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The coverage of AZT and its potential role in the social amplification of risk in English-language newspapers of South Africa

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The coverage of AZT and its potential role in the social amplification of risk in English-language newspapers of South Africa

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ABSTRACTS

This study examined the coverage of the anti-AIDS drug, AZT, in two major South African English-language newspapers to evaluate the media's role in the social amplification of risk regarding AZT. In 1999, President Mbeki claimed that AZT was toxic, and consequently the government resisted a timely treatment and prevention program using AZT. Newspaper articles were collected surrounding President Mbeki's six addresses regarding AZT from 1999 to 2001. The coverage was assessed by five variables: frequency, prominence, the number and types of sources, sensational words, and tone across three units of measurement: overall average, the issue cycle time frame, and the risk event time frame.

Findings revealed that the media may have served to amplify the risk of AZT based on overall averages due to frequency and sources, while the other variables of prominence, sensationalism and tone may have lessened the extent of such amplification. However, this study emphasizes the importance of looking at coverage in multiple time frames. The results of evaluating the issue cycle time frame are similar to the overall measurement except for less emphasis on sensational words, but the results of evaluating the risk event time frame suggest a much greater amplification effect in all variables except for tone. There were no meaningful differences in coverage between two newspapers that are representative of white- and black -dominated readerships, suggesting that Mbeki's anti-west scapegoating rhetoric was not effective at least within newspaper coverage.

KEYWORDS: HIV/AIDS, AZT, social amplification, risk communication, media coverage, President Mbeki

CHAPTER 1. INTRODUCTION AND STATEMENT OF THE PROBLEM

In 1999, South African President Thabo Mbeki claimed that AZT, a drug prescribed to treat and prevent mother-to-child HIV infection, posed a health risk, and consequently the government was resistant to implement prevention and treatment programs using the drug. Mbeki's claim, promoted by a small number of dissident AIDS scientists, stated that AZT actually caused AIDS rather than preventing or treating it. In justification of his dissident views, Mbeki extended the debate from the science of AZT to political ideologies and racial conflicts. In 2000, he linked poverty to the epidemic of AIDS and made an analogy between "the west" and the previous apartheid government, saying "We are now being asked to do precisely the same thing that the racist apartheid tyranny we opposed did, because, it is said, there exits a scientific view that is supported by the majority, against which dissent is prohibited" (Youde, 2005, p. 430).

Suddenly, AZT became a new and possibly catastrophic risk, and was associated with political identity rather than therapeutics. Scientists criticized Mbeki severely for exaggerating certain hazards of AZT and enhancing uncertainties and conflicts within HIV/AIDS. In July 2000, over 5000 scientists signed the Durban Declaration, which upheld that "HIV causes AIDS." As a result of the postponement of the provision of AZT, Essex, Lee, Gruskin, Seage, and Chigwedere (2008) concluded that more than 330,000 lives were lost and 35,000 babies born HIV-positive between 2000 and 2005 in South Africa. Mbeki's statements about AZT served as a specific risk events related to AZT and resulted in serious

social consequences. Therefore it becomes important to understand how risk events are amplified by society to produce such effects.

According to the social amplification of risk framework (SARF), media play an important role in the amplification (increase) or attenuation (decrease) in the social process of risk perception. Risk events are transformed through a variety of psychological, social, institutional or cultural processes in ways that intensify or attenuate perceptions of risk and its manageability. Media coverage can account for the "ripples" of consequences that may spread far beyond the initial impact, leading to impacts such as market loss, demands for regulatory constraint, stigmatization and consumer avoidance of a product or related products (Kasperson, Pidgeon and Slovic, 2003).

Many studies claim that media serve to amplify risks when they make the issues prominent, salient and sensationalized (Slovic, 1987; Friedman, Gorney, and Egolf, 1987; Nunez and Gravoso, 2007). The purpose of the study is to examine how the South African media covered AZT during the time frame that president Mbeki and his government emphasized the toxicity of AZT and dissident views on HIV/AIDS, and whether the media may have served to amplify or attenuate the risk of AZT.

While risk researchers have used the SARF to evaluate health intervention strategies on western diseases, such as the Bovine Spongiform Encephalopathy (BSE) in UK and the West Nile virus in U.S. (Rowe, Frewer, and Sjoberg, 2000; Covello, Perters, Wojtecki, and Hyde, 2001; Roche and Muskavitch, 2003), few studies have applied social amplification of risk to vaccines and other therapeutics. Likewise, communication studies have paid less attention to outbreaks outside of western countries. For example, while sub-Saharan Africa remains the region most heavily affected by HIV worldwide, accounting for two-thirds of all people

living with HIV and three quarters of AIDS death in 2007 (UNAIDS, 2008), only a few studies have analyzed HIV/AIDS in sub-Saharan Africa (Pratt, Ha & Pratt, 2002; Traqina, 2007), and most HIV/AIDS studies still focus on how the west is dealing with the disease (Rogers, Dearing & Chang, 1991; Bardhan, 2001).

South Africa has the largest population of HIV-infected people in the world, and is also unique in its history of politicizing and equating the disease with racial conflicts. In the 1980s, it was alleged that the apartheid government attempted to deliberately spread AIDS to wipe out the black population (Youde, 2005). In late 2000, the provision of AZT became an issue of mayoral campaign in Western Cape. The Democratic Alliance (DA) claimed it would offer free ARV drugs to all HIV-positive pregnant women and rape survivors living in areas under the jurisdiction of its councils. In contrast, the spokeperson of the African National Congress (ANC) party, Smuts Ngonyama, who supported Mbeki's dissident views about AZT, described the initiative as "reminiscent of the biological warfare of the apartheid era," and claimed the DA was using black people in Khayelitsha as "guinea pigs, conning them into using dangerous and toxic drugs that are detrimental to their own health" (Cape Times, October 26, 2000).

AZT in South Africa can serve as a case study in which the conversion of the identity of therapeutics into a political rather than a scientific issue hampered prevention efforts to the point that the disease is now an epidemic. This specific case offers a unique opportunity to assess occurrences of former president Mbeki's dissident views regarding AZT in the media at specific time periods and to gain a comprehensive perspective on the role of South African media in the amplification of these risk events.

This paper will examine the media coverage before and after each of Mbeki's six public addresses about AZT between 1999 and 2001. The time range is chosen because it encompasses periods when the dissident views were announced and presented in the media. The South African president Mbeki first began to question the safety of AZT in 1999. Then, he expressed his dissident views to African leaders, the president of the USA, and AIDS orthodoxy scientists in 2000. Finally, Mbeki rescinded his stance and aligned with mainstream AIDS scientific community in a public talk at Washington, DC in 2001. A detailed timeline is presented in Appendix A.

To analyze the newspaper coverage and its potential role in the social amplification of the risk of AZT, this study will analyze the frequency, prominence, the number and types of sources cited, sensational words and tone of the news stories related to AZT in two South African English-language newspapers. This study will also compare news stories of AZT across two newspapers that are representative of different readerships in South Africa. Because Mbeki's views on HIV/AIDS attempted to unite the black majority in opposition to "the west" for fueling racism, comparing the coverage of AZT across newspapers that differ in their racial majority readership will help to illuminate the success of Mbeki's scapegoating strategy within the media (Sheckels, 2004).

The findings of this study can benefit media research by extending SARF to coverage of therapeutics as well as examining the African side of HIV/AIDS coverage. In addition to analyzing news stories of AZT, this study also highlights the role of media in risk communication among government, experts, and society at large.

CHAPTER 2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 HIV/AIDS in South Africa

The UNAIDS estimated that in 2007 there were 33 million people infected with HIV globally, and 22 million of these were in sub-Saharan Africa. South Africa is the country with the largest number of HIV-infected people in the world with 5.7 million, or 18.3% of its adult population as of 2006 (UNAIDS, 2008). The antiretroviral drug known as AZT has been shown to decrease the mortality of AIDS, and is the drug of choice for HIV-positive women to prevent mother-to-child transmission.

In 1999, Mbeki informed the National Council of Provinces that AZT was toxic and asked the Health Minister to find out where the truth lies (Cape Times, November 3, 1999). As an "AIDS denialist," the former president, Thabo Mbeki, has been severely criticized for delaying the use of AZT in treatment and prevention programs in South Africa. His AIDS policy is estimated to have led to the loss of 330,000 lives and resulted in 35,000 babies born with HIV between 2000 and 2005 in South Africa (Essex et al., 2008).

To justify his stance, Mbeki attempted to create AIDS political narratives to unite the Black majority against "the west." In 2000, Mbeki argued that there was more behind AIDS in Africa than the west revealed, accusing the west of promoting AZT, which he believed knowingly facilitated the transition from HIV to AIDS (Sheckels, 2004, p,76).

Mbeki's acceptance of these dissident views can be better understood by examining Africa's experience with AIDS within a larger historical African context. Since the 1980s, the African press and scientists have rebuffed the western "AIDS origin" theories that

claimed the virus originated in Africa. They regarded the African origin narratives as racist, and believed that AIDS was introduced into Africa through contact with Westerners (Treichler, 1999).

In addition, Epstein (2007, p.50) found that in the 1980s, the west portrayed the epidemic in Africa in such a negative way. The reporting of an abandoned Ugandan village due to AIDS included such statements from American and European experts that " There is profound promiscuity in Uganda. The average Ugandan has sex with great frequency, with a great number of partners." And headlines like " Doomsday Reports Shock Whitehall: African AIDS 'Deadly Threat to Britain'" angered African leaders and intellectuals across the continent.

Epstein (2007) also cited that most African leaders responded to AIDS by downplaying the significance of the epidemic in their countries. The government of Zambia and Nigeria discouraged local newspapers local newspapers from reporting on the AIDS crisis.

In particular, HIV/AIDS is complicated in South Africa because it involves historical, racial, and sociopolitical conflicts. During the 1980s, the apartheid government attempted to misinform and politicize the disease to justify racial segregation, and had plots to wipe out the black population with AIDS. The right-wing newspapers of the day widely spread the Conservative Party's view that HIV could be spread to "low risk groups," like whites, through casual contact, such as "coughing and sneezing, by water, milk, food and fruit; by personal contact and by biting insects" (as cited in Youde, 2005, pp.426). According to the hearings by the Truth and Reconciliation Commission, the apartheid government deliberately spread HIV among mine laborers through sex workers, and sought to use HIV as a sterility-

inducing agent among African women to reduce their birth rates in their secret biological weapon project (as cited in Youde, 2005, pp. 427).

As a result, Africa, and South Africa in particular, have been suspicious of western views of HIV/AIDS. These national negative experiences help to explain why Mbeki embraced dissident views on AZT and was able to gain support by challenging the western medicines in South Africa.

2.2 Social amplification and attenuation of risk

This study adopts the social amplification of risk framework (SARF) because Mbeki's statements regarding AZT represent strong and specific "risk events" that may have been magnified through communication process in society. The SARF holds that risk amplification occurs when experts initially assess a relatively low risk, yet the risk becomes a focus of concern and grows through its underlying informational, psychological, institutional, cultural and social processes. In contrast, social attenuation is defined as the processes by which certain hazards that experts judge more seriously receive comparatively less attention from society (Kasperson et al., 2003).

