. Unexpectedly, information utility alters the exemplification effect for those high and low on issue involvement. Exemplification effects are absent among low issue involvement respondents when information utility is high. At the same time, exemplification is not observed for those high on issue involvement when information utility is low. What does all this mean?

In line with Daschmann, the findings here show evidence of exemplification effects among low issue involvement respondents, though only when information utility was low. Clearly, these conditions seem best suited to promote the type of effortless mental processing said to cause exemplification, and the absence of exemplification effects here might have called our procedure into question. Showing evidence of the effect where its occurrence is most certain while at the same time seeing it absent under other conditions is consistent with an interpretation that hypothesized moderation occurred.

Although inconsistent with both Daschmann's report (and the outcome predicted here) it is not unfathomable to find that exemplification effects were absent among those high on issue importance when information utility was low. Surely, this finding would not have been surprising to Daschmann, whose observations are more notable for showing that exemplification effects were robust enough to overcome the type of careful information processing expected among those highly involved. If Daschmann's research showed that exemplification processes are robust enough to bias message processing even among those high on issue involvement, perhaps our findings suggest that this is limited to situations where information utility is low or where other factors might curtail the type of close attention to message information expected from the highly involved.

Similarly, it is not surprising to find exemplification effects absent among low issue importance respondents exposed to a high information utility message. Though we began by predicting that exemplification would only be absent (or uniquely weakened) when those high on issue importance were exposed to a high information utility message, it is not hard to understand how a high information utility message could foster the type of close attention and scrutiny that would negate the influence of discrepant exemplars.

The failure to find evidence of exemplification effects either in the high information utility, low issue importance or the low information utility, high issue importance conditions is not perplexingly. It can be understood as indicative of the capacity for both information utility and issue involvement to elevate levels of attention and inhibit exemplification. However, observing that exemplification effects among high issue importance respondents occurred only when information utility was high is undeniably a surprise. Evidence of strong exemplar discrepancy effects appeared

precisely under those conditions in which hypothesis four predicted uniquely weakened exemplification. Why should we find exemplification in conditions that should promote the highest levels of attention to the message while, at the same time, finding it absent in conditions less well suited to do this? One possibility is that the exemplar discrepancy comes so unexpectedly in this situation that it resonates with the recipient.

A high informational utility message delivered to respondents with high issue importance might be thought of as akin to a priest preaching to the choir. The high utility message is similar to a priest (credible and relevant) whereas those ascribing high importance to the issue are like the choir. When the priest uses a discrepant exemplar the choir thinks it must be meaningful. Among respondents who think the issue is important, a message with high utility might be considered particularly noteworthy. Discrepant exemplars in this situation should be looked at very closely and given considerable weight. When the discrepancy is an example that underrates the problem, it might push perceptions down below what they would be when no discrepancy occurs. This is the pattern we see here when comparing low and extreme exemplar discrepancy for those in the high informational utility, high issue importance conditions.

No doubt, this observation was so unexpected that to some it might seem almost inexplicable. Moreover, given that this study used a single message topic with a relatively small sample, caution is called for when considering the reliability and scope of this outcome observed in this study. Nevertheless, the findings observed here have important implications for exemplification theory, as well as the application of this theory to health communication and other fields of practice.

The Influence of Message Features on Behavior Intentions

The research question explored the potential for issue importance, information utility, and exemplar discrepancy to affect behavior intentions individually or in combination. Analysis on the separate and combined influence of these factors on measures of behavioral intentions produced a significant effect for the influence of issue importance and a notable effect for exemplar discrepancy.

The effect for issue importance shows that respondents in the high issue importance group were more likely to believe that their own smoking behaviors will be affected by the news stories, more likely to think the news stories will lead others to quit smoking, and more likely to seek out information regarding anxiety caused by smoking. By contrast, respondents low on issue importance were less likely to believe their behaviors would be affected. This observation, that issue importance affects behavioral intentions, is most notable in view of the fact that one of the items measuring behavior intention specifically looks at the likelihood of seeking information about anxiety. This connects the findings here on issue importance to existing research on information processing and selective exposure.

This study was consistent with prior research on selective exposure which shows that individuals who consider an issue to be high in importance are more likely to seek out and pay attention to information pertaining to the issue. The higher level of social significance and personal value one attributes to an issue the more important that issue becomes. As a result, individuals are more likely to actively gather information on the topic (Afifi, Dillow, & Morse, 2004). Evidence of this effect is apparent in studies investigating exposure to online news showing that people pay closer attention to stories

that are high on issue importance (Knobloch, Carpentier, & Zillmann, 2003) and as well as research on the selection of entertaining media content (Atkin, 1985).

The influence of issue importance on selective exposure can be found specifically with regard to public safety and health in research showing that individuals with a higher likelihood of falling prey to a threat are more careful when processing information about an issue than their counterparts (Knobloch, et al. 2003). This notion is central to parallel processing models which argue that when perceived threat is low individuals are less likely to carry out further processing of a message (Witte, 1992). The results of the present study are consistent with these notions, showing that the behavior intentions of those within the low issue importance condition seemed unaffected by the information presented. This would be the expected outcome in situations where the information processing ceased among the low involvement individuals.

Implications for Health Communication Research

The findings of this study have important implications for increasing attentional vigilance to health messages. The data show that when issue importance is high the intent of respondents to seek out information associated with relevant health issues increases. Since individuals reporting high levels of issue importance are more likely to attend to the message more closely, we might expect the response of these individuals to differ. If high levels of magnitude, likelihood, and immediacy of an issue induce greater attention among the target population, we should expect the strength of evidence and arguments to increase the effectiveness of exposure, and the effect of other message elements to suffer. On the other hand, the same cannot be said for low importance individuals. Not only should we doubt that strong evidence and arguments will increase message effectiveness,

in these situations the effect of flawed evidence may play a stronger role. Although the effect of exemplar discrepancy failed to meet the .05 standard on measures of behavior intention, the logic here is consistent with expectations that a potentially strong effect can result from discrepant exemplars that misrepresent population characteristics. Unlike the situation with high issue importance, among low issue importance respondents exaggerated exemplars might be successful in producing the desired behavioral intent.

With this in mind, health communicators should pay close attention to the issue importance level of an intended target, as various message variables are likely to fare quite differently for high and low issue importance recipients. For example, research on threatening messages shows that high fear inducing messages (commonly induced using powerful exemplars) can cause people to focus more on finding ways to deal with the emotional trauma associated with the threat than to address the cause of the threat directly (cf., the extended parallel process model, Witte, 1992). Potentially, in cases where the emotional trauma induced by a threatening exemplar becomes too severe for the individual to endure, strong arguments in the message addressing the cause of the threat may be ignored and result in diminished message effect. One can imagine how preteens first told of the dangers from smoking or addictive drugs might experience extreme levels of fear from vivid exemplar displays, or how adolescents newly introduced to the threat of sexually transmitted diseases might respond to repulsive portrayals. If levels of fear provoked by extreme exemplars reached heights interfering with close attention to abstract solutions presented in a sound health message, it is little wonder that message retention in this situation would be limited to simple notions. Perhaps this explains why simple slogans like "just say no" are easily and well learned when adolescents are first

introduced to such risks, and why they quickly lose their effect. Attentive audiences age and may learn from experience that the simplicity of such slogans are simply a case of misexemplification, just like the extreme exemplars that first provoke their fear.

In this sense, the outcomes observed here have important implications for health message construction. The findings show that information utility and issue importance of messages play a role in perceptions of problem severity and population estimates. Again, using the example of fear appeals, if recipients exposed to a credible, relevant message containing new information perceive moderate levels of problem severity, we might expect the audience to respond to the danger rather than the fear (Witte, 1992). If a threatening health risk message focuses the recipient's attention on sound solutions presented in the message, it might prompt the type of attentional vigilance needed to extract even those solutions that are somewhat abstract and not so easily grasped at a glance. The findings here suggest that high issue importance and information utility produced population estimates much closer to the abstract base-rate reported in the news story (68%) than the baseline established in the pre-experiment survey (40%). This finding might indicate that abstract base-rate information can play a part in shaping perceptions of problem severity for high-involvement individuals. Moreover, it is possible that messages containing high information utility can have a similar effect, whether through the information utility's capacity to engender high issue involvement or through some other cognitive mechanism. This adds to existing work on the Health Belief Model by identifying ways to increase perceived severity and the likelihood of subsequent behavior change. When a health threat is seen as likely, immediate, and severe individuals are more prone to develop behavior intentions consistent with the

message intent. As such, health communicators would be well advised to construct credible and relevant messages that contain new information for respondents.

Notably in this regard, in some situations the use of stories or examples may be considerably less important than making sure that information utility and issue importance are elevated to sufficient levels. When this is the case individuals should pay closer attention to strong arguments and statistical evidence. The most promising conditions for message effectiveness are presented when base-rates and exemplars are non-discrepant while information utility and issue importance are high for the targeted population.

Though not specifically addressed in the research at hand, it is not difficult to imagine a situation in which a message's attributes could be altered to increase the importance of an issue along with the utility of the information it contains; even when the target population's initial perception is that the issue is relatively unimportant. We might even imagine that this is the norm when new health threats are introduced to the public through information campaigns. Evidence of this is apparent in the observation that though few individuals actually engaged in smoking, news story attributes manipulated in this study effectively altered levels of high and low issue importance. Perceptions of issue importance increased among groups of respondents even though few of them smoked. From this we might reason that stories about health threats can alter the behavior intentions of people even when the story deals with an issue unrelated to their own behavior. Given these circumstances, health communicators concerned with issue importance must identify not only those trait variables that distinguish groups inherently high and low on issue importance, but also those message variables that can be used

within a story to increase state issue importance. The only requirement is that state importance persists long enough for message processing to be completed. Unlike the typical media setting identified by Brosious (2003) under this scenario message recipients should attend closely enough to understand how base-rate information differs from exemplars, and use that knowledge information when forming perceptions based on exposure.

Limitations

Several limitations in the design and implementation of this study must be considered when appraising the level of confidence we can have in the outcomes of this research. These include issues associated with the representative nature of the sample, the representative nature of a single issue (smoking related anxiety) selected from the population of all issues, the reliability of the single-item measure of population estimates, the cross-sectional nature of the design, and the unsupervised nature of the online survey.

