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## Doctoral Symposiums

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# Target Population and Behavior Change: Hypertextual Discourse Analysis of Prevention Information on HIV/AIDS Websites

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### 1. INTRODUCTION

HIV/AIDS has been around for more than 20 years, during which the lives of over 20 million people have been claimed in the world. Since there are still no effective cures or vaccines available, prevention is the key to promote behavior change and put this epidemic under control. What is essential in prevention efforts is to inform people of information on HIV/AIDS, especially risk behaviors (Goldstein, Usdin, Scheepers & Japhet, 2005; Kalichman & Belcher, 1997). What information is communicated is important since it should be varied according to the stages of behavior change the target populations are in. However, there is a controversy in health communication about whether health information should be targeted to underserved populations or the larger population. The above two issues of information content and target populations are not restricted to interpersonal and traditional mass media communication. It also extends to the Internet due to the ever increasing popularity of e-health among not only healthcare providers but also consumers, especially those who seek for HIV/AIDS prevention information.

The purpose of this study is to examine the target population and stages of behavior change being addressed in prevention information on HIV/AIDS websites by means of hypertextual discourse analysis. Organizational properties and interests of the website sponsors/designers as well as health policies in public health regarding HIV/AIDS will also be examined to find out their influences on the prevention information provided. The current study is formative in the sense that it is the basis for future empirical studies with the users and the sponsors/designers of those HIV/AIDS websites. The ultimate research goal is to provide insights or concrete suggestions to the sponsors/designers of HIV/AIDS websites as well as policy makers in public health on how to improve the prevention information and public policies in a way that could do more good to the users and to the public health.

### 2. RESEARCH QUESTIONS

- What populations are targeted in HIV/AIDS prevention information on the selected websites?
- What stages of behavior change does the prevention information address?
- What impacts do website sponsors/designers' interests and health policies in public health have on the findings of the first two questions?

### 3. LITERATURE REVIEW

#### 3.1 Health Belief Model and Stages of Change Model

The ultimate purpose and function of health communication is to promote behavior change by means of conveying relevant information to the target populations. In order to design the most effective information, there are two aspects needed to be considered. One is what factors or variables can influence behavior change in general. The other is how to tailor messages to different populations in specific. Health Belief Model (HBM) and Stages of Change Model (SOC) are theories dealing with those two aspects respectively.

HBM identifies five factors that could influence preventive health behaviors. They are: perceived barriers to performing the recommended response; perceived benefits of performing the recommended response; perceived susceptibility to a health threat; perceived severity of a health threat; and cues to action. When people try to make decisions whether to take suggested actions with regards to health, they evaluate the severity of the threat and their risks, and weigh potential benefits against barriers/costs. Cues of action act as prompts which could increase the perceived degrees of threats and risks thus encourage people to think and act (Rosenstock, 1974; Witte, 2001).

The factors identified in HBM are not necessarily addressed all together and with the same level of emphasis in the health messages. It is important to tailor the messages according to individual differences, one of which is the stages of change individuals are in. According to SOC, there are five stages: precontemplation, contemplation, preparation, action and maintenance (DeJong, Wolf & Austin, 2001), ranging from complete unawareness of a health problem at one end to relapse into old behaviors after performance of new behaviors for some time at the other (Maibach & Cotton, 1995; Witte, 2001). People in different stages have different behavioral characteristics, therefore need different information to help them move from one stages to the next (Prochaska et al., 1994; Weinstein, 1988). For example, to move them from precontemplation to contemplation stage, what needs to be focused on is information on the health threat, including susceptibility and severity, and the recommended response, so as to increase their awareness (DeJong, Wolf & Austin, 2001; Witte, 2001).

#### 3.2 Target Populations: Universal vs. Selected Intervention

There is a debate going on concerning whether the target populations should be groups of at-risk people differentiated by their identities, or the general public without drawing any line of identity. By borrowing the two terms in *World report on violence and health*, this controversy can be called a dilemma between "universal intervention" and "selected intervention" (Krug et al, 2002).