The SARF has been used to investigate public reactions to several real or potential risk events regarding technology. Previous studies show that society tends to amplify and, as a consequence, generally opposes certain technologies, such as nuclear energy, including the Rocky Flats nuclear weapons facility (Flynn, Peters, Mertz, and Slovic, 2001), and biotechnology, such as milk products containing bovine growth hormone and apples treated with Alar (Gregory, Flynn & Slovic, 2001).

Because such technology is unfamiliar and complex, the public lacks direct experience and instead perceives the risk through the media and relies on intuitive risk

judgments rather than objective facts. Slovic (1987) claimed that laypeople's risk perceptions are often amplified by two main factors: dread and unknown risks.

Dread risk refers to the extent to which a risk evokes a feeling of dread, catastrophe, lack of control, and the inequitable distribution of risks and benefits. Unknown risk is defined as a risk assumed to be unobservable, unknown, new or delayed in its manifestation of harm. AZT as a therapeutic fits both characteristics. The claim that AZT was toxic increased dread related to AZT, and the concept that there was no cure for AIDS and the presence of continuing debates increased the uncertainty of AZT. Therefore, AZT likely represents a risk with high levels of dread and unknown components and may be subject to social amplification processes similar to the previously mentioned technologies.

Some amplified risk events result in the stigmatization of people, places, technologies and products. These risk-induced stigmas are regarded as "ripples" of secondary consequences, including social opposition, economic loss, or regulatory constraints. The development of risk-induced stigmas involves three stages. First, social amplification is triggered by risk events that receive high visibility and salience through communication, usually via imagery, which leads to perception of high risk. Second, the perceptions are associated with the person, place, technology, or product in identifying it as risky and therefore undesirable. Finally, the identity of the person, place, technology or product remains tainted or discredited even when the risk has diminished, thereby producing behavioral changes in society (Kasperson, Jhaveri & Kasperson, 2001).

The South African government's opposition to the use of AZT for either prevention or treatment can be seen as ripples of the risk events, starting from Mbeki's first addresses in 1999. This stance became more visible when Mbeki set up his Presidential Advisory AIDS

panel where half of the members represented dissident scientists and half of the members represented orthodoxy scientists and he confronted mainstream science in the international AIDS conference at Durban and in the following year. Although Mbeki stopped commenting on AZT in 2001, the stigma attached to AZT remained and kept the government from starting the national rollout program (HAART, Highly Active Antiretroviral Therapy) for AIDS patients until 2003.

In addition to the nature of risks, risk perception also depends on the assignment of responsibility for risk events. The public wants to see risks reduced through proper management, such as strict regulations, especially when it comes to dread risk (Slovic, 1987). If risk managers respond to the risk in a rapid and effective way, they can minimize damage to public confidence in the managers. On the other hand, if the managers are clearly to blame or seek to conceal their responsibility, then the risk event is likely to be strongly amplified through media revelations and intensified public concerns (Kasperson et al., 2003). As a result, public acceptance of technology will be partially based on confidence in the ability of risk managers, how well they understand and control risks and how trustworthy they are in fulfilling their responsibilities (as cited in Flynn et al., 2001). In the current case, Mbeki attempted to shift the responsibilities of the risks of AZT to the west to increase the confidence in his own role as risk manager (Sheckels, 2004).

2.3 Mass media and social amplification of risk

Media coverage plays an important mediating role in the SARF by disseminating risk information and there are numerous variables that are said to influence the amplification of risk.

The agenda-setting theory suggests that media shape the public perception through increasing intensity and persistence of media coverage related to public issues (Roger, Dearing, & Chang, 1991). It is claimed that increased coverage not only makes the risk salient, but it also turns public opinion in a negative direction, even if the overall tone of the coverage is generally positive (as cited in Rowe et al., 2000). The higher the visibility and salience of the risk issue, the more the risk is amplified. Lewis and Tyshenko (2009) compared the coverage of mad cow disease for the first 12 months after the first confirmed domestic cases in Canada, United Kingdom, German, and Japan. They concluded that Canada not only had the lowest frequency of newspaper articles but also attenuated related risk issues whereas the other three countries experienced amplification of risks due to more frequent coverage.

The mass media are also claimed to amplify risks when they sensationalize issues by emphasizing negative impacts. Friedman et al. (1987) measured the presence of negative emotional words to evaluate the coverage's sensationalism, especially "worst-case scenarios" (i.e., radiation injuries or deaths) and "loaded words", such as deadly, fatal, lethal, mortal, killing or murderous, and found that the media overemphasized dangerous properties of radiation and unnecessarily scared the public in Chernobyl coverage.

Such sensationalism is often cited when comparing views of risk in the media with those from scientists. Sharlin (1987, as cited in Rowe et al., 2000) pointed out that the media's messages about the carcinogenicity of ethylene dibromide (EDB) were more provoking compared to the technical risk information by the Environmental Protection Agency (EPA). The media emphasized the acute risk of EDB, such as deaths or severe illness of several individuals, while the EPA regarded EDB in the food supply as a chronic or long-

range risk problem. Lichter and Rothman (1999) analyzed cancer-related risk information in print and broadcast news from 1972 to 1992 and concluded that scientists regard tobacco, diet, sunlight as the primary cause of cancer, while media have given greater coverage to man-made risks, such as food additives, pollution, radiation, and hormone treatment.

Media are also often said to pay more attention to the politics rather than science of a situation (Maxwell, 2003, p.237). According to the SARF, risk events are particularly affected by political competition that occurs to control language, symbols, imagery, definition, and framing of the risk problems (Kasperson et al., 2003). Ruhrmann (1992, as cited in Rowe et al., 2000) examined the coverage of genetic technology in Germany from 1998 to 1990 and found that more articles appeared in political rather than scientific sections of newspapers because political conflicts increase the dramatization and newsworthiness of technology.

Regarding technological stigmas, Flynn et al. (1998) indicated that news coverage may produce stigma by (a) initiating awareness of a danger, (b) increasing perception of a known danger, (c) stimulating recall for people with latent negative reactions that have atrophied with time, and (d) increasing the number and geographical locations of people with knowledge about the danger. He found that after a risk event regarding the Colorado nuclear weapon site, an increase in negativity and distrust of the management in media coverage resulted in stigmatization, leading to the loss of the property values.

2.4 Research objective

According to the SARF, media may serve to amplify risk events regarding technologies resulting in strong public concerns and stigmatization. To examine the potential role of media in social amplification, this study intends to conduct an assessment of AZT's

media coverage using the variables associated with the aforementioned studies. It is assumed that the media will likely amplify a risk event if the coverage contains (1) high frequency (2) high prominence (3) a greater reliance on political sources than other sources (4) high presence of sensational words and (5) strong negative tone regarding the technology. In addition, Mbeki's narratives of HIV/AIDS involve anti-apartheid and anti-western political contexts. This study will also examine these factors between papers with black- and white-dominant readership.

In addition to overall measures of these variables, this study will identify potential changes of these variables by analyzing AZT's media coverage regarding Mbeki's risk events across two different time frames. The first time frame investigates the change across the entire time period of Mbeki's statements, from Sept, 1999 to July, 2001. This "issue cycle" time frame allows each risk event to receive different levels of coverage. The second time frame combines Mbeki's six statements to look for patterns in how the media responded to the risk events on average. This "risk event" time frame assumes that the differences present during the first three weeks after each of the risk events will share certain characteristics and reveal a finer-grained look at coverage patterns.

2.4.1 Frequency of coverage

In the SARF, the frequency of media coverage is assumed to be an important determinant in risk perception. Finlay (2004, as cited in Kruger, 2005) compared South African coverage of HIV/AIDS in 2002 and 2003, and found a 32% drop between the two periods. He argued that the first period was full of obvious news cues, like Constitutional court's challenge to government on the provision of ARV, but the second period lacked comparable drama.

This study will measure the changes in frequency across the two different time frames. In regard to the issue cycle time frame, if the frequency of AZT's coverage increases, the media may serve to amplify the risk of AZT. Conversely, if the frequency of AZT's coverage decreases, the media may serve to attenuate risk perceptions of AZT.

With respect to the risk event time frame, if the frequency of AZT's coverage increases after the event and remains high, the media may serve to amplify the risk of AZT. Conversely, if the frequency of AZT's coverage remains low after the risk event or quickly declines after an initial increase, the media may serve to attenuate the risk perception of AZT.

RQ1a: What trends existed in the change of frequency regarding AZT's newspaper coverage over the issue cycle time frame?

RQ1b: What trends existed in the change of frequency regarding AZT's newspaper coverage over the risk event time frame?

2.4.2 Prominence of coverage

It is assumed that prominence is critical for visibility. Nunez and Gravoso (2007) used space allocation to measure prominence, and concluded that the major Philippine newspapers did not give prominence to health risk articles of bird flu, Dengue fever, food poisoning and meningococcemia.

This study will measure the average prominence of news coverage as well as changes in prominence across the two different time frames. In regard to the issue cycle time frame, if the prominence of AZT's coverage increases, the media may serve to amplify the risk of AZT. Conversely, if the prominence of AZT's coverage decreases, the media may serve to attenuate the risk of AZT.

With respect to the risk event time frame, if the prominence of AZT's news coverage increases after the risk event and then remains high, the media may amplify the risk of AZT. Conversely, if the prominence of AZT's news coverage remains low after the risk event or quickly declines after an initial increase, the media may attenuate the risk of AZT.

RQ2: How prominent was AZT's newspaper overall regarding Mbeki's addresses?

RQ2a: What trends existed in the change of prominence regarding AZT's newspaper coverage over the issue cycle time frame?

RQ2b: What trends existed in the change of prominence regarding AZT's newspaper coverage over the risk event time frame?

2.4.3 Number and types of sources

Previous studies suggest that the flow of risk information in public health emergency communication is often regarded as a one-way transfer, and the government controls many of the communication tools and pathways used to directly engage the public (Reynolds and Seeger, 2005). In the SARF, both professional experts and social networks outside the government can act on risk information processes and may either cooperate or compete with officials' agendas, help frame the tone of public discourses or offer alternative explanations to official announcements (Maxwell, 2003).

Studies that have looked at HIV/AIDS coverage in sub-Saharan Africa found the government to be the key source of information. Traquina (2007) analyzed Angolan newspapers in the 1990s, and concluded that official sources dominated the news process. Muula (2008) contended that South African media didn't provide a balance in the coverage of AZT because they favored federal government side's information and paid little attention to local government, but he didn't use empirical data.

This study will look at how politicians and the main opponents to the government's AZT policy, such as scientists and advocacy groups, were represented as sources in AZT's newspaper coverage. The SARF contends that the media often favor political conflicts over scientific debates and that a dominance of political sources often serves to amplify risk perceptions. In addition to the dominant source, this study will examine the total number and types of sources used in the overall news coverage as well as changes in political versus non-political sources across the two different time frames. In regard to the issue cycle time frame, if the use of political sources increases or the use of non-political sources decreases, the media may serve to amplify the risk of AZT. Conversely, if the use of political sources decreases or the use of non-political sources increases, the media may serve to attenuate the risk of AZT through diversification of their sources.