The first issue deals with several limitations associated with the sample selected for study. Most conspicuously here, use of a student sample in this study raises questions about the ability of the observations here to generalize to other populations. In this instance a student sample is reasonable for several reasons. To begin with, often overused criticisms directed at the use of student samples should be applied sparingly and only when there is reason to suspect problems in this regard. Research examining the outcomes from studies on these different populations shows no significant differences between student and non-student samples across several major disciplines conducting research on human behavior (Locke, 1986). Considering the case of exemplification in particular, expectations that responses from these two populations should differ is even

less likely since this research examines experimentally a type of unconscious reaction that stems from the phylogenetic roots of the human information processing system. If we consider the context of the particular experience encountered by respondents in this study, the media exposure setting used, is a common real-world occurrence for college students. As such, threats associated with mundane realism are negligible. Moreover, because college students represent an age group that is frequently the target of health messages (e.g. reducing binge drinking on college campuses, safer sex, and HIV prevention), in this instance they represent the potential target audience for the practical applications of this work. As with many health messages, properly targeting an audience or segment of the population is important to ensure campaign success, giving good cause for the use of the small and relatively homogenous sample here.

Another issue of note in this sample is that only 52 subjects rated anxiety from cigarette smoking as high on issue importance. Two questions come immediately to mind when considering this concern. The first question we must ask deals with the extent to which the percent of respondents in this sample ascribing high issue importance to smoking is representative of other populations. With no baseline from the general population is it hard to answer this question. One observation related to this issue deals with the percent of smokers found in our sample compared to the percent in the population at large. The present study had 14.5% smokers compared to 23.6% of smokers 18-24 in the population at large (Center for Disease Control, 2005), a relatively small percent in both cases. Though this comparison does not answer the question of whether or not the issue involvement with smoking in our sample was representative of the population at large, it does suggest this sample is similar to the population at large in

terms of having a vast majority of nonsmokers, though the sample here had slightly fewer smokers. The second question we must ask deals with the fact that having 52 subjects in the high issue importance condition limits the power available for analyses, a particular concern in tests of the three-way interactions.

The second issue deals with limitations associated with the representative nature of single issue selected for use in this study. One again, two issues come quickly to mind. First, since smoking is only one issue for a large population of health and non-health related issues, we must ask about the extent to which unique characteristics of this issue are responsible for some of the patterns observed. The fact that this research successfully replicated the main effects observed in previous research on issue involvement, information utility, and exemplification supports the contentions that the findings observed here are not limited to the single issue. At the same time, the most important findings observed in this study, those dealing with two-way and three-way interaction among these variables are unique to this investigation. As such, questions related to these findings are in need of additional reflection. Second, we must ask about the extent to which smoking related anxiety provided the types of distinct populations (in terms of high and low issue importance) needed to provide a reliable test of the interactions predicted in this study. This issue starts with concern over the fact that only 52 respondents scored high on issue importance, and touches on discussion already addressed in the first limitation. In addition to this, however, are questions concerning whether or not this issue provided the type of truly high and/or low population grouping needed to provide an effective test of the hypothesized interactions. Although the first pilot study showed this to be a viable health issue to use there may have been one not

presented within the six issues given in the pilot. Another health behavior, particularly one for which a sub-sample of the population scoring truly high on issue importance exists, may provide a better test of hypothesis four. More than anything, the first two limitations identified here, the representative nature of the sample and the issue of smoking-related anxiety; signify the need to replicate the findings of this study in research using other samples and different issues. This will help determine the extent to which these findings generalize to populations and settings.

The third issue deals with the limitations associated with the reliability for three single-item measures: one measuring population estimates, and two measuring the strength of the exemplar discrepancy induction. In both cases, the single-item measures make assessments of reliability impossible and draw into question study claims that variables failed to represent the measure and manipulation specified. Population estimate is one of the two main outcomes variables in this study. As such, any question concerning its reliability needs to be considered closely. At the same time, the single item measure of population estimate used in this study follows common practice. Respondents were simply asked to estimate the percent of college student smokers who have anxiety problems. The long practice of measuring population estimates in this manner leads us to conclude that the reliability threat here is not considered severe. The two items measuring the strength of the exemplar discrepancy induction were used only as a manipulation check. Since the items did not form a single index, separate analyses were conducted on both items. Although this leaves some concern that the reliability of the exemplar discrepancy measure may have been problematic, the fact that analysis on both separate measures produced consistent results helps ease this concern.

The fourth issue deals with the limitations associated with the decision to use a post-test only research design with a post-test measure at only one point in time. The post-test only design was selected in this case to reduce threats to internal validity. In particular, there was concern that a pre-test on perceptions of problem severity and population estimates might sensitize participants and bias measures on these two main outcome variables. This threat was considered particularly inauspicious and strongly influenced design choice. At the same time, however, the post-test design introduced other limitations. First, measures used to assign respondents to conditions of issue importance were gathered after exposure to the story on smoking. The potential for the story to bias these responses cannot be overlooked. At the same time, one could argue that the impact of story exposure should attenuate existing differences and, as a result, the post-test measure was a conservative approach to distinguishing the two groups. Second, the absence of a pre-test meant that no baseline measure of population estimates was available. Though having a baseline on the participants in the main study would have been valuable, obtaining population estimates in the pilot test from a separate student provided something in this regard. Not to be overlooked, the fact that the post-test measure was taken at only one point in time eliminated the ability to assess how long the observed effects persisted.

The final issue deals with the limitations associated with the unsupervised nature of the online survey. Using the Internet to conduct the experiment allowed participants to take as long as they wanted to read each news story, it also allowed participants to go back to the story if they so desired (even though instructions asked them not to). This ability to review the stimulus messages may have allowed message recipients to more

closely review information in the messages related to the questions asked in the survey. If respondents behaved in this manner, it may have skewed answers of population estimates. However, the nature of this study minimizes concern with this threat for two reasons. First, if the bias introduced by the unsupervised nature of the online survey increased attention across all conditions in this study, the outcome should have attenuated message effects. The fact that significant differences associated with all three predictors were observed challenges this interpretation. Second, if the bias introduced increased attention across only under conditions of increased issue importance and/or information utility, the increased attention would be consistent with the logic said to explain the outcomes observed.

Future Research

Based on the findings of this study as well as previous research by Krupat, et al. (1997), it appears that the superiority of exemplars over base-rate information is limited by moderating factors. Yet this study is the first of its kind to demonstrate this effect and only begins to identify the circumstances in which this might be true. Future research is needed not only to replicate this finding but also to examine the extent to which it will generalize beyond the contexts of purchasing decisions or health issues perceptions examined to date. Attempts to replicate the findings from this study in research that replicates some of the original work establishing the exemplar effect in the context of news and political media would help corroborate observations that information utility and issue importance can moderate exemplification processes.

In addition to work aimed at increasing confidence in the findings of this study through replication of the interactions observed, research is needed to examine the

underlying processes that might be responsible for these findings. The logic for the pattern of findings observed here argues that the moderating influence of information utility and issue importance results from increased message attention. Research examining the mediating role of attention in this development is critical to understanding the processes at hand and the outcomes that should be expected. Similar research examining how the retention and recall of exemplars and base-rates is predicted by varying levels of information utility and issue importance would also add greatly to this understanding. Although research on exemplification has firmly established the phenomenon as an important outcome of media exposure, our understanding of the underlying processes is still in its infancy. Efforts to explicate the theoretical mechanisms at work promise considerable applied benefit.

Contributions to Exemplification Theory and Health Communication

The value of this research can be seen both conceptually in terms of what it adds to our understanding of exemplification theory and pragmatically in terms of its applications in health communication campaigns. At the conceptual level, the findings here demonstrate that the robust nature of exemplification effects is not boundless. It can be moderated by issue importance and information utility. Undeniably, questions about the stability of findings regarding those high on issue importance are subject to concerns about the low number of high issue importance respondents in this study. However, information utility moderated the exemplar effect among those low on issue importance, where the number of respondents was ample. This provides more convincing evidence of the potential for exemplification to be moderated. The explanation offered here suggests that moderation might result from increased attention to the information contained in a

message. If this is the case, the theoretical implications for exemplification theory are considerable, and efforts to identify other variables that too might increase attention and moderate exemplification should be pursued.

In terms of the practical implications of this research, the findings here might prove useful for efforts by health communication practitioners in efforts to create more effective campaigns. Knowing under which conditions (particularly conditions of high information utility and high issue importance) target audiences are more likely to be affected by base-rates and/or exemplars can help in message design. Although more research is needed to determine if the findings here will generalize to other health issues and populations, it suggests that message attributes capable of increasing information utility may heighten attention to, if not at least the influence of base-rate information. To the extent that a focus on base-rates might promote healthy behaviors, this should be an effective strategy on some target populations. By contrast, in cases where base-rates might not be expected to promote desired behavior, efforts to moderate exemplification effects might be less desirable. In such cases, message designers might focus simply on taking advantage of the generally robust nature of exemplars.

Appendix A

Pilot Study - Phase One Questionnaire

<u>Iss</u>	ue Importance	Not	at all				Extr	remely
Magnitude								
1.	Do you feel personally threatened risk of sexually transmitted infections (diseases).	by the 1	2	3	4	5	6	7
2.	In your judgment how great is the presented to you by the risk of sexually transmitted infections	threat	2	3	4	5	6	7
3.	Compared to other threats to your how big a problem is the risk sexually transmitted infections	health of s.1	2	3	4	5	6	7
4.	Do you feel personally threatened the risk of unplanned pregnance	by cy.1	2	3	4	5	6	7
5.	In your judgment how great is the presented to you by the risk of unplanned pregnancy.	threat	2	3	4	5	6	7
6.	Compared to other threats to your how big a problem is the risk of unplanned pregnancy.	health of an 1	2	3	4	5	6	7
7.	Do you feel personally threatened the health risks associated with smoking.	by h 1	2	3	4	5	6	7
8.	In your judgment how great is the presented to you by the risk of smoking	threat	2	3	4	5	6	7
9.	Compared to other threats to your how big a problem is the risk associated with smoking.	health 1	, 2	3	4	5	6	7
10. Do you feel personally threatened by the health risks associated with drug use. 1 2 3 4 5 6 7						7		