On one hand, if only the underserved populations or populations at risk are targeted in health communication, they can easily perceive the relevance and give the information more thoughts. However, such communication efforts only deal with inequalities in healthcare without addressing the more fundamental structural factors which are the roots of those inequalities. On the other hand, if the large segments of the population is the target, even small changes in behaviors could possibly result in big transformations in the overall health conditions of the general public. It is also more cost-effective if limited resources could be invested to reach the maximum amount of people. However, individuals or small groups' special needs are ignored (Guttman, 1997).

If this debate is positioned in the HIV/AIDS scenario, there are more social and ethical implications. There has always been a stigmatized label attached to it (Herek & Glunt, 1989). Whatever the label is, it is generally perceived as a disease of "the other", who get infected due to behaviors outside of the mainstream beliefs

held by normative citizens and spread the deadly disease to the innocent, thus pose a significant threat to the general public (Watney, 1987).

Therefore, if those at-risk populations are targeted in HIV/AIDS prevention communication by making their identities salient, the “enacted stigma” by the public would be mentally experienced by them as the “felt stigma” (Green, 1995). They may feel offended and then are resistant to such communication efforts. What’s more, the existing negative attitudes among the public towards them would be even worse, which in turn continues to do damage to their self-esteem and self-efficacy (Green, 1995), two important factors in initiating behavior change. Another fault with this strategy is that such communication sends the wrong message to those non-target populations that they are immune to HIV/AIDS since their identities are not included in the prevention information. As a result, they may not even bother to read or listen to the information. Before long, HIV/AIDS crossed the line of sex orientation, race and gender, spreading to virtually every population and putting almost everybody at risk (Kinsella, 1989). In short, the goal of HIV/AIDS prevention communication could never be achieved if both the target and non-target populations ignore whatever information that is conveyed.

Since HIV/AIDS prevention should practically be everybody’s concern, would it be better to target HIV/AIDS prevention information to the larger population without drawing any stigmatized line? However, if “everyone” is stated to be at risk in prevention information, everybody would tend to think the information is targeted to others instead of him/herself. What is more, those who are really at risk will neither be aware of their particular risk nor have the motivation to change behaviors (DeJong, Wolf & Austin, 2001). In fact, there are truly populations who are at much greater risk. Statistics show that HIV/AIDS infections are in fact not evenly distributed among different populations in the U.S. with minority people and women being disproportionately infected (CDC, 2003; 2005; US Census Bureau). Other at-risk groups are characterized not just by identities but also by behaviors, such as IDUs (Injecting Drug Users), sex workers, and homosexuals

Although health communication by means of traditional media is not unimportant, the focus of this study is online communication. Considering that more and more people are relying on the Internet for health information, especially those interested in such stigmatized diseases as HIV/AIDS, it is worthwhile to extend the exploration of this issue to the cyberspace.

### 3.3 eHealth

eHealth is an area where information and communication technologies (ICTs) are applied in medicine and public health, by either healthcare providers to improve their service, or by healthcare consumers to better their health conditions (Eng, 2002). On the healthcare consumers’ side, the Internet is perhaps the most popular tool among all the ICTs.

According to Internet World Stats (2004), 68.6% of the U.S. population--more than 201 million individuals, has access to the Internet now. The percentage of adult Internet users in the U.S. who went to the Internet for healthcare information was 80%, a total of 93 million (Fox & Fallows, 2003). The unique features of the Internet, especially the privacy, anonymity and confidentiality it can provide, are particularly attracted to users who are in need of HIV/AIDS information, who want to be empowered, but don’t want to be judged and scrutinized (Cotton & Gupta, 2004). In fact, HIV/AIDS patients are among the healthcare consumers with chronic medical conditions who increasingly take the Internet as a major source of information (Kalichman, Weinhardt, Benetsch & Cherry, 2002).

### 3.4 Political Economy of Media

What populations are targeted and what information is provided to them in HIV/AIDS prevention communication on media are not determined in vacuum. Decisions are always made in certain social context. According to the theory of political economy of media, media are under the control of the economic and political interests of those powerful, upon whom the operations of media have to depend (Jakubowicz & Goodall, 1994). Therefore, the information provided on media reflects what the dominant groups want to say or write, not necessarily what needs to be heard or read (Teo, 2000).