With respect to the risk event time frame, if the use of political sources increases or the use of non-political sources decreases immediately after the risk event, the media may serve to amplify the risk of AZT. Conversely, if the use of political sources decreases or the use of non-political sources increases immediately after the risk event, the media may serve to attenuate the risk of AZT through diversification of their sources.

RQ3: How did the use of political, scientific and advocacy sources compare in AZT's newspaper coverage overall regarding Mbeki's addresses?

RQ3a: What trends existed in the change of political/scientific/advocacy sources cited regarding AZT's newspaper coverage over the issue cycle time frame?

RQ3b: What trends existed in the change of political/scientific/advocacy source cited regarding AZT's newspaper coverage over the risk events time frame?

2.4.4 Frequency of sensational words

Previous studies suggest that the mass media serve to amplify risk when they sensationalize the risk issues. Negative emotional words are often used to measure sensationalism and stigmatization. For instance, to evaluate the level of stigmatization in sub-Saharan African HIV/AIDS coverage, Pratt and his colleagues (2002) used negative, derogatory phrases as indicators, such as "deadly syndrome," "dreaded disease," and "gay plague." Furthermore, Nuenz and Gravoso (2007) argued sensationalism affects people's perception of anxiety, leading to amplification of risks. They indicated that different diseases have different patterns of sensationalized words. Most negative words regarding coverage of bird flu occurred before the peak of media coverage; the most negative words regarding coverage of dengue fever was during the peak of media coverage, and the most negative words regarding coverage of food poisoning and meningococcemia appeared after the peak of media coverage.

This study aims to examine the patterns of sensational words in AZT's newspaper coverage, such as "toxic," "poisonous," and "dangerous," and to evaluate the frequency of sensational words regarding overall news coverage as well as across the two different time frames. In regard to the issue cycle time frame, if the frequency of sensational words related to AZT increases, the media may serve to amplify the risk of AZT. Conversely, if the frequency of sensational words related to AZT decreases, the media may serve to attenuate the risk of AZT.

With respect to the time risk event frame, if the frequency of sensational words related to AZT increases after the risk event, the media may serve to amplify the risk of AZT.

Conversely, if the frequency of sensational words related to AZT decreases after the risk event or increases but declines quickly, the media may serve to attenuate the risk of AZT.

RQ4: How frequent was the presence of sensational words in AZT's newspaper coverage overall regarding Mbeki's addresses?

RQ4a: What trends existed in the change of sensational words regarding AZT's newspaper coverage over the issue cycle time frame?

RQ4b: What trends existed in change of sensational words regarding AZT's newspaper coverage over the risk event time frame?

2.4.5 Tone of coverage

Risk perception is critical for public acceptance of technology. The SARF contends that risk hazards will build on confidence in the ability of risk managers, how well they understand and control risks and how trustworthy they are in fulfilling their responsibilities (Flynn et al., 2001). However, Chang, Salmon, Lee, Choi, and Zeldes (2004) pointed out that news organization often reflects national priorities, values and agendas when reporting on health risks.

In this particular case, South Africa has a history of confrontation between the government and the media. Brown (1988) reviewed the newspapers coverage before and after the emergency regulation state, in which the government imposed stringent legislation, claiming that the need to reassure whites in South Africa was of greatest importance. She stated that when the government tried to censor the coverage of civil unrest and police action by censoring the word "detained," the media continued reportage and defied censorship by using words such as "missing," "vanished" or "disappeared."

Additionally, Muula (2008) reviewed the South African media reports of Mbeki's dissident views and the government's response to AIDS treatment, and found that the media were negative to Mbeki's dissident views and the government's policy regarding AZT. However, this was anecdotal and not supported by empirical data.

Therefore, this study uses the tone of newspaper coverage to indicate the media's attitudes toward either the potential risk of AZT, Mbeki's dissident views or related policies. This study will access the tone of overall news coverage as well as changes in tone across the two different time frames. In regard to the issue cycle time frame, if the tone toward Mbeki's views grows more positive, the media may appear to support the government's dissident views and serve to amplify the risk of AZT. Conversely, if the tone toward Mbeki's views grows more negative, the media may appear to disagree with the government's dissident views and serve to attenuate the risk of AZT.

With respect to the risk event time frame, if the tone toward Mbeki's views grows more positive after the risk event, the media may appear to support the government's views and serve to amplify the risk of AZT. Conversely, if the tone toward Mbeki's views grows more negative after the risk event, the media may appear to disagree with the government's views and serve to attenuate the risk of AZT.

RQ5: What was the average tone of AZT's newspaper coverage overall regarding Mbeki's addresses?

RQ5a: What trends existed in the change of tone regarding AZT's newspaper coverage over the issue cycle time frame?

RQ5b: What trends existed in the change of tone regarding AZT's newspaper coverage over the risk event time frame?

2.4.6 Comparison between black- and white-dominant readership papers

Sheckels (2004) claimed that Mbeki's narratives of AZT attempted to unite the black majority by assigning the responsibilities of HIV/AIDS to the west. If his scapegoating strategy was successful, the black-dominant readership paper may exhibit greater amplification of risk of AZT than the white-dominant readership paper. This study will therefore compare the average overall measures of the previous variables in the black and white –dominant readership newspaper to examine this question.

RQ6: What differences existed in frequency, prominence, the number and types of sources, sensational words, and tone of AZT's overall coverage between the black and the white-dominant readership newspapers?

CHAPTER 3. METHODOLOGY

The purpose of this study was to measure the newspaper coverage of AZT in South Africa during the time periods surrounding the risk events of Mbeki's announcements to investigate the potential role of media in the amplification of risk perceptions. This study analyzed newspaper coverage for following purposes: (1) to assess the frequency of news articles to determine the salience; (2) to evaluate the prominence of news articles to indicate the visibility; (3) to identify the number and type of sources; (4) to measure the presence of sensational words; (5) to examine the tone of news articles (6) to compare the black and white-dominant readership newspapers. The overall objective is to better understand the role of media in the SARF for disseminating risk information in emerging public health crises.

3.1 Study design

Data was collected through a content analysis of the two leading English-language newspapers in South African, *The Star* and *Cape Times*. The population of news articles was all articles that mentioned AZT during the time periods surrounding Mbeki's six addresses related to the risk of AZT.

The articles were selected from a period of three months surrounding each of Mbeki's six addresses. The only exception was for his third address, which fell within the three-month-period surrounding the second address. Each three-month-period consists of one month prior to one of Mbeki's address, and two months after. The study contained five, three-month-periods, from Sep 1999 to July 2001. Following the selection criteria, there were two gaps in the overall time frame that represent relevantly silent periods by Mbeki. One gap was from Dec 1999 to Feb 2000, and the other is from Dec 2000 to April 2001.

The decision to examine South African newspapers was driven by the nature of print media. Previous research indicated that the quality press (i.e., newspapers and magazines) is one of the most trusted sources of risk information (Rowe et al., 2000). The selection of newspapers in this study was chosen to represent the most trusted newspapers while maintaining a diverse racial audience. *The Star* is the most influential daily national newspaper in South Africa. The circulation in 2007 was 168,264; the readership was 840,000. 66% of its readers were black, and 25% of them were white, and its main sales were in Johannesburg (The Star, n.d.). *The Cape Times* is the dominant and authoritative morning daily newspaper in Cape Town, and aims at middle class of Cape Town. The circulation in 2009 was 47,514, and the readership in 2008 was 272,000. 44% of its readers were colored, 39% of them were white, and 15% of them are black. (Cape Times, n.d.). Full-text of all stories were collected from microfilm of the two newspapers. The words "antiretroviral drugs (ARV)" or "AZT" or "Nevirapine[1]" were used to search for relevant stories. The microfilm search criteria resulted in a total of 284 AZT newspaper articles within the relevant time periods from the two newspapers in this study.

3.1.1 Operational definition of variables

To measure the coverage of AZT in the South African press, the content analysis included the variables of frequency, prominence, the number and types of sources, sensational words and tone of articles. In addition, date, story type, newspaper and coder were also recorded. The complete codebook is presented in Appendix B.

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[1] AZT and Nevirapine are both antiretroviral agents, using for the treatment and prevention mother-to-child transmission of HIV. AZT is approved by FDA in 1987, and Nevirapine is approved by FDA in 1996.

1. News frequency: The frequency was measured by the number of articles related to AZT.

2. News prominence: The prominence of articles was determined through their placement within the pages of the newspaper. Articles located in the front pages were considered more important than those following inside pages. Therefore, the measurement of prominence was inversely based on the page number.

3. News sources: Up to the first ten sources of information cited in the newspaper articles were coded. Sources referred to individuals or groups who were cited as direct quotes or offered facts, opinions, suggestions or analysis. These sources were categorized as follows (adapted from Nunez and Gravoso, 2007):

(1) South African federal government officials (e.g. President Mbeki, party presidents, Mbeki's spokeperson, the Health minister, Manto Tshabalala-Msimang, the government-appointed Medicine Control Council, National Conventional of AIDS)

(2) South African local government officials (e.g., City council, mayoral candidate, South Peninsula Municipality)

(3) Politicians affiliated with the African National Congress (ANC) party but not in the federal government (e.g., ANC spokeperson, Smuts Ngonyama)

(4) Politicians affiliated with the opposing Democratic Alliance (DA) party (e.g., Leader of DA, Tony Leon)

(5) Politicians affiliated neither with ANC nor DA (e.g., New National Party, Pan African Congress Party, New Nation Party)

(6) Foreign government officials (e.g., US president, Kenyan President)

(7) Dissident scientists[2]: Scientists who rejected mainstream opinion that HIV causes AIDS and emphasized the risk of AZT. Appendix C includes a list of dissident scientists.

(8) Orthodoxy scientists[2]: scientists who accepted mainstream opinion that HIV causes AIDS and emphasized benefits of AZT. Appendix C includes a list of orthodoxy scientists.

(9) Unknown scientists: scientists who mentioned neither their stances on the cause of AIDS nor benefits of AZT

(10) Scientific studies, journals, or journal editors

(11) Clinical medical experts or health workers in South Africa

(12) Business: industry or industry associates (e.g., CEO's, cooperate spokeperson)

(13) South African local advocacy groups, which referred to organizations that had strong opinions and actively supported actions related to the government's AIDS policy, such as the Treatment Access Campaign (TAC), and the Congress of South Africa Trade Union (COSATU)

(14) International non-profit organizations (e.g., WHO, World Bank, doctors from Medicines sans Frontiers (MSF)

(15) Ordinary citizens, such as HIV-positive individuals and their friends and families

(16) Celebrity and public figures, but not from the groups listed above (e.g., Nelson Mandela, singers, religious leaders)

(17) Media (e.g., News Wire, the Time magazine)

(18) Judiciary (e.g., The court, judge, laws, acts)

[2] A guide for coding dissident and orthodoxy scientists is adapted from the South African Presidential Panel (The Cape Times, May 5, 2000).