11. In	your judgment how great is the presented to you by the risk of drug use .	threat f 1	2	3	4	5	6	7
12. Co	mpared to other threats to your how big a problem is the risk associated with drug use.	health	, 2	3	4	5	6	7
13. Do	you feel personally threatened associated with drinking alcoh	by risl	ks 2	3	4	5	6	7
14. In	your judgment how great is the presented to you by the risk of drinking alcohol.	threat f 1	2	3	4	5	6	7
15. Co	mpared to other threats to your how big a problem is the risk	health	,	2	A	E	C	7
16. Do	you feel personally threatened	by the	2	3	4	3	0	/
17.1	domestic violence.	1	2	3	4	5	6	7
17. In j	your judgment how great is the presented to you by the risk of domestic violence.	f 1	2	3	4	5	6	7
18. Compared to other threats to your health, how big a problem is the risk								
Likelih	associated with domestic viol	ence. I	2	3	4	2	0	/
19. Do	you feel that a college student like you is likely to be affected by a sexually transmitted infect	d ction.1	2	3	4	5	6	7
20. Do	you feel that you personally are likely to contract a sexuall transmitted infection.	у 1	2	3	4	5	6	7
21. Но	w often do you think about the likelihood of getting a sexually transmitted infection	y 1	2	3	4	5	6	7
22. Do	you feel that a college student like you is likely to be affected by an unplanned pregnancy. 1	2	3	4	5	6	. 7	
--------	---	--------	---	---	---	---	------------	
23. Do	you feel that you personally are likely to become pregnant or get a partner pregnant. 1	2	3	4	5	6	7	
24. Ho	w often do you think about the likelihood of having an unplanned pregnancy. 1	1 2	3	4	5	6	7	
25. Do	you feel that a college student like you is likely to be affected by smoking. 1	2	3	4	5	6	7	
26. Do	you feel that you personally are likely to contract a health problem associated with smoking	.1 2	3	4	5	6	7	
27. Ho	w often do you think about the likelihood of having a health problem due to smoking. 1	2	3	4	5	6	7	
28. Do	you feel that a college student like you is likely to be affected by drug use. 1	2	3	4	5	6	7	
29. Do	you feel that you personally are likely to contract a health problem associated with drug use.	.1 2	3	4	5	6	7	
30. Ho	w often do you think about the likelihood of having a health problem due to drug use. 1	2	3	4	5	6	7	
31. Do	you feel that a college student like you is likely to be affected by drinking alcohol. 1	2	3	4	5	6	7	
32. Do	you feel that you personally are likely to contract a health prob associated with drinking alcohol.	olem	3	4	5	6	7	

33. H	ow often do you think about th likelihood of having a health problem due to drinking alco	e hol.1	2	3	4	5	6	7
34. D	o you feel that a college studen like you is likely to be affecte by domestic violence.	t ed 1	2	3	4	5	6	7
35. D	o you feel that you personally are likely to contract a health due to domestic violence.	proble 1	m 2	3	4	5	6	7
36. He	ow often do you think about the likelihood of being impacted domestic violence.	e by 1	2	3	4	5	6	7
Imme	diacy							
37. I t	hink that I will be affected by a sexually transmitted infection within the next year.	a 1	2	3	4	5	6	7
38. I v	will be affected by a sexually transmitted infection soon.	1	2	3	4	5	6	7
39. I v	vill not be affected by a sexual transmitted infection any time soon. ®	ly e 1	2	3	4	5	6	7
40. I t	hink that I will be affected by a unplanned pregnancy within next year.	n the 1	2	3	4	5	6	7
41. I v	vill be affected by an unplanne pregnancy soon.	d 1	2	3	4	5	6	7
42. I v	vill not be affected by an unpla pregnancy any time soon. ®	nned 1	2	3	4	5	6	7
43. I ti	hink that I will be affected by h problems due to smoking wit the next year.	nealth hin 1	2	3	4	5	6	7
44. I v	vill be affected by smoking soc	on.1	2	3	4	5	6	7

•

45. I will not be affected by smokin time soon. ®	g any l	2	3	4	5	6	7
46. I think that I will be affected by problems due to drug use wi	health ithin						
the next year.	1	2	3	4	5	6	7
47. I will be affected by drug use so	on.1	2	3	4	5	6	7
48. I will not be affected by drug us	e						
any time soon. ®	1	2	3	4	5	6	7
49. I think that I will be affected by	health						
within the next year.	1	2	3	4	5	6	7
50. I will be affected by drinking al	cohol						
soon.	1	2	3	4	5	6	7
51. I will not be affected by drinkin	g						
alcohol any time soon. ®	1	2	3	4	5	6	7
52. I think that I will be affected by							
year.	l next	2	3	4	5	6	7
53. I will be affected by domestic							
violence soon.	1	2	3	4	5	6	7
CAT 11 - 41 - 6 - 41 - 1							
54. I will not be affected by domest	1C	ſ	2	٨	5	6	7
violence any time soon. W	I	2	3	4	3	Ο	/

Here is a list of sources that may present you with a health message. Please rate each source as to how *credible* (believable) you think that source would be for health information (1 = "not at all credible" and 7 = "extremely credible").

		Not at all Credible						Extremely Credible		
1.	The Center for Disease Control	1	2	3	4	5	6	7		
2.	The American Cancer Society	1	2	3	4	5	6	7		
3.	The Lansing State Journal	1	2	3	4	5	6	7		

4.	WebMd on the Internet	1	2	3	4	5	6	7
5.	A doctor	1	2	3	4	5	6	7
6.	Someone who has suffered from the health issue in question	1	2	3	4	5	6	7
7.	A parent	1	2	3	4	5	6	7
8.	A college student	1	2	3	4	5	6	7
9.	A professor	1	2	3	4	5	6	7
10.	Oprah Winfrey	1	2	3	4	5	6	7
11.	Tom Cruise	1	2	3	4	5	6	7
12.	U.S. News & World Report	1	2	3	4	5	6	7
13.	Jessica Simpson	1	2	3	4	5	6	7
14.	LeBron James	1	2	3	4	5	6	7
15.	Planned Parenthood	1	2	3	4	5	6	7
16.	MSU president Simon	1	2	3	4	5	6	7
17.	An unfamiliar adult	1	2	3	4	5	6	7
18.	National Institute of Health	1	2	3	4	5	6	7
19.	An unidentified government offic	cial l	2	3	4	5	6	7
20.	An unidentified source	1	2	3	4	5	6	7
21.	Hilary Rodham Clinton	1	2	3	4	5	6	7
22.	A tobacco company	1	2	3	4	5	6	7
23.	Journal of Health Communicatio	<i>n</i> 1	2	3	4	5	6	7
24.	Surgeon General	1	2	3	4	5	6	7
25.	Pharmaceutical Company	1	2	3	4	5	6	7
26.	The National Enquirer	1	2	3	4	5	6	7

27	. Time	1	2	3	4	5	6	7		
28	. Newsweek	1	2	3	4	5	6	7		
29	. Journal of Public Health	1	2	3	4	5	6	7		
30	. Junk Mail/Spam	1	2	3	4	5	6	7		
Ne	w Information for Possible use a	s base-	rate inf	o rmat io	0 n .					
1.	What percent of all sexually tran	nsmitte	ed infect	tions oc	cur in p	eople 2	25 or yo	unger?		
						_%				
2.	What percent of sexually active	people	e will ha	ive con	tracted	a sexual	lly trans	mitted		
	infection by the age of 24?					_%				
3.	Among women, at what age is t	he rate	of gond	orrhea i	s highe	st?	m ald			
4.	4. Among men, at what age is the rate of gonorrhea is highest?									
	runong mon, at what age 15 me		gonorra	iea is n	ignest?					
	Tunong men, at what age is the		gonorm	iea is ni	ignest?	year	s-old			
5.	How many million sexually acti	ve you	gonorm ng adul	ts acqu	ire a sex	year	s-old ransmitt	ed		
5.	How many million sexually acti infection every year?	ve you	ng adul	ts acqu	ire a sex	year xually ti mill	s-old ransmitt ion	ed		
5 . 6 .	How many million sexually acti infection every year? Acquired immunodeficiency syn	ve you	ng adul	ts acqu) is one	ire a sex	year xually tr mill leading	s-old ransmitt ion causes	ed of death		
5. 6.	How many million sexually acti infection every year? Acquired immunodeficiency syn among people of what age group	ve you ndrome	ng adul	ts acqu) is one	ire a sex	year kually tr mill leading year	s-old ransmitt ion causes s-old	ed of death		
 5. 6. 7. 	How many million sexually acti infection every year? Acquired immunodeficiency syn among people of what age group About how many million wome	ve you ndrome p? n face	ng adul e (AIDS	ts acqu) is one and pres	ire a sex	year xually tr mill leading year each ye	s-old ransmitt ion causes s-old ar?	ed of death		
 5. 6. 7. 	How many million sexually acti infection every year? Acquired immunodeficiency syn among people of what age group About how many million wome	ve you ndrome p? n face	ng adul c (AIDS	ts acqu	ire a sex e of the gnancy	year kually ti mill leading years each ye millio	s-old ransmitt ion causes s-old ar? on	ed of death		
 5. 6. 7. 8. 	How many million sexually acti infection every year? Acquired immunodeficiency syn among people of what age group About how many million wome In women aged 20-24-years old	ve you ndrome p? n face	ng adul c (AIDS unplann what pe	ts acqu) is one hed pres	ire a sex of the gnancy of	year kually tr mill leading year each year millio egnancio	s-old ransmitt ion causes s-old ar? on es occur	ed of death		
 5. 6. 7. 8. 	How many million sexually acti infection every year? Acquired immunodeficiency syn among people of what age group About how many million wome In women aged 20-24-years old of marriage?	ve you ndrome p? n face	ng adul e (AIDS unplann what pe	ts acqu) is one hed pres	ire a sex e of the gnancy of gree of pre-	year kually tr mill leading year each year each year commilie gnancie	s-old ransmitt ion causes s-old ar? on es occur	ed of death		
 5. 6. 7. 8. 9. 	How many million sexually acti infection every year? Acquired immunodeficiency syn among people of what age group About how many million wome In women aged 20-24-years old of marriage? What percent of college women	ve you ndrome p? n face about	ng adul e (AIDS unplann what pe	ts acqu) is one hed preg rcentag	ire a sex ire a sex e of the gnancy of gre of pro-	year xually tr mill leading year each year each year cons have	s-old ransmitt ion causes s-old ar? on es occur e experio	enced		

- 10. About what percent of smokers under the age of 25 have anxiety problems associated with cigarette smoking? %
- 11. Smoking is known to be related to lower academic achievement in what percent of college student smokers?
- 12. The maximum lung functioning level for college student smokers is what percentage lower than non-smokers?
- 13. The average resting heart rate of young adult smokers is how many beats per minute faster than nonsmokers.
- 14. About what percent of college student smokers have increased cough and/or severe respiratory illnesses due to smoking?
- 15. Approximately how many deaths are there per year are smoking associated?
- 16. Approximately what percentage of Americans are smokers?
- 17. Smoking has been found to accelerate the aging process by how many years?

years

%

18. Approximately, how many college students between the ages of 18 and 24 die each year from unintentional alcohol-related injuries, including motor vehicle crashes?

students

19. Approximately, how many students between the ages of 18 and 24 are unintentionally injured each year while under the influence of alcohol?

students

- 20. How many students between the ages of 18 and 24 are assaulted each year by another student who has been drinking?

students

%

%

%

deaths

beats per minute

students 23. What percentage of adult women experience at least one physical assault by a partner? % 24. Approximately, what percentage of all annual violence against women is perpetrated by intimate partners? % 25. The rate of reported violence by intimate partners is highest among women at what age? vears-old 26. Smoking marijuana is known to cause memory loss in what percent of college student marijuana smokers? % 27. Smoking marijuana has been directly related to a shortened attention span in what percentage of college students? %

®These questions were reverse coded.