The Internet as a new form of medium can not escape from the influences of the dominant groups who can easily extend their power to this new realm (Hall et al, 1978; Hall, 1982). In other words, the power dynamics in online information is, to some degree, reproducing that in the traditional media (Brock, 2005). For HIV/AIDS prevention information online, it is justifiable to believe that the reasons

for its particular design could be explained at least partially by the dominant entities--namely the sponsors/designers and policy makers in public health.

## 4. METHOD

Only HIV/AIDS prevention information on websites will be examined since websites are considered to be more comprehensive, formal, organized and thus credible than other online formats. The websites collected will be categorized according their URL domain names, including .com, .edu, .gov, .net, and .org., which stand for different ownership of websites (Mohammed & Thombre, 2005). Cross-sectional and within-sectional comparisons can be made so as to better reveal the relationships between the nature of the sponsors/designers and the information content provided by them. *Google* advanced search will be used to collect the websites whose titles have either HIV or AIDS or both. The top 5 hits in each category of domain names will be selected since rankings can represent the level of popularity and credibility to a certain degree. Besides, the websites should be oriented towards not just one population and have a decent amount of prevention information. They will also be checked whether they are outdated and links are working, etc. The selection will be a purposeful process in terms of what and how many websites will be collected, in order to ensure that the cases “offer both typicality and variety” (Pollach, 2003, p280), and only data that can serve research goals and contribute to the solving of research questions be selected (Mushi, 2004). Sampling will be not used due to the impossibility of knowing the population size and having a complete list of all the relevant websites (Mohammed & Thombre, 2005). Other reliable search engines, such as *Yahoo!* and *MSN*, could also be used to double check the popularity and credibility of the selected websites since they have different ranking algorithms. Adjustment to the data set may be made if necessary.

There are two types of data on prevention information that are needed to be collected on selected websites: hypertext and organizational information of the website sponsors/designers. There are two reasons for using the hypertext as the approach to examine the research questions, instead of the information content linked to by the hypertext. Firstly, hypertext is one of the defining characteristics (Rafaeli & Newhagen, 1996) of the web, while the information contents can be, and often times really are, just the online versions of those from non-electronic media. Secondly, hypertext can be the cue of the topics of the information contents, while structure of hypertext can be the cue of the importance of the contents attached by the sponsors/designers which reflects their interests. Hypertext will be structured in the form of table composed of nodes and links to depict an overview of the website. The homepages will be the starting point and nodes will be followed step by step from there from the higher level of links to the lower level. For organizational information of the website sponsors, usually they can be found on the homepage under such tabs as “about us”. The information linked to by those tabs often includes histories, missions, goals, target audience, etc.

Discourse analysis will be used for both the hypertext and the organizational information based on the three functions of texts (Halliday & Hasan, 1976). The topics of prevention information represented by the texts of linked nodes will be analyzed and classified and which stages of behavior they address will be identified. The organizational information will be viewed beyond what is stated by the website sponsors/designers themselves. Rather, what is unspoken and what is assumed will be the focused on (Thompson, 2004). Self-reference and personal address will also be analyzed, i.e. which perspective is used--the more subjective first-person or the more neutral third-person; and which stakeholders are emphasized (Pollach, 2003). In order to relate the interests of website sponsors/designers to the way prevention information is designed, what will be examined are the existence of linked nodes on the homepage and the existence of separate menus for certain topics, since they can indicate what priorities website sponsors/designers assign to certain information and audiences (Killoran, 2005). In addition, how linked nodes are laid out on web pages is also an important index, thus will be subjects of analysis too.

After the analysis of each selected website, cross-sectional and within-sectional comparisons will be made to see their similarities and differences.

## 5. EXPECTED OUTCOMES

It is expected that the selected websites would be largely uniform in the content of their prevention information and in the populations they target. In other words, little difference could be found among the websites sponsored by different orga-

nizational entities, whether it is commercial, educational or governmental. There is a dominant voice in the discourses on the web concerning what prevention information should be provided and what populations should be targeted.

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# Virtual Project Risk vs. Traditional Project Risk in Software Projects

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## INTRODUCTION

This research is designed to distinguish virtual and traditional project risks and specifically to identify the critical risks in virtual software projects. The resulting list of critical risks will provide guidance on managing risks for project leaders working in a virtual team environment. Three areas are important to the discussion of virtual software project risk: virtual software project teams, project failure and project risk.