(19) Others (not listed in above)

From the above list, certain sources were then grouped into three larger categories: political, scientific, and advocacy sources. The political sources were comprised of groups (1) to (6). The scientific sources were comprised of groups (7) to (11). The advocacy sources were comprised of groups (13) and (14). The remaining sources were grouped into "others," including groups (12) and (15) to (19).

4. Sensational words: The sensational words were measured by frequency of loaded words from a word list. The word list was composed of previously cited loaded words and phrases regarding the risk of AZT in South African newspapers as well as words and phrases agreed upon by both coders. The word list included: toxic, poisonous, dangerous, harmful, fatal, lethal, unsafe, detrimental and kill (only in the future tense). The loaded phrases used included: biological weapon/warfare, genocide, guinea pig. The use of word list limited the range of negative words as some negative terms may not have been included, but provided an objective list from which reliability could be ensured.

The frequency of sensational words was coded in four levels. If the article did not have negative emotional words, it coded as 0. If the article had one sensational word, it coded as 1. If the article had two sensational words, it coded as 2. If the article had three or more sensational words, it coded as 3. This study chose to code the presence of sensational words in these levels rather than counting the exact number of sensational words in article to assist in reliability.

5. The overall tone of the article: The tone was determined by the overall article's valence related to the risk of AZT, Mbeki's dissident views or the government's AZT policy. When the article tended to oppose to the government's stance on AZT, it was coded as

negative. When the article tended to support the government's stance on AZT, it was coded as positive. If the article did not exhibit a biased tone, it was coded as neutral.

To measure the tone, this study used the two-thirds rule (Dudo, Dahlstrom & Brossard, 2007). Each paragraph within an article was coded as positive, neutral or negative. An example of a paragraph that was coded as "negative" is:

> Mbeki's statement had raised questions, the NNP said, such as what the source of his information had been, and that he had cited no scientifically acceptable references to the drug's being safe (Cape Times, November 3, 1999).

An example of a paragraph that was coded as "positive" is:

> To a certain extent we defended the president's "HIV-might-not-be-the-cause" debate when we had to respond to puzzled questions from overseas (Cape Times, October 5, 2000).

An example of paragraph that was coded as "neutral" is:

> South African health authorities are watching closely as Thailand attempts to break international pharmaceutical companies' strangle hold on the price of anti-Aids medication (Cape Times, November 17, 1999).

After coding each paragraph, the total number of each code was summed. If more than two-thirds of the paragraphs were coded as positive, the overall article was coded as positive. If more than two-thirds of the paragraphs were coded as negative, the overall article was coded as negative. If no more than two-thirds of the paragraphs were either positive or negative, the article was coded as neutral.

3.1.2 Reliability Testing

To ensure reliability, a second coder was recruited and coded 10% of the total population of articles using the codebook. Both coders were trained using 39 articles outside the sample population: 8 articles related to AZT outside of the time periods of interest and 31 articles related to HIV/AIDS that did not mention AZT within the time period of interest.

During training, the coders adjusted the codebook until the acceptable level of reliability was achieved. Once the codebook was finalized, each coder independently coded 10% of the actual sample population randomly selected from the 284 newspaper stories related to AZT. The inter-coder reliability was measured using Cohen's Kappa. It should be noted that the α associated with the tone variable is at the low end of acceptable reliability measures. However, tone has been noted as a difficult variable to measure and other studies have noted similar reliability values (Dudo et al., 2007). Table 1 provides the α value for each variable.

Table 1 Summary of inter-coder reliability tests

Variables	Inter-coder Reliability
Page number	1.00
Number of sources	.83
First cited source	.88
Second cited source	.82
Third cited source	.85
Fourth cited source	.83
Fifth cited source	.74
Sixth cited source	.75
Seventh cited source	1.00
Eighth cited source	1.00
Ninth cited source	1.00
Tenth cited source	1.00
Frequency of sensational words	.82
Tone of articles	.71

CHAPTER 4. RESULTS

Data for each variable of interest was analyzed in three ways: (1) overall average, (2) across the issue cycle time frame, (3) across the risk event time frame. It is important to note that because this data is based on a census of relevant newspaper coverage, inductive statistical tests are not necessary to determine significance. However, ANOVA tests were conducted when appropriate to help suggest when a measured difference may be meaningfully different, and regression tests were conducted when appropriate to help suggest the strength of linear relationships.

For the issue cycle time frame, the overall newspaper coverage was grouped into five, three-month-periods for the ANOVA analysis. Each period consisted of the month before Mbeki gave a speech, and two months after. Period 1 encompassed the first address (Oct 28, 1999) and news articles related to AZT published between September to November, 1999. Period 2 encompasses the second (April 3, 2000) and third (May 6, 2000) addresses as well as news articles related to AZT published between March to May 2000. Period 3 encompasses the fourth address (July 9, 2000) and news articles related to AZT published between June to August 2000. Period 4 encompasses the fifth address (Oct 5, 2000) and news articles related to AZT published between September to November 2000. Period 5 encompasses the last address (June 28, 2001) and news articles related to AZT published from May to July 2001.

For the risk event time frame, newspaper coverage was grouped into four, single-week-periods for the ANOVA analysis. These four, single-week-periods include one week before each risk event to serve as a baseline and the three weeks following the risk event. Because some articles did not fall into these four-week-periods, the risk event time frame consisted of

a subset of 151 news articles out of the total of 284 articles used in the issue cycle time frame.

4.1 Frequency of coverage

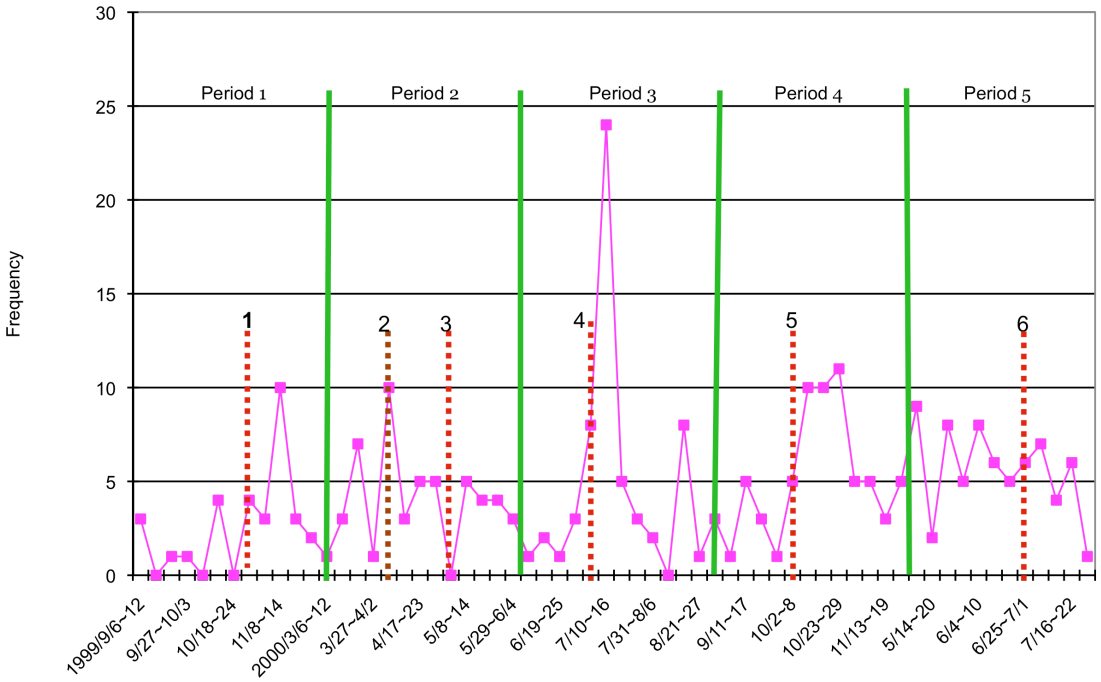

Figure 1 Frequency of AZT's coverage across the issue cycle time frame grouped by week

Figure 1 shows the frequency of AZT's coverage by week. The five periods for ANOVA purposes are superimposed over the issue cycle time frame. Mbeki's six addresses are also labeled by numbers 1~ 6. Coverage appears to increase after Mbeki's fourth and fifth address, but the relationship is not as clear regarding the other addresses. The large peak after Mbeki's fourth address in period 3 coincides with the Durban Conference, July 9, 2000, in which over 5,000 scientists from around the world signed the Durban Declaration emphasizing that HIV causes AIDS, which was rejected by Mbeki's spokesperson Parks Mankalhlana.

Period 2 coincides with the appointment of a government AIDS panel including dissident scientists, and an event involving five mothers who died while on trials for AIDS drugs. The peak in period 4 coincides with the opposition party leader calling twice for HIV/AIDS debates and the provincial elections in the end of 2000.

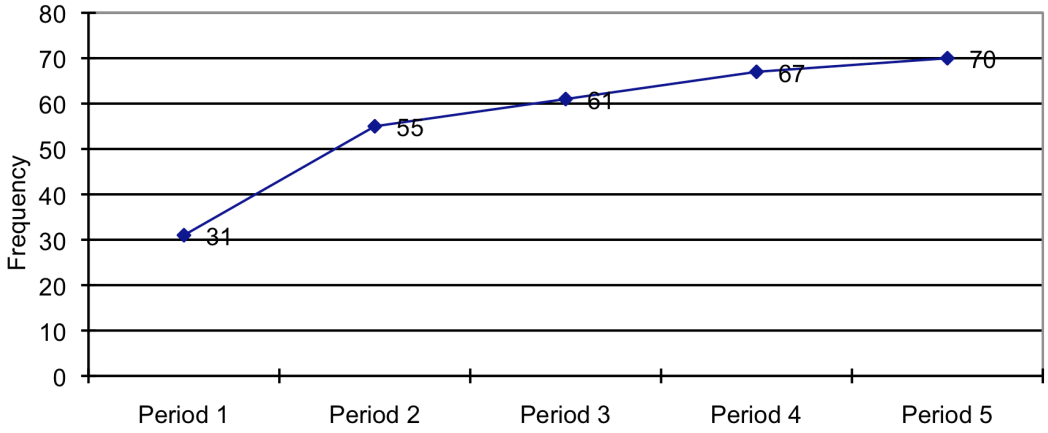

Figure 1-1 Frequency of AZT's coverage across the issue cycle time frame grouped by three-month-period

Figure 1-1 displays the frequency of AZT's coverage in each of the five issue cycle time periods. The frequency of coverage increased across the entire time frame. Therefore, in response to RQ1a, media may have served to amplify the risk of AZT based on the increase in frequency of coverage over the issue cycle time frame.