21. How many students between the ages of 18 and 24 are victims of alcohol-related sexual assault or date rape each year?

_____ students

22. How many students develop an alcohol-related health problem?

Appendix B

Pilot Study - Phase Two Questionnaire

Smoking Story

Perceived Credibility

1.	The Director of the CDC is a credible source for giving out information that pertains health risks associated with smoking.	e to 1	2	3	4	5	6	7
2.	The Director of the CDC does not have eno information on the risks of smoking to make these claims. ®	ugh 1	2	3	4	5	6	7
3.	I trust the Director of the CDC to tell the tru about smoking.	uth 1	2	3	4	5	6	7
4.	I have confidence in the accuracy of the information about smoking and anxiety.	. 1	2	3	4	5	6	7
5.	I believe that cigarette smoking can cause a	nxiet	y.1 2	3	4	5	6	7
6.	I don't believe that cigarette smoking has an on college students. ®	n effe 1	ect 2	3	4	5	6	7
Rel	levance							
7.	The story on smoking and anxiety provides valuable information for college student	s. 1	2	3	4	5	6	7
8.	The smoking related anxiety story provided information that I find very useful.	I	2	3	4	5	6	7
9.	The information on smoking and anxiety is personally relevant to me.	1	2	3	4	5	6	7
10.	The story on smoking and anxiety applies directly to me life.	1	2	3	4	5	6	7

New Information

11. If (before you read the report in U.S. News & World Report today) somebody had asked you to estimate the percent of college student smokers that have anxiety, what would your answer have been?

____%

	Not	at all				E	xtremely
11. How informative was the U.S. News & World Report on smoking on							
anxiety?	1	2	3	4	5	6	7
12. How well educated do you now feel abo the effects of smoking on anxiety af reading the article in U.S. News & W Report?	out ter <i>Vorld</i> 1	2	3	4	5	6	7
13. To what extent do you think that the rep you read in U.S. News & World Rep adds to your knowledge about smok and anxiety?	ort ort ing 1	2	3	4	5	6	7
Behavior							

14. I consider myself to be a smoker:

Yes		
No		
I don't consider myself a smo	ker, but I do	smoke socially
I used to smoke but I quit	years	months ago.

Exemplar Discrepancy

15. The information about anxiety in the example given within the story is representative of the statistical information presented.

Strongly Agree	Agree	Neutral	Disagree	Strongly
				Disagree

- 16. Looking at the information provided about anxiety which do you believe to be more accurate the statistical information or the example given? (circle one)
 - a. Statistics
 - b. Example
 - c. They are the same
- 17. On a scale of 1 to 7 (with 1 = "not at all" and 7 = "extremely") rate how different you think the example about anxiety is from the statistical information.

Population Estimates

19. What percent of college student smokers have anxiety problems? _____%

Perception of Problem Severity

	No	t at a	11				Extre	emely
20. How severe is the problem of related anxiety among co	of smoking ollege students?	1	2	3	4	5	6	7
21. How likely do you think it is smoking related anxiety college students will get	s that among worse?	1	2	3	4	5	6	7
22. How likely do you think it is related anxiety will beco real problem on the MSU	s that smoking me a J campus?	1	2	3	4	5	6	7
23. How likely do you think it is related anxiety might be problem for you?	s that smoking come a	1	2	3	4	5	6	7
Behavioral Intentions								
24. How likely is this information to affect your current sm	on about anxiety oking behavior?	2 1	2	3	4	5	6	7
25. How likely are you to seek n health problems associat	nore informatior ed with smoking	n on g?1	2	3	4	5	6	7
26. How likely are you to quit subased on the information	noking or not st about anxiety?	art 1	2	3	4	5	6	7
27. How likely do you think othe smoking based on this in anxiety?	ers would be to of formation about	quit 1	2	3	4	5	6	7
Terrorism Story								
Perceived Credibility								
1. U.S. News & World Report i	Not s a credible	t at al	1				Extre	mely
source for giving out info pertains to terrorism.	ormation that 1	2	3	4	5	6		7
2. U.S. News & World Report of enough information on te these claims.	loes not have errorism to make 1	2	3	4	5	6		7

3.	I trust U.S. News & World Report to tell truth about terrorism.	the 1	2	3	4	5	6		7
4.	I have confidence in the accuracy of the information about terrorism.	1	2	3	4	5	6		7
5.	I believe that there are a number of terror attacks every year.	rist 1	2	3	4	5	6		7
6.	I don't believe that there are terrorist atta	icks.	®1	2	3	4	5	6	7
Re	levance								
7.	The story on terrorism provides valuable information for college students	1	2	3	4	5	6		7
8.	The terrorism story provided information I find very useful	n that 1	2	3	4	5	6		7
9.	The information on terrorist attacks is per relevant to me.	rsona 1	ally 2	3	4	5	6		7
10.	The story on terrorist attacks applies dire me life.	ctly (1	to 2	3	4	5	6		7
Ne	w Information								
11.	If (before you read the report in U.S. New asked you to estimate the number of terro answer have been?	<u>vs &</u> orist a	<u>Worl</u> attack	<u>d Repa</u> as each	o <u>rt</u> tod 1 year,	lay) so what	mebo would	dy ha I you	ıd r
	attacks each year								
		Not	at all					Extr	emely
12.	How informative was the U.S. News & World Report on terrorist attacks?	1	,	2 1	3	4	5	6	7

- 13. How well educated do you now feel about terrorist attacks after reading the article in U.S. News & World Report? 1 2 3 4 5 6 7
 14. To what event do you think that the article
- 14. To what extent do you think that the report you read in U.S. News & World Report adds to your knowledge about terrorism? 1 2 3 4 5 6 7

Behavior

15. I consider myself to be dreadfully worried about terrorism:

Yes No I don't consid worried I used be drea months ago	ler myself drea adfully worried	dfully worrie I but this stop	ed at	bout te about	rrorisn	n, but years	I am a	bit -
Exemplar Discrepancy								
16. The information about representative of the sta	terrorism in th atistical inform	e example gi ation presen	ven ted.	within	the sto	ory is		
Strongly Agree	Agree	Neutral		Disa	gree	St D	rongly isagree	,)
17. Looking at the informa more accurate the statisa. Statisticsb. Examplec. They are the	tion provided a stical informati e same	about terroris on or the exa	sm, v ampl	vhich (e give	lo you n?	believ	ve to b	e
18. On a scale of 1 to 7 (with think the example about	th $1 =$ "not at a it terrorism is f	all" and 7 = ' rom the stati	'extr stica	emely' l infor	") rate matior	how c	lifferen	nt you —
Population Estimate								
19. How many terrorist atta	acks occurred i	in 2004?			-			
Perception of Problem Sev	erity							
20. How severe is the prob for college students	lem of terrorist ?	Not at all t attacks 1	2	3	4	5	Extr 6	emely 7
21. How likely do you thin terrorist attacks will	k it is that l get worse?	1	2	3	4	5	6	7
22. How likely do you thin will become a real campus?	k it is that terro problem on the	orist attacks MSU 1	2	3	4	5	6	7

23	. How likely do you think it is that terrorist a might become a problem for you?	ttacks 1	2	3	4	5	6	7
Be	havioral Intentions							
24	. How likely is this information about terroria attacks to affect your behavior?	st 1	2	3	4	5	6	7
25	. How likely are you to seek more information terrorist attacks?	on on 1	2	3	4	5	6	7
26	. How likely are you to take preventative action on this information about terrorist attack	ion ba cs?1	sed 2	3	4	5	6	7
27	. How likely do you think others would be to take preventative action on this informa about terrorist attacks?	take tion 1	2	3	4	5	6	7
<u>Ge</u>	enetic Screening Story							
Pe	nceived Credibility	ot at a	11				Extr	emely
1.	The National Institute of Health is a credibl source for giving out information that pertains to genetic screening.	e 1	2	3	4	5	6	7
2.	The National Institute of Health does not hat enough information on genetic screening make these claims. ®	ive g to 1	2	3	4	5	6	7
3.	I trust the National Institute of Health to tell truth about genetic screening.	l the 1	2	3	4	5	6	7
4.	I have confidence in the accuracy of the information about genetic screening.	1	2	3	4	5	6	7
5.	I believe that genetic screening can detect for abnormalities.	etal 1	2	3	4	5	6	7
6.	I don't believe that genetic screening has an on abnormality detection. ®	effec 1	t 2	3	4	5	6	7

Relevance

7.	The story on genetic screening provides valuable information for college stude	ents. 1	2	3	4	5	6	7
8.	The genetic screening story provided information that I find very useful.	1	2	3	4	5	6	7
9.	The information on genetic screening is personally relevant to me.	1	2	3	4	5	6	7
10.	The story on genetic screening applies directly to me life.	1	2	3	4	5	6	7

New information

11. If (before you read the report in U.S. News & World Report today) somebody had asked you to estimate the percent of fetal abnormalities detected by genetic screening, what would your answer have been?

%							
N	lot at a	all				Extr	emely
12. How informative was the U.S. News &							
World Report on genetic screening?	1	2	3	4	5	6	7
13. How well educated do you now feel about genetic screening after reading the							
article in U.S. News & World Report?	1	2	3	4	5	6	7
14. To what extent do you think that the report you read in U.S. News & World Report	t tadds						
to your knowledge about genetic screen	ning?1	2	3	4	5	6	7
Population Estimates							
15. What percent of fetal abnormalities are det	ected	by gen	etic so	creenir	ıg?	%)
Behavior							

16. I consider myself to be dreadfully worried about genetic screening:

Yes		
No		
I am not dreadfully worried about genetic scree	ening, but I am	a bit worried
I used be very worried but this stopped about _	years	months
ago.		

Exemplar Discrepancy

17. The information about genetic screening in the example given within the story is representative of the statistical information presented.

Strongly Agree	Agree	Neutral	Disagree	Strongly
				Disagree

- 18. Looking at the information provided about genetic screening, which do you believe to be more accurate the statistical information or the example given?
 - a. Statistics
 - b. Example
 - c. They are the same
- 19. On a scale of 1 to 7 (with 1 = "not at all" and 7 = "extremely") rate how different you think the example about genetic screening is from the statistical information.