Virtual software project teams are a growing phenomenon. They are called virtual because team members are not co-located. "Virtual teams are groups of geographically, organizationally and/or time dispersed workers brought together by information and telecommunication technologies to accomplish one or more organizational tasks (Powell *et al.*, 2004)". Many driving forces are causing increased dependence on these teams, including offshoring, outsourcing, reduced business travel due to security concerns, and improvements in collaborative tools. A task force study on globalization and offshoring indicated information technology (IT) has essentially become "a global field, business, and industry" (ACM, 2006). Therefore, there is a need to study how the unique aspects of virtual projects relate to their success.

The Standish Group over the years has measured the incidence of software project failure in corporations with their well known CHAOS reports. They conduct surveys with industry practitioners in the United States and Europe. The 2000 CHAOS report indicated 23% of projects failed while 49% were challenged (Standish Group International, 2001). The 2004 CHAOS report for the third quarter indicated 18% of projects failed and 53% of projects were challenged (Standish Group International, 2004). A one percent decrease in the number of troubled projects shows little improvement over a four year period. These numbers reinforce the need to investigate causes of project failure and identify the most critical project risks. This need is not just for projects in general, but particularly for the rapidly growing case of virtual projects.

*Critical* project risks are those factors that will have the greatest impact on the success or failure of a project. Boehm indicates critical risks should be the main focus of a project manager, instead of the entire pool of identified risks (Boehm, 1991). Some risk management advocates are proponents of identifying and analyzing "threats to success", which allows appropriate actions to be taken to "reduce the chance of failure" (Wallace *et al.*, 2004).

## RESEARCH PROBLEM

The research problem is:

*What are the significant differences between risks in virtual and traditional software development projects? Which of these risks are critical to successful project completion of virtual software projects?*

Prior research on project risk has been performed predominately on different types of traditional software projects. A review of prior research, a series of interviews and focus groups, and my own experiences as a professional project manager, have led me to the following hypotheses:

- Some risk factors in virtual and traditional software projects are similar
- Critical risk factors in virtual software projects are different from critical risk factors in traditional software projects.
- Resource issues are critical to virtual software projects.  
Reasoning: Resource issues have an impact on project success (Beise, 2004; Fairley, 1994; PMI, 2004) and are likely to be intensified when resources are not co-located
- Communication issues are critical on virtual software projects  
Reasoning: Virtual projects are often dependent on other, less common, forms of communication because traditional face-to-face communication is usually not an option. (Igbaria *et al.*, 1999)
- Virtual team dynamics are different from traditional team dynamics  
Reasoning: Virtual teams are more likely to be diversified since team members are not co-located and they may never meet face-to-face (Ewusi-Mensah, 2003; Powell *et al.*, 2004)

## OBJECTIVES

The main objective of this study is to identify a set of comprehensive yet concise *critical* risk factors for virtual software projects, by conducting a survey of industry practitioners. The list is essential to developing effective risk management for virtual software projects. Risk management, "a collection of methods aimed at minimizing or reducing the effects of project failure" (Addison & Vallabh, 2002), can then be used by organizations to increase the likelihood of project success. Thus, the importance of this study lies in its ability to enable virtual software project managers to avoid major risks and achieve greater rates of project success. The 2004 CHAOS report indicated companies in the United States and Europe spent \$255 billion on software projects while the cost of failed projects was \$55 billion (SoftwareMag.com, 2004).

## LITERATURE REVIEW

Several researchers have identified the important risks in traditional software projects. Boehm, conducted a survey of experienced IT project managers who worked with him at TRW in the early 1990's. The result was his "Top ten software risk items" which is contained in the first column in Table 1 (Boehm, 1991). One of the limitations of this study was the sample which consisted of a small number of project managers from the same company.

Barki, Rivard *et al.* sent their 144 item questionnaire to the largest 100 companies across a variety of industries in Quebec and surveyed 120 software development projects. The result was a list of software project risks grouped in five categories of risk factors/risk dimensions: technological newness, application size, lack of expertise, application complexity and organizational environment. The purpose

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