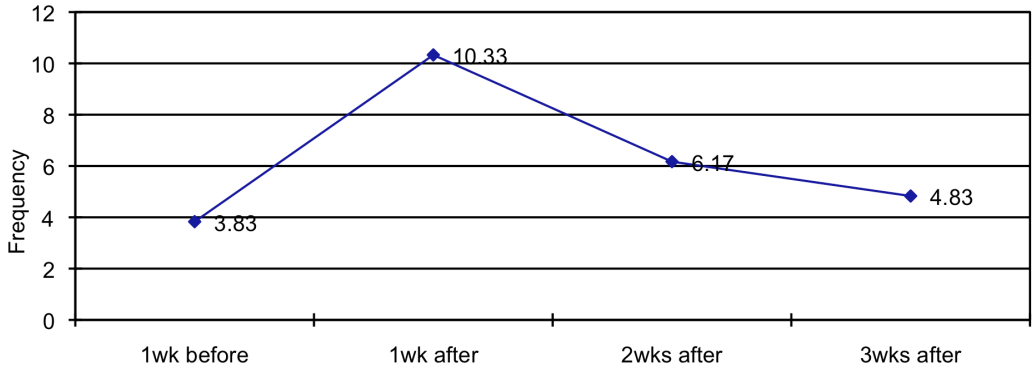

Figure 1-2 Frequency of AZT's coverage across the risk event time frame

Figure 1-2 presents the average frequency of AZT's coverage in each of the four risk event time periods. The frequency of coverage nearly peaked after the risk event, declining by the second week after the address, but did not return to baseline until three weeks after the address. Therefore, in response to RQ1b, media may have served to amplify the risk of AZT based on the increase in frequency and duration of coverage over the risk event time frame.

4.2 Prominence of coverage

The largest number of AZT stories appeared between pages 4~10 (N=152, 52%), followed by the first 3 pages (N=93, 32%) and then after 10 pages (N=49, 17%). The average page number was 6.3 (SD=4.30). Therefore, in response to RQ2, the media did not give high prominence to news articles to AZT.

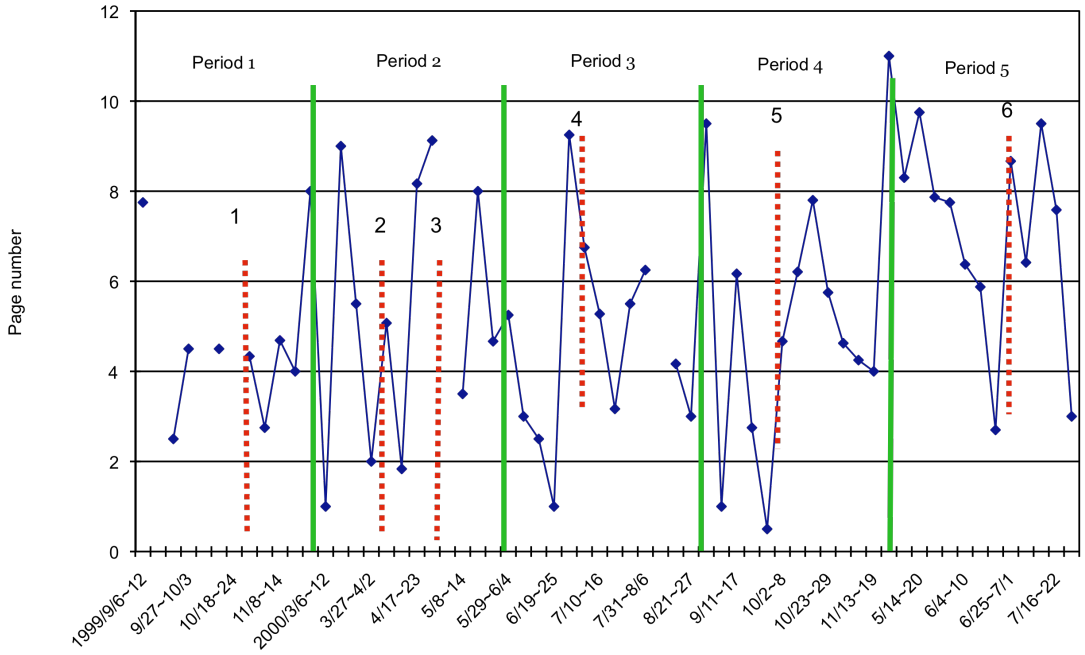

Figure 2 Prominence of AZT's coverage across the issue cycle time frame grouped by week

Figure 2 shows the change in prominence of overall AZT's coverage by week. The five periods for ANOVA purposes are superimposed over the issue cycle time frame. Because of

the wide fluctuation in prominence, it is hard to generalize trends without first looking at the grouped coverage.

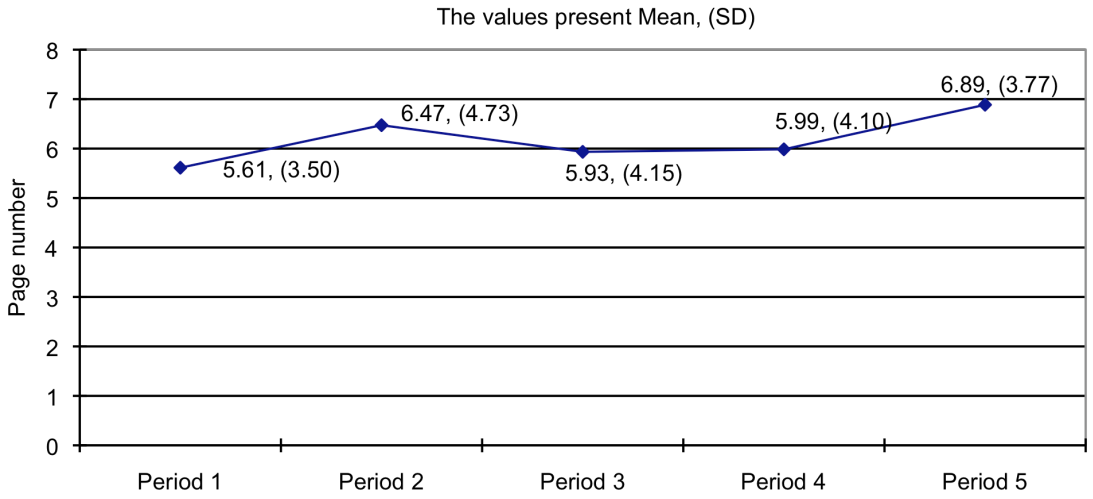

Figure 2-1 Prominence of AZT's coverage across the issue cycle time frame grouped by three-month-period

Figure 2-1 presents that the average prominence of AZT's coverage in each of the five periods for the issue cycle. The average page number slightly increased from 5.6 to 6.9 over the entire time frame. However, the ANOVA test ($F_{(4,279)}$=.81, p=.52) indicates the change in prominence is not significant over the issue cycle time frame. Therefore, in response to RQ2a, while prominence may have decreased slightly, any attenuation of the risk of AZT was likely small.

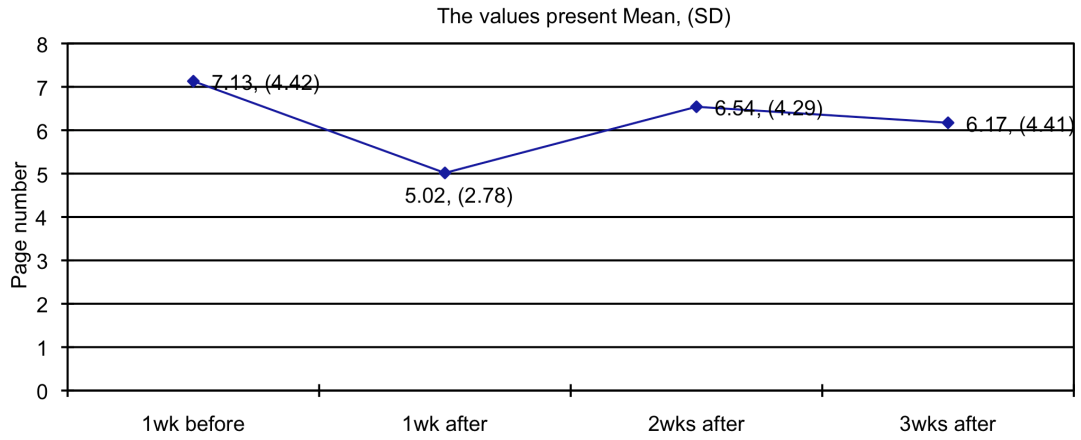

Figure 2-2 Prominence of AZT's coverage across the risk event time frame

Figure 2-2 indicates the average prominence of AZT's coverage in each of the four risk event time periods. The page number decreased from baseline (pg=7) to one week after the event (pg=5), and then a slightly increased in the following two weeks (pg=6). However, the ANOVA test ($F_{(3,147)}$=2.33, p=.08) shows that the change in prominence was also not significant surrounding Mbeki's addresses. Therefore, in response to RQ2b, while the prominence may have increased slightly after each risk event, any amplification of the risk of AZT was likely small.

4.3 Number and types of sources

Nearly 58 % of the articles used between 1~3 sources, 36 % quoted more than three sources, and 7 % were without sources. The average source number was 3.03 (SD=2.22). Politicians were quoted in 60 % of the stories; scientists were quoted in 35 % of the stories; and the advocacy groups were quoted in 33 % of the stories.

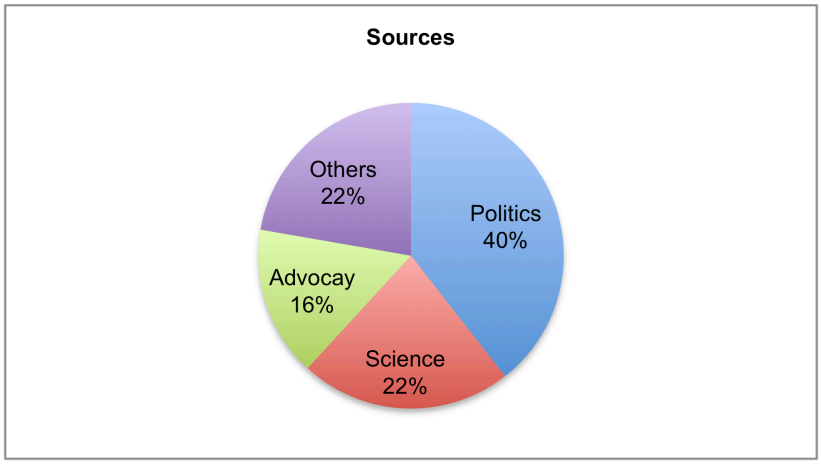

Figure 3-1 Breakdown of sources in overall AZT's coverage

Figure 3-1 shows the dominant source was politicians (40%), followed by scientists (22%), advocacy groups (16%), and others group (22%). Therefore, in response to RQ3, the dominant source was political sources in AZT's overall news coverage surrounding Mbeki's addresses, suggesting that media may serve to amplify the risk of AZT.