Perception of Problem Severity

No	ot at al	1				Extr	emely	,
20. How severe is the problem of fear of fetal abnormalities among college students?	1	2	3	4	5	6	7	
21. How likely do you think it is that fears of fe abnormalities college students will get v	tal vorse?	1	2 3	4	5	6	7	
22. How likely do you think it is that fears of fe abnormalities will become a real problem the MSU campus?	etal m on 1	2	3	4	5	6	7	
23. How likely do you think it is that fetal abnormalities might become a problem	for yo	u?1	2	34	5	6	7	
Behavioral Intentions								
24. How likely is this information about genetic screening to affect your behavior?	2 1	2	3	4	5	6	7	
25. How likely are you to seek more informatio genetic screening?	n on 1	2	3	4	5	6	7	
26. How likely would you be to take use genetic screening based on this information?	c 1	2	3	4	5	6	7	

27. How likely do you think others would be to use						
genetic screening based on this information?1	2	3	4	5	6	7

®These questions were reverse coded.

Appendix C

News Stories

Smoking story:

High Information utility - low discrepancy [extreme discrepancy]

U.S. News & World Report. Wednesday, August 17, 2005

In a statement released today by the Center for Disease Control (CDC), CDC Director Jeffrey P. Koplan, M.D., M.P.H., reported the results of a new study linking cigarette smoking to anxiety problems suffered by college students. The study, conducted on a U.S. nation wide sample of over 78,000 students at 4-year universities finds support for previous studies showing that smoking is linked with a variety of health problems. However, in surprising new evidence, the CDC reports smoking is associated with anxiety. According to Dr. Koplan, research evidence shows that 68% of college student smokers have anxiety problems, and that smoking is a contributor to these anxiety problems. Notably, the onset of this problem appears to be surprisingly sudden and unexpected and strikes college students of all types in an unpredictable manner. The report also states that there is clear evidence that when individuals stop smoking the anxiety problems quickly dissipate.

[Of course, not all students are affected.] Alex Shipley of Madison, Wisconsin is a good example. Shipley, a student at the University of Wisconsin, is an honor student in the Business School who plans on getting a job in finance when he graduates. Alex says that things have [nothing has] changed since he started smoking. "When I came to school it was easy for me. I always felt comfortable. I never had any trouble speaking to my professors in class. I liked hanging out and talking with other kids. Nothing seemed to bother me. Then when [When] I was a sophomore I started smoking with some of my friends and things started to change [but nothing has really changed]. Now I feel worried [I still feel good about] about everything. I [never] get nervous when I'm around people. My hands get sweaty and I start to feel real uncomfortable [I always feel real comfortable]. When I speak I always [never] stutter and [or] mumble my words."

Mark Westbrook is another example. Mark grew up in East Lansing, Michigan and attends Michigan State University. Mark is an Advertising major who plans to work in marketing when he graduates. Mark was always highly involved in school activities as an Evans Scholar and a member of several clubs on campus. Mark <u>first noticed</u> [has noticed no] signs of mounting anxiety <u>after</u> [since] he started smoking during his junior year. "I <u>always use to think</u> [have always thought] of myself as really outgoing. <u>Now I don't</u> [I] enjoy being around other people. I [never] get nervous even when I'm with <u>my friends</u> [strangers]. When I started smoking I thought of it as kind of a social activity. <u>Now I feel</u> like smoking <u>has made</u> [helps make] me [one of] the most <u>anxious, anti-social person</u> [social people] out there."

Smoking story:

Low Information utility - <u>low discrepancy</u> [extreme discrepancy]

The National Enquirer Wednesday, August 17, 2005

A statement released reported the results of a study linking cigarette smoking to anxiety problems suffered by senior citizens. The study replicates previous studies showing that smoking is linked with a variety of health problems. Once again, it was found that smoking is associated with anxiety. According to an unidentified source, research evidence shows that 68% of senior citizen smokers have anxiety problems, and that smoking is a contributor to these anxiety problems. It is unclear whether or not the anxiety can be alleviated by quitting.

[Of course, not all senior citizens are affected]. Alex Shipley of Riverside, California is a good example. Shipley, a retired construction worker, is a 65-year old father of three and grandfather of four and has been a smoker for over 40 years. Alex says that [nothing has] things have changed since he started smoking. "When I started working it was easy for me. I always felt comfortable. I never had any trouble speaking to my boss at work. I liked hanging out and talking with coworkers. Nothing seemed to bother me. Then When I had been working for two years I started smoking with some of my friends [but nothing has really changed] and things started to change. Now I [still feel good] feel worried about everything. I [never] get nervous when I'm around people. [I always feel real comfortable]. My hands get sweaty and I start to feel real uncomfortable. When I speak I [never] always stutter [or] and mumble my words."

Mark Westbrook is another example. Mark grew up in Boise, Idaho and is also retired. Mark was an assembly worker for a plastics factory. Mark is 59-years-old, a father of two, and has been smoking for 19 years. Mark was always highly involved in various activities as a member of Community Theater and social clubs around Boise. Mark [has] <u>first</u> noticed [no] signs of mounting anxiety [since] <u>after</u> he started smoking. "I have always thought of myself as really outgoing. <u>Now I don't enjoy being around other</u> people. I [never] get nervous even when I'm with [strangers] <u>my friends</u>. When I started smoking I thought of it as kind of a social activity. <u>Now</u> I feel like smoking [helps make] <u>has made</u> me one of the most <u>anxious, anti-</u>social people out there."

Terrorism Story: (High Issue Importance - low discrepancy)

U.S. News & World Report Monday, August 15, 2005

The White House has issued a press release stating that they will no longer be publishing information pertaining to the number of terrorist attacks that occur throughout the world. The most recent statistics from the State Department are from 2004, which state that there were 625 "significant" terrorist attacks in that year alone. According to the Secretary of Defense, Donald Rumsfeld, the number of terrorist attacks each year has not been declining since September 11, 2001, regardless of the number of new counter-measures that are in place. Rumsfeld stated, "Although we have up-dated measures to prevent terrorist attacks in place throughout the world there is still cause for caution as the number of attacks do not appear to be decreasing." According to the Department of Defense the majority of the 625 attacks in 2004 did claim lives.

Brian Roberts, a U.S. Army soldier from Toledo, Ohio, has been involved in trying to trace terrorist activities. "We get information from all over the world," Green said "The information we receive is crucial in trying to prevent terrorist attacks from occurring." Green has noticed that there have been several hundred attacks each year since he joined the army and is not surprised that the number has not decreased in recent years. "We're doing all we can, I wish we could do more but I know that we are stopping a number of attacks every month and without the work that is being done there would be even more successful attacks, particularly on U.S. citizens."

Michelle Bennett, an American, was in London during the most recent attacks on public transportation. Michelle was fortunate that she was not injured but she did see some of the devastating effects of the bombs. "I was in London for work; I was in the office when the news came in about the attacks. We were all in shock that terrorism had come so close to where we were but we always knew that it was a possibility. You hear about this happening all over the world but when it happens close by it makes it much more real."

<u>Genetic Screening Story:</u> (Low Issue Importance – low discrepancy)

U.S. News & World Report Monday, August 15, 2005

In a statement released today by the National Institute of Health (NIH), NIH Director Elias A. Zerhouni, M.D., reported the results of a new study which examined the success of genetic screening to detect treatable fetal abnormalities that threaten the life of babies during a mother's pregnancy. The study was conducted on tissue samples colleted over the course of several months from 1,000 pregnant women over the age of 40 (when women are at higher risk of carrying a healthy baby to term). The study found an increase in the previously reported success of genetic screening. According to Dr. Zerhouni research evidence shows that genetic screening can now detect 70% of all lethal fetal abnormalities.

Of course, this is good news for many concerned parents. Todd and Linda Oaks of Boulder, Colorado have been trying to conceive for 10 years. Linda is now in her 40s and is finally pregnant with their first child. "It has been a very trying time for us and we've thought about giving up. After I turned 40 I became hesitant about carrying a child. So many things can go wrong for women my age and it can hurt the baby. Todd and I are very excited to have an opportunity to be able to tell if the baby has any health problems that they can be treated now. It will give us a sense of relief to know that we are having a healthy child."

Chris and Angie Jansing, of Salt Lake City, Utah, are also excited about the prospect of checking for fetal abnormalities. Chris and Angie already have three children and just found out that a fourth is on the way. "We're both very nervous about this baby. I [Angie] just turned 48 and was extremely surprised when I found out I was pregnant. Our children are all in their teens and we weren't expecting to have another child. After we thought about it we became excited by the idea but we realize that my age may cause some problems in the baby. We're hoping that genetic screening will tell us that the baby is healthy, but if not we want to detect problems early so we can do everything possible to save the baby."

Appendix D

Main Study – Questionnaire

Smoking

Ma	agnitude							
1	Do you feel nersonally threatened	Not at	all					Extremely
1.	the health risks associated with	by h						
	smoking?	1	2	3	4	5	6	7
2.	In your judgment how great is the presented to you by the risk of	threat						
	smoking?	1	2	3	4	5	6	7
3.	Compared to other threats to your	health	,					
	associated with smoking?	1	2	3	4	5	6	7
Lil	kelihood							
4.	Do you feel that a college student like you is likely to be affected	I						
	by smoking?	1	2	3	4	5	6	7
5.	Do you feel that you personally are likely to contract a health							
	problem associated with smoking	ing?1	2	3	4	5	6	7
6.	How often do you think about the likelihood of having a health							
	problem due to smoking?	l	2	3	4	5	6	7
Im	mediacy							
7.	I think that I will be affected by he problems due to smoking with	alth in						
	the next year.	l	2	3	4	5	6	7
8.	I will be affected by smoking soon	.1	2	3	4	5	6	7
9.	I will not be affected by smoking a time soon. ®	iny	2	3	4	5	6	7

Behavior

10. I consider myself to be a smoker (check one)

- ____Yes
- No I don't consider myself a smoker but I do smoke socially
- _____ I used to smoke but I quit _____ years _____ months ago.

If No, please skip down to question #____

- 11. I have been a smoker for _____ years ____ months
- 12. I smoke ______ cigarettes daily. (please estimate actual number of cigarettes)
- 13. I purchase a pack of cigarettes every _____ days.
- 14. I have tried to quit smoking:

Never	Once	Twice	Three Times	More
				than 3

Population Estimates

1. What percent of college student smokers have anxiety problems? _____%

Perception of Problem Severity

	No	ot at a	all				Extr	emely
2.	How severe is the problem of smoking related anxiety among college students?	1	2	3	4	5	6	7
3.	How likely do you think it is that smoking related anxiety among college students will get worse?	1	2	3	4	5	6	7
4.	How likely do you think it is that smoking related anxiety will become a real problem on the MSU campus?	1	2	3	4	5	6	7
5.	How likely do you think it is that smoking related anxiety might become a problem for you?	1	2	3	4	5	6	7

Behavioral Intentions

6.	How likely is this information about anxiety to affect your behavior?	1	2	3	4	5	6	7
7.	How likely are you to seek more information health problems associated with smoking	on ;?1	2	3	4	5	6	7
8.	How likely are you to quit smoking or not sta based on the information about anxiety?	art 1	2	3	4	5	6	7
9.	How likely do you think others would be to a smoking based on this information about anxiety?	quit I	2	3	4	5	6	7
Inf	formation Utility							
Pe	rceived Credibility							
10	The director of the CDC is a credible source for giving out information that pertains to health risks associated with smoking.) 1	2	3	4	5	6	7
11.	The director of the CDC does not have enoug information on the risks of smoking to make these claims. ®	gh 1	2	3	4	5	6	7
12.	. I trust the director of the CDC to tell the truth about smoking.	1	2	3	4	5	6	7
13.	I have confidence in the accuracy of the information about smoking and anxiety.	1	2	3	4	5	6	7
14.	I believe that cigarette smoking can cause any	kiety.	1	2	3 4	1 5	6	7
15.	I don't believe that cigarette smoking has an on college students. ®	effect 1	: 2	3	4	5	6	7
Rei	levance							
16.	The story on smoking and anxiety provides valuable information for college students.	. 1	2	3	4	5	6	7
17.	The smoking related anxiety story provided information that I find very useful.		2	3	4	5	6	7

18. The information on smoking and anxiety	' is						
personally relevant to me.	1	2	3	4	5	6	7
19. The story on smoking and anxiety is applies directly to me life.	1	2	3	4	5	6	7

New Information

20. If (before you read the report in U.S. News & World Report today) somebody had asked you to estimate the percent of college student smokers that have anxiety, what would your answer have been?

___%

		Not	at all				E	xtre	mely
21. How informative was the U.S. N Report report on smoking on	anxiety	<i>orld</i> ? 1	2	3	4	5	6		7
22. How well educated do you now the effects of smoking on any reading the article in U.S. Ne	feel abou kiety afte ws & W	ut er <i>forld</i>	_			_			_
Report?		1	2	3	4	5	6		7
23. To what extent do you think that you read in U.S. News & Wou to your knowledge about smo	the repo rld Repo oking an	ort ort add ad anx	ds tiety?1	2	3	4	5	6	7
Terrorism Story									
Population Estimates									
1. How many terrorist attacks occur	rred in 2	004?			_				
Magnitude		Not a	at all						
Extremely									
10. Do you feel personally threatene possible terrorist attacks?	d by 1	2	3	4	5	6	j	7	
11. In your judgment how great is th presented to you of terrorist	e threat								
attacks?	1	2	3	4	5	6		7	
12. Compared to other threats to you how hig a problem is the three	ır health,	,							
of terrorist attacks?	1	2	3	4	5	6)	7	

Likelihood

13	. Do you feel that a college student like you is likely to be affecte by terrorist attack?	t ed 1	2		3	4	5	6	7	,
14	. Do you feel that you personally are likely to be affected by terrorist attack?	1	2		3	4	5	6	7	,
15	. How often do you think about the likelihood of terrorist attacks?	e ?1	2		3	4	5	6	7	,
Im	mediacy									
16	. I think that I will be affected by to attacks smoking within	errorist								
	the next year.	1	2		3	4	5	6	7	
17	. I will be affected by terrorist attac	ck soon	.1	2	3	4	5	6	7	,
18	. I will not be affected by terrorist	attack			•		_		_	
	any time soon. ®	1	2		3	4	5	6	7	
Pe	rception of Problem Severity									
			Not	at al	11				Extr	emely
2.	How severe is the problem of terr for college students?	orist at	tacks	1	2	3	4	5	6	7
3.	How likely do you think it is that terrorist attacks will get worse	?	1	1	2	3	4	5	6	7
4.	How likely do you think it is that will become a real problem of	terroris n the M	st atta ISU	icks						
	campus?		1	l	2	3	4	5	6	7
5.	How likely do you think it is that might become a problem for y	terroris /ou?	st atta	icks I	2	3	4	5	6	7
Be	havioral Intentions									
6.	How likely is this information abo attacks to affect your behavior	out terre	orist 1		2	3	4	5	6	7

7.	How likely are you to seek more information terrorist attacks?	n on 1	2	3	4	5	6	7
8.	How likely are you to take preventative action on this information about terrorist attack	on ba: s?1	sed 2	3	4	5	6	7
9.	How likely do you think others would be to take preventative action on this informat about terrorist attacks?	take tion 1	2	3	4	5	6	7
Pe	rceived Credibility							
10.	. U.S. News & World Report is a credible sou for giving out information that pertains t terrorism.	rce to 1	2	3	4	5	6	7
11.	U.S. News & World Report does not have er information on terrorism to make these of	nough claims	. ®1	2	3	4 :	56	7
12.	I trust U.S. News & World Report to tell the about terrorism.	truth 1	2	3	4	5	6	7
13.	I have confidence in the accuracy of the information about terrorism.	1	2	3	4	5	6	7
14.	I believe that there are a number of terrorist attacks every year.	1	2	3	4	5	6	7
15.	I don't believe that there are terrorist attacks	s. ®1	2	3	4	5	6	7
Rei	levance							
16.	The story on terrorism provides valuable information for college students.	1	2	3	4	5	6	7
17.	The terrorism story provided information the I find very useful.	at 1	2	3	4	5	6	7
18.	The information on terrorist attacks is person relevant to me.	nally 1	2	3	4	5	6	7
19.	The story on terrorist attacks applies directly me life.	/ to 1	2	3	4	5	6	7

New Information

20. If (before you read the report in U.S. News & World Report today) somebody had asked you to estimate the number of terrorist attacks each year, what would your answer have been?

_____ attacks each year

	0 11	Not a	t all				Extr	emely
<i>Report</i> report on terrorist attac	ws & n cks?	oria 1	2	3	4	5	6	7
22. How well educated do you now for terrorist attacks after reading to in U.S. News & World Report	el abou he artic?	ut ele 1	2	3	4	5	6	7
23. To what extent do you think that to you read in U.S. News & Work to your knowledge about terror	the repo Id Repo prism?	ort o <i>rt</i> add 1	ls 2	2 3	4	5	6	7
Genetic Screening Story								
Population Estimates								
1. What percent of fetal abnormalities	es are d	etecte	d by g	genetic	screeni	ng?	%	, D
Magnitude		- 11					Erster	
19. Do you feel personally threatened the health risks associated wit	by	all 0	2		Ę		EXU 7	emery
fetal abnormalities?	1	2	3	4	5	6	1	
20. In your judgment how great is the presented to you by the risk of fetal abnormalities?	threat f 1	2	3	4	5	6	7	
21. Compared to other threats to your how big a problem is the risk associated with fetal abnormal	health, lities?1	2	3	4	5	6	7	
Likelihood								
22. Do you feel that a college student								

like you is likely to be affected

	by fetal abnormalities?	1	2	3	4	5	6	7	
23	. Do you feel that you personally are likely to contract a health problem associated with feta abnormalities?	1 1	2	3	4	5	6	7	
24	. How often do you think about th likelihood of having a health problem due to fetal abnorma	e alities?1	2	3	4	5	6	7	
Im	mediacy								
25	I think that I will be affected by abnormalities within the next	fetal t year.1		2	3	4	56	7	
26	. I will be affected by fetal abnorn soon.	nalities 1	2	3	4	5	6	7	
27	I will not be affected by fetal abr any time soon. ®	normalit 1	ies 2	3	4	5	6	7	
			Not	at all				Extra	emely
Pe	rception of Problem Severity								
2.	How severe is the problem of fea abnormalities among college	ar of feta student	al s? 1	2	3	4	5	6	7
3.	How likely do you think it is that abnormalities college student	t fears o ts will g	f fetal et wo	l rse?1	2	3 4	5	6	7
4.	How likely do you think it is that abnormalities will become a the MSU campus?	t fears o real pro	f fetal blem 1	l on 2	3	4	5	6	7
5.	How likely do you think it is that abnormalities might become	t fetal a proble	em foi	you?1	2	3	45	6	7
Be	havioral Intentions								
6.	How likely is this information ab screening to affect your beha	out gen vior?	etic 1	2	3	4 5	56		7
7.	How likely are you to seek more genetic screening?	informa	ation o 1	on 2	3	4	5	6	7

8.	How likely would you be to take use genet screening based on this information?	ic 1	2	3	4	5	6	7
9.	How likely do you think others would be to genetic screening based on this information	o use ation?	12	3	4	5	6	7
Pe	rceived Credibility							
10	. The National Institute of Health is a credib source for giving out information that pertains to genetic screening.	le 1	2	3	4	5	6	7
11.	. The National Institute of Health does not he enough information on genetic screenir make these claims. ®	ave ng to 1	2	3	4	5	6	7
12.	. I trust the National Institute of Health to tel truth about genetic screening.	ll the 1	2	3	4	5	6	7
13.	. I have confidence in the accuracy of the information about genetic screening.	1	2	3	4	5	6	7
14.	I believe that genetic screening can detect f abnormalities.	fetal 1	2	3	4	5	6	7
15.	I don't believe that genetic screening has an on abnormality detection. ®	n effec 1	ct 2	3	4	5	6	7
Rei	levance							
16.	The story on genetic screening provides valuable information for college studen	ts. 1	2	3	4	5	6	7
17.	The genetic screening story provided information that I find very useful.	1	2	3	4	5	6	7
18.	The information on genetic screening is personally relevant to me.	1	2	3	4	5	6	7
19.	The story on genetic screening applies directly to me life.	1	2	3	4	5	6	7

New information

20. If (before you read the report in U.S. News & World Report today) somebody had asked you to estimate the percent of fetal abnormalities detected by genetic screening, what would your answer have been?

	%							
21	How informative was the U.S. News &	Not at a <i>World</i>	11				Extre	emely
21	<i>Report</i> report on genetic screening?	1	2	3	4	5	6	7
22	. How well educated do you now feel abo genetic screening after reading the article in U.S. News & World Repor	out 17? 1	2	3	4	5	6	7
23	. To what extent do you think that the rep you read in U.S. News & World Rep to your knowledge about genetic sci	oort oort adds reening?1	2	3	4	5	6	7
De	emographics							
(P)	lease circle the item which best describes	you.)						
1.	I am (circle one): male female							
2.	I am currently a (circle one):							
	Freshman Sopho	omore		Junio	r	Se	nior	
3.	I consider myself to be (circle one):							
	Caucasian Africa	n-Americ	an	Asian	/Pacif	fic Isla	nder	
	Chicano-Latino Middl Other	e Eastern		Nativ	e Am	erican		
4.	I am years of age.							
5.	My current GPA is							
6.	My average household income is (circle	e one):						

- a. Below \$25,000
- b. \$25,000 \$50,000

- c. \$50,000 \$75,000
- d. \$75,000 \$100,000
- e. \$100,000 \$150,000
- f. \$150,000 \$200,000
- g. \$200,000 and above
- 7. While completing this experiment I believe that I have detected the purpose of the study.