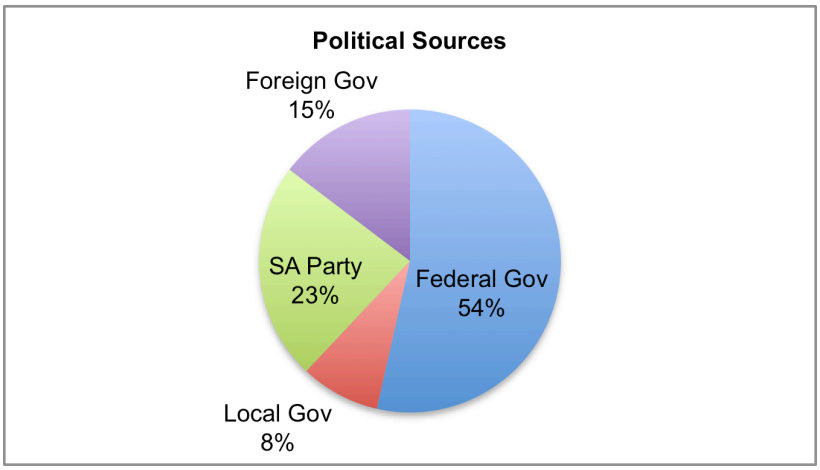

Figure 3-1a Breakdown of political sources in overall AZT's coverage

Fig 3-1a breaks up the political group into party, federal, local and foreign government sources. The dominant political source was the South African federal government (54%), followed by political parties (23%), foreign government (15%), and local government (8%).

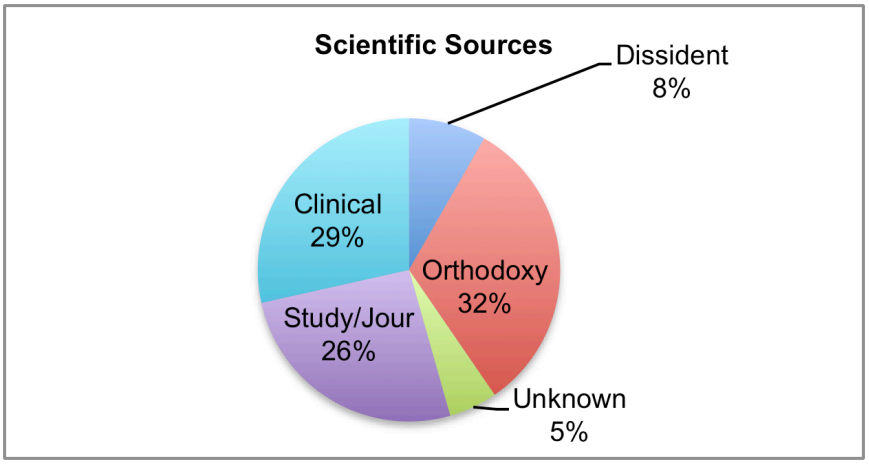

Figure 3-1b Breakdown of scientific sources in overall AZT's coverage

Fig 3-1b breaks up the scientific group into dissident, orthodoxy, medical journals, clinical health professionals, and unknown sources. The dominant scientific source was orthodoxy scientists (32%), followed by clinical experts and health workers (29%), clinical studies and journals (26%), dissident scientists (8%) and unknown (5%).

Even though neither the scientific nor political source groups were homogenous regarding their support or opposition to Mbeki's views, the breakdowns of these sources suggest mostly

antagonism between the majority of orthodoxy scientific sources that opposed Mbeki's views of HIV/AIDS and AZT, and the majority of federal political sources that supported Mbeki's views.

Figure 3-1c Breakdown of advocacy group sources in overall AZT's coverage

Fig 3-1c breaks up the advocacy group into South African local advocacy group and international non-profit organizations sources. The media favored local advocacy group (63%) over international non-profit organizations (37%).

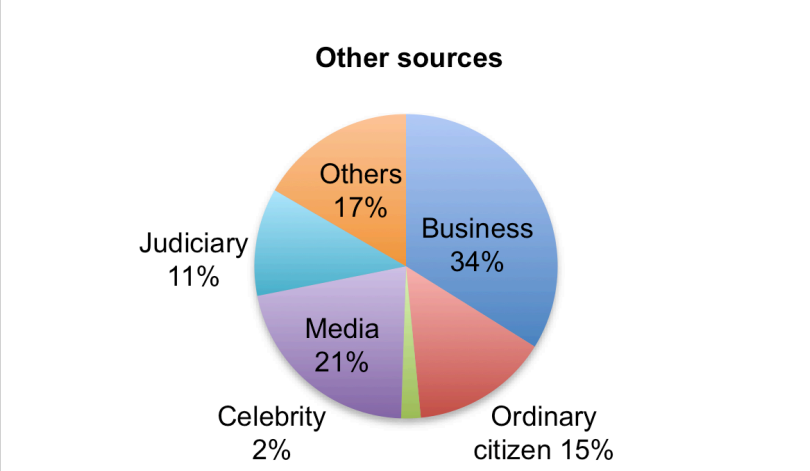

Figure 3-1d Breakdown of other sources in overall AZT's coverage

Fig3-1d breaks up other group into business, ordinary citizens, celebrity and public figures, media, judiciary, and others sources. The dominant source was business (34%), followed by media (21%), others (17%), ordinary citizens (15%), judiciary (11%), and celebrity (2%).

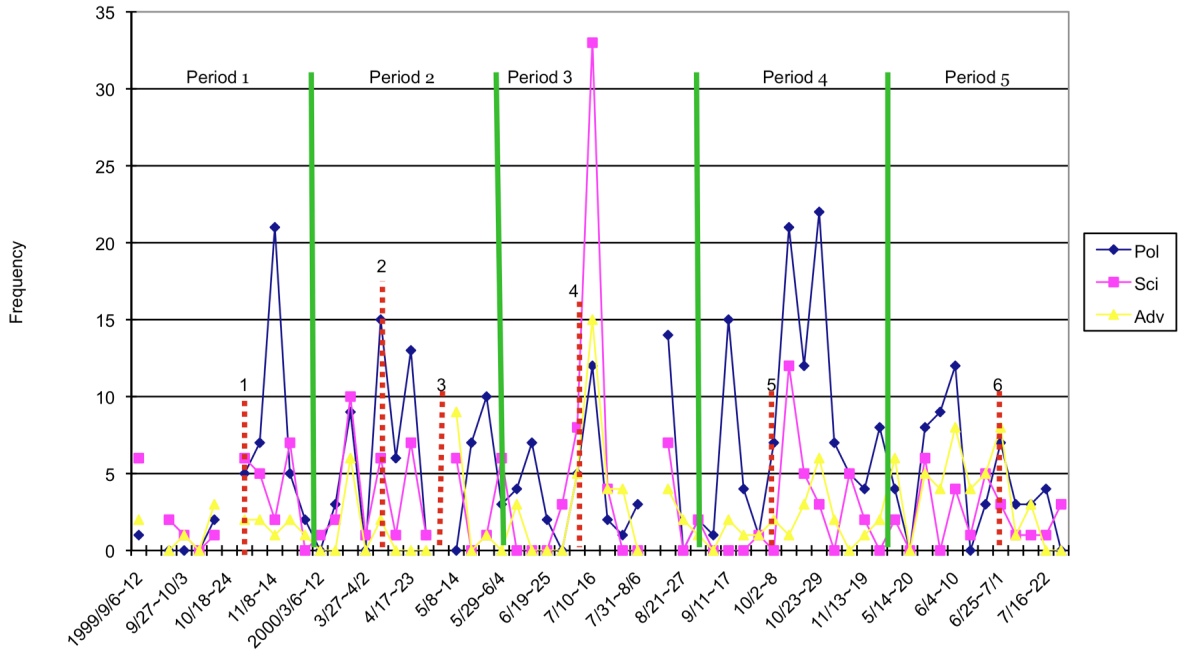

Figure 3-2 Number and types of sources in overall AZT's coverage across the issue cycle time frame grouped by week

Figure 3-2 presents the number of sources divided by political, scientific and advocacy groups coverage by week. The five periods for ANOVA purposes are superimposed over the issue cycle time frame. The dominant source was political, followed by scientific and advocacy sources for each period except the third when the dominant source changed from political to scientific.

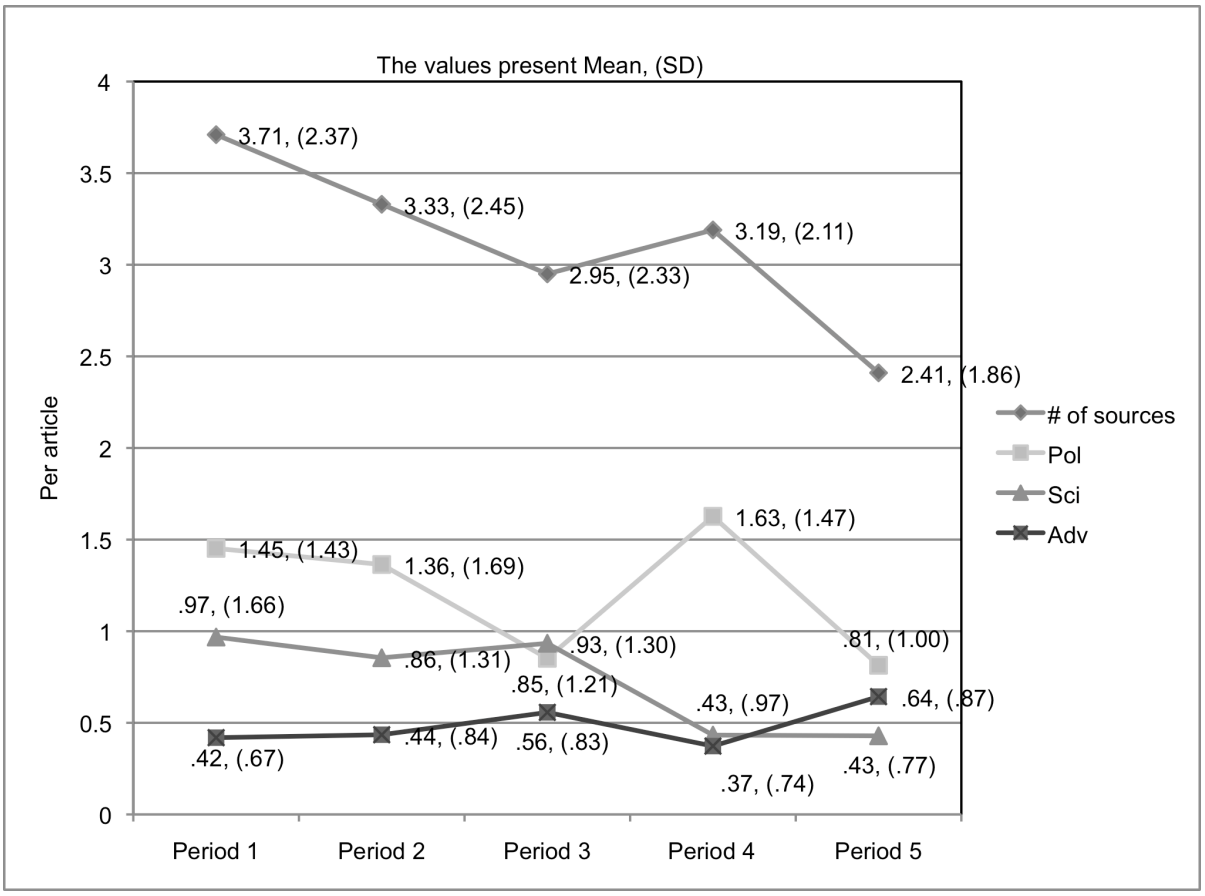

Figure 3-3 Number and types of sources in AZT's coverage across the issue cycle time frame grouped by three-month-period

Figure 3-3 shows the average number of each type of sources cited per article related to AZT as well as the total number of sources in each of the five periods for the issue cycle. The total number of sources tended to decrease across the issue cycle time frame. Political sources remain dominant except for period 3 and exhibited the largest difference among political vs. non-political sources in period 4. Those changes respectively coincide with the Durban conference that scientist affirmed HIV causes AIDS in period 3 and the political election in period 4. The use of scientific sources remained fairly constant until dropping in period 4, allowing the smaller but consistent advocacy category to overtake scientific sources in the last period.

The ANOVA tests also support the importance of above findings. The number of total ($F_{(4,279)}$=2.47, p=.05), political($F_{(4,279)}$=4.53, p<.01) and scientific($F_{(4,279)}$=3.06, p=.02) sources were significantly different across the issue cycle time frame. The advocacy source ($F_{(4,279)}$=1.58, p=.18) was the only source with no significant change. A regression test showed that there was a significant linear relationship ($t_{(282)}$=-2.73, p<.01) in the decrease in the number of sources. In response to RQ3a, politicians dominated sources for all periods except period 3 with scientists generally occupying a place of secondary importance except for periods 3 and 5. Therefore, because of the media's reliance on political sources, the media may have amplified risk of AZT, except for period 3 when the increase in scientific sources may have served to briefly attenuate the risk.

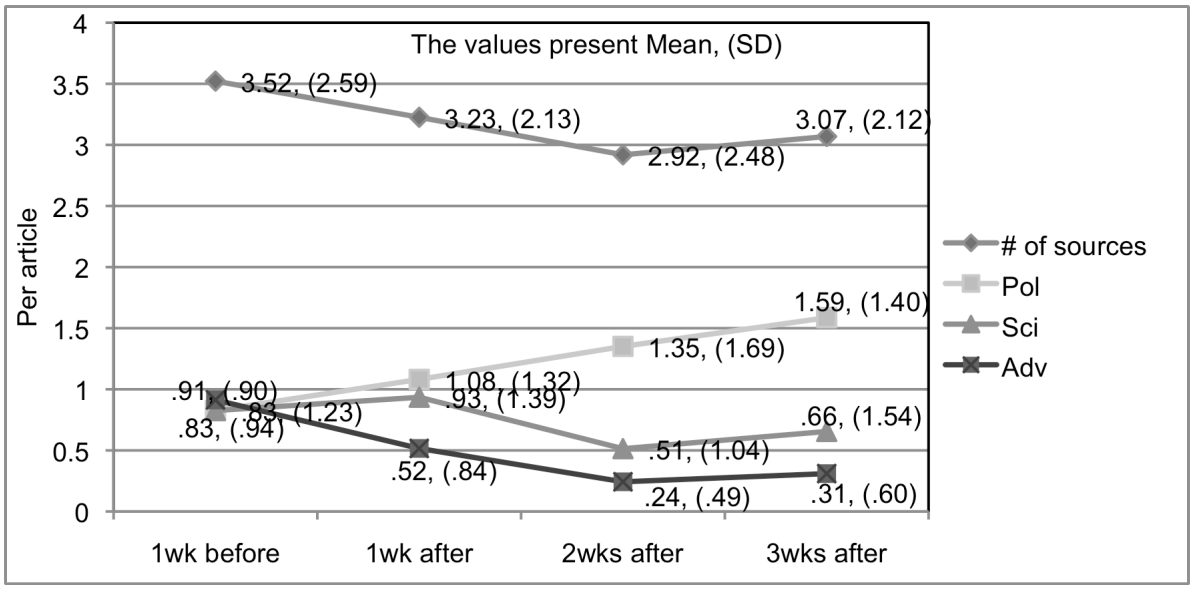

Figure 3-4 Number and types of sources in AZT's coverage across the risk event

Fig 3-4 presents the average number of each type of sources cited per article related to AZT as well as the total number of sources in each of the four risk event time periods. Before the risk event, the three sources categories were at roughly the same level. After the risk event, the political source continuously increased and remained dominant, while the non-

political sources (scientific and advocacy sources) decreased to below pre-event levels. However, the overall source number tended to decrease across the existing risk event time frame, suggesting that the interaction between a decreasing total number of sources and an increasing reliance on political sources may create an even greater dominance by political sources after each risk event.

This being said, the ANOVA test suggests that the decrease in advocacy source was the only significant difference ($F_{(3,147)}$=4.45, p<.01). However, regression tests showed that the increase in political source ($t_{(149)}$=2.21, p=.03) and the decrease in advocacy source ($t_{(149)}$=-3.15, p<.01) both contained significant linear trends, while the decrease in number of sources ($t_{(149)}$=-.85, p=.40) and scientific sources ($t_{(149)}$=-1.07, p=.29) did not.

Therefore, in response to RQ3b, because political sources dominated and increased while the use of non-political sources and total number of sources decreased after the risk event, the media may have served to amplify the risk of AZT even without a significant ANOVA test.

4.4 Frequency of sensational words

Few newspapers stories of AZT used sensational words. Only 20 % of newspapers stories mentioned at least one sensational word, 9% of stories mentioned at least two sensational words, and 3% mentioned three or more loaded words. Therefore, in response to RQ4, the average frequency of sensational words was .32 (SD=.73) per article within the range of 0 to 3, suggesting that the effect of risk amplification in AZT's overall coverage seems small.

Because the frequency of sensational words were coded by category, not by the exact number of sensational words per article, the "3" category could represent more than 3 sensational words. However, because such a small percent of the articles received a 3 code –

it was decided to treat the variable as continuous noting the possibility of a slight underestimation in the following graphs and analyses.

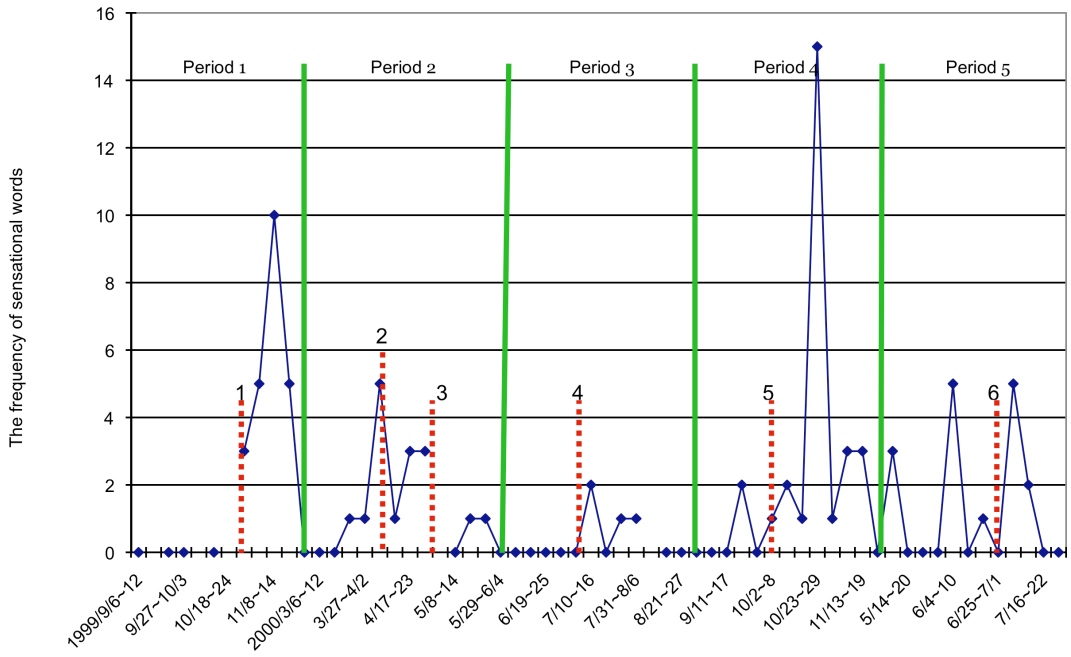

Figure 4-1 Frequency of sensational words in overall AZT's across the issue cycle time frame grouped by week

Figure 4-1 displays the frequency of sensational words by week. The five periods for ANOVA purposes are superimposed over the issue cycle time frame. The highest peaks appear two or three weeks after Mbeki's fifth address in period 4 and after his first address in period 1.

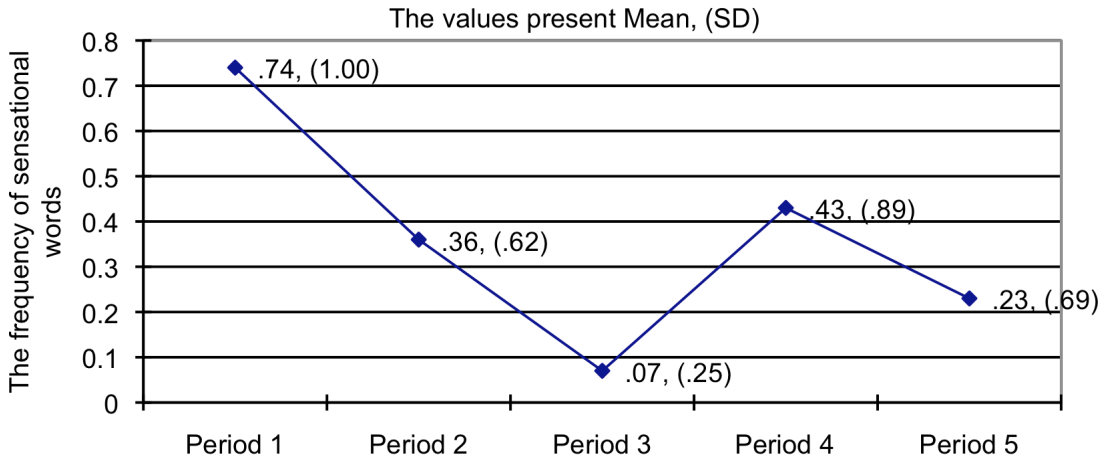

Figure 4-2 Frequency of sensational words in AZT's coverage across the issue cycle time frame grouped by three-month-period

Figure 4-2 shows the average frequency of sensational words per article related to AZT in each of the five periods for the issue cycle. The sensationalism decreased sharply, reached its lowest point in period 3, and increased near its average before dropping again in period 5. The ANOVA test showed that the presence of sensational words ($F_{(4, 279)}$=5.52, p<.01) was significantly different, and a regression test found that there was a significant linear relationship ($t_{(282)}$=-2.12, p=.04) in the decrease of sensational words . Therefore, in response to RQ4a, media may have served to attenuate the risk of AZT.