Yes No

8. If yes, this purpose is:

®These questions were reverse coded.

Appendix E

Source	Mean	SD
Center for Disease Control	6.54	.75
American Cancer Society	6.54	.70
The Lansing State Journal	3.42	1.23
WebMD on the Internet	3.40	1.51
A doctor	5.96	1.08
Sufferer of Health issue	5.19	1.22
Parent	4.63	1.31
College student	2.98	1.12
Professor	4.03	1.28
Oprah Winfrey	3.48	1.54
Tom Cruise	1.56	.87
U.S. News & World Report	4.46	1.40
Jessica Simpson	1.33	.81
LeBron James	1.39	.78
Planned Parenthood	5.17	1.46
MSU President Simon	3.04	1.34
An unfamiliar adult	1.73	.89
National Institute of Health	6.1	1.11
Unidentified government official	2.67	1.25
Unidentified Source	1.60	1.05
Hilary Clinton	3.08	1.68
A tobacco company	2.15	1.55
Journal of Health	5.33	1.23
Surgeon General	6.00	1.01
Pharmaceutical Company	3.88	1.62
The National Enguirer	1.21	.72
Time	3.75	1.50
Newsweek	3.88	1.55
Journal of Public Health	5.23	1.11
Junk Mail/Spam	1.06	.24

Perceptions of Credibility – 1 = "not at all" 7 = "extremely"
Appendix F

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Question	Mean	SD
% of all STIs occur in people 25 or younger	64.92	19.65
% of sexually active people that will have contracted a STI by 24	47.55	20.61
Age rate of gonorrhea is highest - women	21.06	5.81
Age rate of gonorrhea is highest - men	20.21	4.08
How many million sexually active young adults acquire a STI	16.98	35.48
AIDS is one of the leading causes of death among people of what	26.56	6.29
About how many million women face unplanned pregnancy each	27 30	89 35
year	27.50	07.55
In women, 20-24, what % of pregnancies occur outside of marriage	50.27	22.70
% of women attending 4-year colleges have experienced pregnancy	23.39	17.10
% of smokers under 25 have anxiety problems associated with	40.00	25.08
cigarette smoking		
Smoking is related to lower academic achievement in _% of college student smokers	31.31	23.25
Maximum lung functioning level for college student smokers is _% lower than non-smokers	39.57	20.47
Average resting heart rate of young adult smokers is _ bpms faster than nonsmokers	16.83	15.79
% of college student smokers have increased cough and/or severe respiratory illnesses	45.48	29.03
How many deaths per year are associated with smoking	1380482	2 mil+
% of American's that are smokers	37.26	14.92
Smoking accelerates the aging process by years	9.20	3.84
# of college students, 18-24 die yearly from unintentional alcohol-	626755	2 mil+
# of students, 18-24 are unintentionally injured yearly while under the influence of alcohol	1220796	3 mil+
# of students, 18-24 assaulted each year by another student who has been drinking	1392002	5 mil+
# of students, 18-24 victims of alcohol-related sexual assault or date rape each year	707878	2 mil+
# of students develop an alcohol-related health problem	392212	1 mil+
% of adult women experience at least one physical assault by a partner	32.38	19.29
% of all annual violence against women perpetrated by intimate partners	60.06	26.70
Rate of reported violence by intimate partners is highest among women at what age	25.04	9.35
Smoking marijuana causes memory loss in what % of college student marijuana smokers	52.42	35.53
Smoking marijuana is related to a shortened attention span in what % of college students	49.55	33.54

Questions Measuring Respondent Knowledge of Base-Rates

Appendix G

Information Utility Items

Relevance – Final Items Used

Question	Factor
	Loading
The information on smoking and anxiety is personally relevant to me.	.918
The story on smoking and anxiety applies directly to me life.	.918

Question	Factor Loading
The story on smoking and anxiety provides valuable information for college students.	.587
The smoking related anxiety story provided information that I find very useful.	.583

Excluded Items

Perceived Credibility – Final Items Used

Question	Factor Loading
The Director of the CDC is a credible source for giving out information that pertains to health risks associated with smoking.	.823
The Director of the CDC does not have enough information on the risks of smoking to make these claims. $\$.594
I trust the Director of the CDC to tell the truth about smoking.	.900
I have confidence in the accuracy of the information about smoking and anxiety.	.832
I believe that cigarette smoking can cause anxiety.	.656

Excluded Items

Question	Factor Loading
I don't believe that cigarette smoking has an effect on college students. ®	146

New Information

Question	Factor Loading
How informative was the U.S. News & World Report on smoking on anxiety?	.905
How well educated do you now feel about the effects of smoking on anxiety after reading the article in U.S. News & World Report?	.922
To what extent do you think that the report you read in U.S. News & World Report adds to your knowledge about smoking and anxiety?	.920

Appendix H

Perception of Problem Severity – Items Used

Question	Factor
	Loading
How severe is the problem of smoking related anxiety among college students?	.872
How likely do you think it is that smoking related anxiety among college students will get worse?	.907
How likely do you think it is that smoking related anxiety will become a real problem on the MSU campus	.890

Excluded Item

Question	Factor Loading
How likely do you think it is that smoking related anxiety might become a problem for you?	.266

Appendix I

Question	Mean	SD	Factor Loading
How likely is this information about anxiety to affect your current smoking behavior?	1.56	1.25	.69
How likely are you to seek more information on health problems associated with smoking?	1.74	1.24	.60
How likely are you to quit smoking or not start based on the information about anxiety?	3.02	2.25	.64
How likely do you think others would be to quit smoking based on this information about anxiety?	2.49	1.19	.67

Appendix J

Issue Importance – Measures Factor Loadings

Variable	Question	Factor
Magnitude	Do you feel personally threatened by the health risks associated with smoking?	.84
	In your judgment how great is the threat presented to you by the risk of smoking?	.85
	Compared to other threats to your health, how big a problem is the risk associated with smoking?	.89
Likelihood	Do you feel that a college student like you is likely to be affected by smoking?	.74
	Do you feel that you personally are likely to contract a health problem associated with smoking?	.87
	How often do you think about the likelihood of having a health problem due to smoking?	.79
Immediacy	I think that I will be affected by health problems due to smoking within the next year.	.88
	I will be affected by smoking soon.	.91

Immediacy Item Excluded

Question	Factor
	Loading
I will not be affected by smoking any time soon. ®	.55

This question was reverse coded.

Appendix K

Information Utility – Measures Factor Loadings

Variable	Question	Factor
		Loading
Relevance	The story on smoking and anxiety provides valuable	.61
	information for college students.	
	The smoking related anxiety story provided information that I find very useful.	.82
	The information on smoking and anxiety is personally relevant to me.	.84
	The story on smoking and anxiety is applies directly to me life.	.80
Credibility	The director of the CDC is a credible source for giving out information that pertains to health risks associated	.81
	with smoking.	
	The director of the CDC does not have enough	.58
	information on the risks of smoking to make these	
	I trust the director of the CDC to tell the truth about	88
	smoking.	.00
	I have confidence in the accuracy of the information	.81
	L believe that eigenette smeking can cause anviety.	50
Now	I believe that eighter showing can cause anxiety.	
Information	Report report on smoking on anxiety?	.09
mormation	How well educated do you now feel about the effects of	.94
	smoking on anxiety after reading the article in U.S. News	
	& World Report?	
	To what extent do you think that the report you read in	.90
	U.S. News & World Report adds to your knowledge	
	about smoking and anxiety?	

Credibility Item Excluded

Question	Factor
	Loading
I don't believe that cigarette smoking has an effect on college students.	.18
®	

This question was reverse coded.

Appendix L

Perception of Problem Severity – Items Used

Question	Factor Loading
How severe is the problem of smoking related anxiety among college students?	.85
How likely do you think it is that smoking related anxiety among college students will get worse?	.92
How likely do you think it is that smoking related anxiety will become a real problem on the MSU campus	.88

Excluded Item

Question	Factor Loading
How likely do you think it is that smoking related anxiety might become a problem for you?	.48

Appendix M

Behavior Intentions Scale

Question	Factor Loading
How likely is this information about anxiety to affect your current smoking behavior?	.79
How likely are you to seek more information on health problems associated with smoking?	.83
How likely do you think others would be to quit smoking based on this information about anxiety?	.78

Behavior Intention Excluded Item

Question	Factor Loading
How likely are you to quit smoking or not start based on the information about anxiety?	.54

References

- Adler, J.E. (1997). If the base rate fallacy is a fallacy, does it matter how frequently it is committed? *Behavioral and Brain Sciences*, 20, 4, 774-776.
- Afifi, W.A., Dillow, M.R., & Morse, C. (2004). Examining predictors and consequences of information seeking in close relationships. *Personal Relationships*, 11, 4, 429-449.
- Atkin, C.K. (1985). Information utility and selective exposure to entertainment media. In
 D. Zillmann & J. Bryant (Eds.) Selective Exposure to Communication. (pp. 63-91). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Atkin, C. K. (2001). Theory and principles of media health campaigns. In R. Rice & C.
- Atkin (Eds.) *Public Communication Campaigns*. (pp. 49-68). Thousand Oaks: Sage Publications, Inc.
- Aust, C.F. & Zillmann, D. (1996). Effects of victim exemplification in television news on viewer perception of social issues. Journalism and Mass Communication Quarterly, 73, 4, 787-803.
- Bar-Hillel, M. (1980). The base-rate fallacy in probability judgements, Acta Psychologica, 44, 211-233.
- Bar-Hillel, M. & Fischhoff, B. (1981). When do base rates affect predictions? Journal of Personality and Social Psychology, 41, 671-680.
- Berger, C.R. (2000). Quantitative depictions of threatening phenomena in news reports: The scary world of frequency data. *Human Communication Research*, 26, 1, 27-52.
- Berger, C.R. (2002). Base-rate bingo: ephemeral effects of population data on cognitive responses, apprehension, and perceived risk. *Communication Research*, 29, 2, 99-125.
- Berlyne, D. E. (1954). A theory of human curiosity. British Journal of Psychology, 45, 180-191.
- Boster, F.J., Cameron, K.A., Campo, S., Liu, W., Lillie, J.K., Baker, E.M., & Yun, K.A. (2000). The persuasive effects of statistical evidence in the presence of exemplars. *Communication Studies*, 51, 3, 296.

- Brashers, D.E., Goldsmith, D.J, & Hsieh, E. (2002). Information seeking and avoiding in health contexts. *Human Communication Research*, 28, 2, 258-271.
- Brosius, H.B. (2003). Exemplars in the News: A theory of the effects of political communication. In J. Bryant, D. Roskos-Ewoldsen, & J. Cantor (Eds.) Communication and Emotion: Essays in honor of Dolf Zillmann. (pp. 179-196). Mahwah, NJ: Lawrence Erlbaum.
- Buda, R. & Charnov, B.H. (2003). Message processing in realistic recruitment practices. Journal of Managerial Issues, 15, 3, 302-316.
- Brosius, H.B. & Bathelt, A. (1994). The utility of exemplars in persuasive communications. *Communication Research*, 21, 1, 48-79.
- Burke, A., Heuer, F., & Reisberg, D. (1992). Remembering emotional events. *Memory & Cognition, 20*, 3, 277-290.
- Castelli, L, Zogmaister, C., Smith, E.R., & Arcuri, L. (2004). On the automatic evaluation of social exemplars. *Journal of Personality and Social Psychology*, 86, 3, 373-388.
- Center for Disease Control (December, 2005) *Tobacco Information and Prevention Source*. Retrieved August 10, 2006, from http://www.cdc.gov/tobacco/factsheets/AdultCigaretteSmoking_FactSheet.htm
- Daschmann, G. (2000). Vox pop & polls: The impact of poll results and voter statements in the media on the perception of a climate of opinion. *International Journal of Public Opinion Research*, 12, 2, 160-181.
- Festinger, L. (1957). A Theory of Cognitive Dissonance. Stanford: Stanford University Press.
- Freedman, J.L. (1965). Confidence, utility, and selective exposure: A partial replication. Journal of Personality & Social Psychology, 2, 5, 778-780.
- Gibson, R. & Zillmann, D. (1994). Exaggerated versus representative exemplification in news reports. *Communication Research*, 21, 5, 603-625.
- Gibson, R. & Zillmann, D. (1998). Effects of citation in exemplifying testimony on issue perception. Journalism & Mass Communication Quarterly, 75, 1, 167-176.
- Gilbert, D.T., & Jones, E.E. (1986). Exemplification: The self-presentation of moral character. *Journal of Personality*, 54, 593-615.

- Glik, D., Berkanovic, E., Stone, K., Ibarra, L., Jones, M., Rosen, B., Schreibman, M., Gordon, L., Minassian, L., & Richards, D. (1998). Health education goes Hollywood: Working with prime-time and daytime entertainment television for immunization promotion. *Journal of Health Communication*, 3, 263-282.
- Goodie, A.S. (1997). Direct experience is ecologically valid. *Behavioral and Brain* Sciences, 20, 4, 777-779.
- Gunther, A.C. & Christen, C.T. (1999). Effects of news slant and base rate information on perceived public opinion. *Journalism and Mass Communication Quarterly*, 76, 2, 277-292.
- Hayes-Roth, B. & Hayes-Roth, F. (1977). Concept learning and the recognition and classification of exemplars. *Journal of Verbal Learning and Verbal Behavior*, 16, 321-338.
- Heuer, F. & Reisberg, D. (1990). Vivid memories of emotional events: The accuracy of remembered minutiae. *Memory & Cognition*, 18, 5, 496-506.
- Huh, J., DeLorme, D.E., & Reid, L.N. (2004). The information utility of DTC prescription drug advertising. *Journalism and Mass Communication Quarterly*, 81, 4, 788-807.
- Kline, K. N. (2003). Popular media and health: Images, effects, and institutions. In T. L. Thompson & A. M. Dorsey & K. I. Miller & R. Parrott (Eds.), Handbook of Health Communication (pp. 557-581). Mahwah, NJ: Lawrence Erlbaum Associates.
- Knobloch, S., Carpentier, F.D., & Zillmann, D. (2003). Effects of salience dimensions of informational utility on selective exposure to online news. *Journalism and Mass Communication Quarterly*, 80, 1, 91-108.
- Koehler, J.J. (1996). The base rate fallacy reconsidered: descriptive, normative, and methodological challenges. *Behavioral and Brain Sciences, 19*, 1, 1-54.
- Kreuter, M.W., Bull, F.C., Clark, E.M., & Oswald, D.L. (1999). Understanding how people process health information: A comparison of tailored and nontailored weight-loss materials. *Health Psychology*, 18, 5, 487-494.
- Krupat, E., Smith, R.H., Leach, C.W., & Jackson, M.A. (1997). Generalizing from atypical cases: How general a tendency? *Basic and Applied Social Psychology*, 19, 3, 345-361.
- Locke, E.A. (1986). Generalizing from laboratory to field settings: Research findings from industrial-organizational psychology, organizational behavior, and human resource management. Lexington, MA: Lexington Books.

- McGuire, W. J. (2001). Input and output variables currently promising for constructing persuasive communications. In R. Rice & C. Atkin (Eds.) *Public Communication Campaigns*. (pp. 22-48). Thousand Oaks: Sage Publications, Inc.
- Millar, M.G. & Millar, K.U. (2000). Promoting safe driving behaviors: The influence of message framing and issue involvement. *Journal of Applied Social Psychology*, 30, 4, 853-866.
- Moenaert, R.K. & Souder, W.E. (1996). Context and antecedents of information utility at the R&D/marketing interface. *Management Science*, 42, 11, 1592-1611.
- National Institute on Drug Abuse (2001). *NIDA Notes*. Retrieved August 10, 2006, from <u>http://www.drugabuse.gov/NIDA_Notes/NNVol16N1/Smoking.html</u>
- Neighbors, C., Palmer, R. S., Larimer, M. E. (2004). Interest and participation in a college student alcohol intervention study as a function of typical drinking. *Journal of Studies on Alcohol, 65,* 6, 736-741.
- Newhagen, J.E. & Reeves, B. (1992). The evening's bad news: Effects of compelling negative television news images on memory. *Journal of Communication*, 42, 2, 25-41.
- Perloff, R.M. (2001). Persuading People to Have Safer Sex. Mahwah, NJ: Lawrence Erlbaum.
- Perry, S.D. & Gonzenbach, W.J. (1997). Effects of news exemplification extended: considerations of controversiality and perceived future opinion. *Journal of Broadcasting & Electronic Media*, 41, 2, 229-245.
- Perry, S.D. & Gonzenbach, W.J. (2000). Inhibiting speech through exemplar distribution: Can we predict a spiral of silence? *Journal of Broadcasting & Electronic Media*, 44, 2, 268.
- Petty, R.E. & Cacioppo, J.T. (1986) Communication and Persuasion: Central and peripheral routes to attitude. New York: Springer-Verlag.
- Rodgers, L. (2003) Images of Islam: Exemplification as elegance in the post-9/11 works of Thomas Friedman. A paper presented at the annual Association for Education in Journalism and Mass Communication conference.
- Rosenstock, I. M. (1990). The health belief model: Explaining health behavior through expectancies. In K. Glanz, F. M. Lewis, & B. K. Rimer (Eds.), *Health behavior* and health education: Theory, research, and practice (pp. 39-62). San Francisco: Jossey-Bass.

- Rothbart, M., Fulero, S., Jensen, C., Howard, J., & Birrell, P. (1978). From individual to group impressions: Availability heuristics in stereotype formation. *Journal of Experimental Social Psychology*, 14, 237-255.
- Rothman, A.J., & Salovey, P. (1997). Shaping perceptions to motivate healthy behavior: The role of message framing. *Psychological Bulletin*, 121, 1, 3-19.
- Rothman, A.J., & Schwarz, N. (1998). Constructing perceptions of vulnerability: personal relevance and the use of experiential information in health judgments. *Personality & Social Psychology Bulletin, 24*, 10, 1053-1065.
- Salmon, C. & Atkin, C.K. (2003). Using media campaigns in health promotion. In T. Thompson, A. Dorsey, K. Miller & R. Parrott (Eds.) Handbook of Health Communication. Mahway, NJ: Lawrence Erlbaum.
- Scheider, M.C. (2001). Deterrence and the base rate fallacy: An examination of perceived certainty. Justice Quarterly: Jq, 18, 1, 63-86.
- Sears, D. O., & Freedman, J. L. (1967). Selective exposure to information: A critical review. *Public Opinion Quarterly*, 31, 2, 194-213.
- Sharf, B. F., & Freimuth, V. S. (1993). The construction of illness on entertainment television. *Health Communication*, 5(3), 141-160.
- Sherman, J.W. (1996). Development and mental representation of stereotypes. Journal of Personality and Social Psychology, 70, 6, 1126-1142.
- Sia, T.L., Lord, C.G., Blessum, K.A., Thomas, J.C., & Lepper, M.R. (1999). Activation of exemplars in the process of assessing social category attitudes. *Journal of Personality and Social Psychology*, 76, 4, 517-518.
- Singhal, A., & Rogers, E. M. (1999). Entertainment-education: A communication strategy for social change. Mahwah, NJ: Lawrence Erlbaum Associates. Skumanich, S.A. & Kintsfather, D.P. (1996). Promoting the organ donor card: a causal model of persuasion effects. Social Science & Medicine, 43, 3, 401-409.
- Thayer, H.S. (1968). *Meaning and action: A critical history of pragmatism*. Indianapolis, IN: Bobbs-Merrill.
- Thompson, W.N. (1975). *The Process of Persuasion: Principles and Readings*. New York: Harper & Row.
- Trenholm, S. (1989). Persuasion and Social Influence. Englewood Cliffs, NJ: Prentice Hall.

- Wilton, P.C. & Myers, J.G. (1986). Task, expectancy, and information assessment effects in information utilization processes. *Journal of Consumer Research*, 12, 4, 469-486.
- Witte, K. (1992). Putting the fear back into fear appeals: The extended parallel process model. *Communication Monographs*, 59, 329-349.
- Witte, K., & Morrison, K. (2000). Examining the influence of trait anxiety/repressionsensitization on individuals' reactions to fear appeals. Western Journal of Communication, 64, 1, 1-28.
- Zillmann, D. (1999). Exemplification theory: Judging the whole by some of its parts. *Media Psychology*, 1, 69-94.
- Zillmann, D. (2000). Mood management in the context of selective exposure theory. In M. Roloff (Ed.), *Communication Yearkbook 23* (pp. 103-123). Thousand Oaks: Sage Publications, Inc.
- Zillmann, D. (2002). Exemplification theory of media influence. In J. Bryant & D.
 Zillmann (Eds.), *Media effects: Advances in theory and research* (pp. 19-41).
 Mahwah, NJ: Lawrence Erlbaum Associates.
- Zillmann, D. & Brosius, H.B. (2000). Exemplification in Communication: The influence of case reports on the perception of issues. Mahwah, NJ: Lawrence Erlbaum Associates.
- Zillmann, D., Gibson, R., Sundar, S.S., & Perkins, J.W. (1996). Effects of exemplification in news reports on the perception of social issues. *Journalism and Mass Communication Quarterly*, 73, 2, 427.
- Zillmann, D., Perkins, J.W., & Sundar, S.S. (1992). Impression formation effects of printed news varying in descriptive precision and exemplification. *Medienpsychologie*, 4, 168-185.