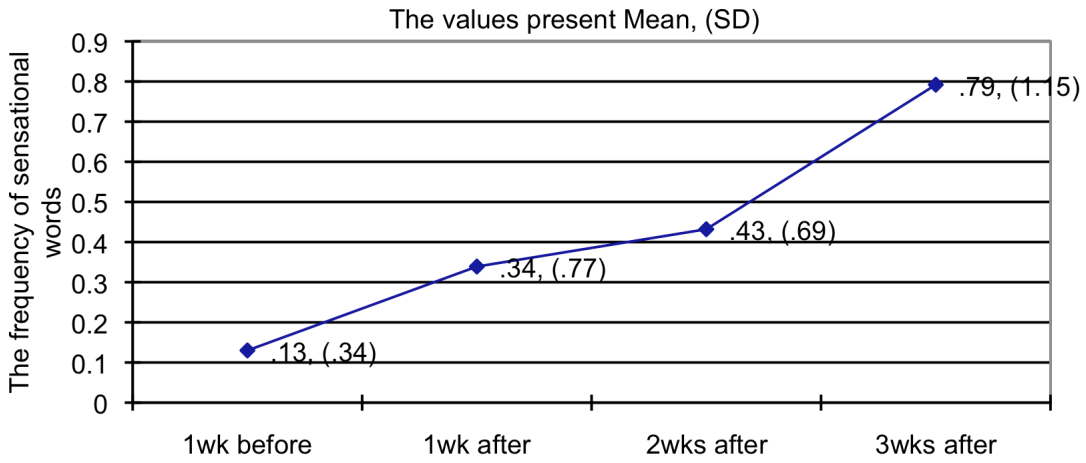

Figure 4-3 Frequency of sensational words in AZT's coverage across the risk event time frame

Figure 4-3 presents the frequency of sensational words in the four risk event time periods. The linear regression test ($t_{(149)}$=3.08, p <.01)shows sensationalism increased over the four periods and the ANOVA test ($F_{(3,147)}$=3.39, p=.02) agreed in significant differences. Therefore, in response to RQ4b, the sensationalism continuously increased after each risk event, suggesting that media may have served to amplify the risk of AZT even if the overall sensationalism remained small.

4.5 Tone of coverage

Nearly 55% of articles opposed the government's stance of AZT, 28% of articles were neutral, and only 17% of articles supported the government's stance on AZT. Therefore, in response to RQ5, the average tone was -.38 (SD=.76) within a range of +1 to -1, suggesting that the media opposed the government's stance on AZT, and may have served to attenuate the risk of AZT.

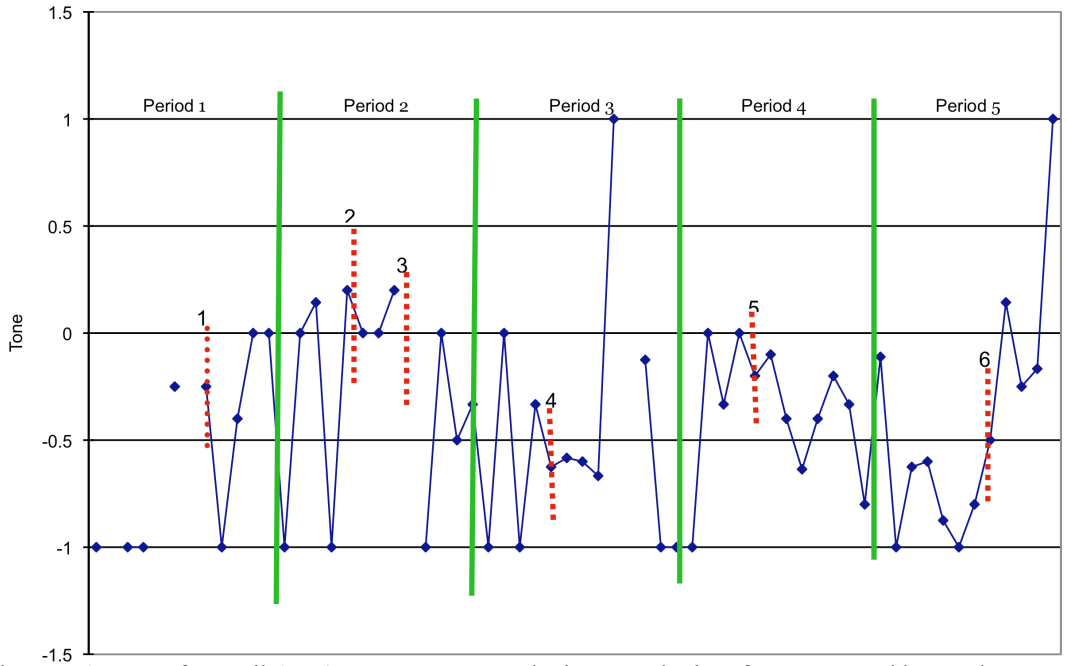

Figure 5-1 Tone of overall AZT's coverage across the issue cycle time frame grouped by week

Figure 5-1 indicates the tone of overall AZT's coverage by week. The five periods for ANOVA purposes are superimposed over the issue cycle time frame. The media opposed the first, fourth, fifth and sixth addresses, but slightly agreed with the second addresses in period 2. The strongest opposition was to the fourth address in period 3 among his six addresses. Even though the tone generally fluctuated between 0 to -1, there are two peaks of +1 in period 3 and 5 because those codes were determined by only one or two articles in those weeks.

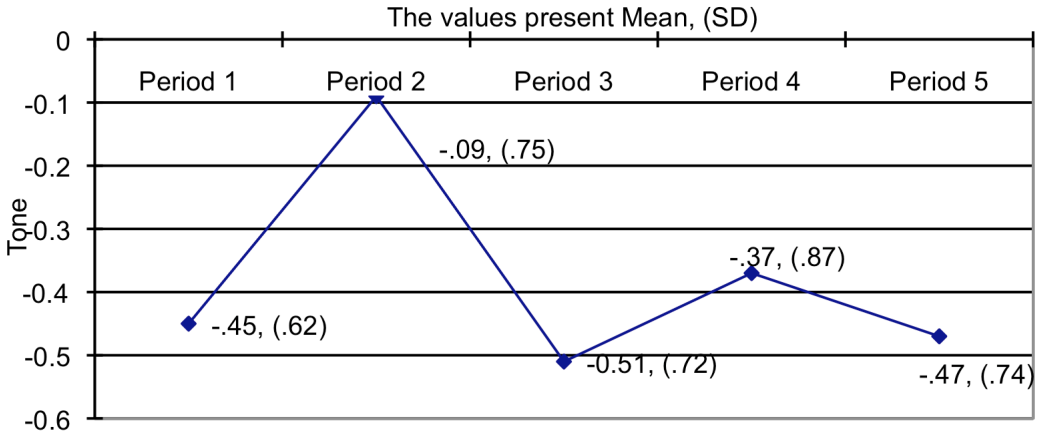

Figure 5-2 Tone of AZT's coverage across the issue cycle time frame grouped by three-month-period

Figure 5-2 presents the average tone related to AZT in each of the five issue cycle time periods. The average tone was highest in period 2 but remained negative over all periods for the issue cycle. The ANOVA test ($F_{(4,279)}$=2.83, p=.03) shows that there are significant differences in tone. Therefore, in response to RQ5a, even with the peak of tone in period 2, that media's constant opposition to Mbeki's views suggests it may have served to attenuate the risk.

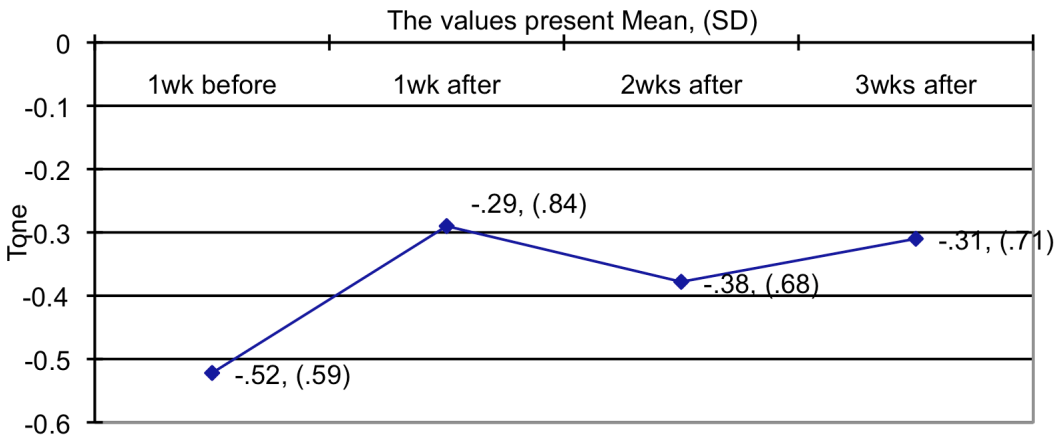

Figure 5-3 Tone of AZT's coverage across the risk event time frame

Figure 5-3 shows the average tone of AZT's coverage in each of four risk event periods. The media consistently opposed to the government's stance on AZT. The attitude toward Mbeki's views seemed slightly more positive after each risk event, but still remained negative. However, the ANOVA test results ($F_{(3,147)}$=.59, p=.63) and the linear regression tests ($t_{(149)}$=.60, p=.55) both found no statistical significances among the four periods, suggesting that the change in tone is not significant across the risk time frame. In response to RQ5b, the media seemed to attenuate the risk of AZT because the peak after the risk event never became positive and the tone remained constantly negative overall.

4.6 Comparison between black- and white-dominant readership papers

The star published more AZT stories (N=166, 59%) than The Cape Times (N=108, 38%), and ten articles appeared in both newspapers (N=10, 4%). Each of the ten repeated articles were only analyzed once for all previous measures, but were analyzed twice when comparing two papers, once for each paper in which it appeared.

Table 2 shows values of ANOVA tests for each paper. The average prominence as measured by page number of the Cape Times (pg=5.43) was significantly higher than in The

Star (pg=6.78). This is likely an artifact of the fact that the Star has 20~30 pages in the first section, while the Cape Times has 15~20 pages in the first section.

The Cape Times had more sources cited per articles as well as each type of sources than The Star. The dominant source in both papers was political sources, followed by scientific sources, and advocacy group sources. The Cape Times (.32) had an equal frequency of sensational words with The Star (.31). The average tone of Cape Times (-.45) was more negative than The Star (-.34). But the ANOVA tests show that the two newspapers have significant differences only for prominence without significant differences in the remaining variables. Therefore, in response to RQ6, the only significant difference between papers was prominence, and the rest of variables were not significantly different.

Ta ble 2 Comparison between black- and white-dominant readership papers

Variables	Cape Times Mean, (SD)	The Star Mean, (SD)	$F_{(1,292)}$	p
Page number	5.43, (3.15)	6.78, (4.52)	7.89	<.01
# of sources	3.29, (2.57)	2.85, (1.95)	2.79	.10
Political sources	1.22, (1.45)	1.13, (1.33)	.34	.56
Scientific sources	.79, (1.35)	.59, (1.04)	1.99	.16
Advocacy sources	.59, (.93)	.41, (.73)	3.62	.06
Sensational words	.32, (.76)	0.86, (.69)	.32	.31
Tone	-.45, (.66)	-.34, (.81)	1.47	.23

CHAPTER 5. DISCUSSION

The purpose of this study was to examine the coverage of AZT in South Africa newspapers and to assess the potential role of media in the social amplification of risk. In particular, this case study provides an extension of the SARF into the area of therapeutics within an African view of AIDS, both of which have been largely absent. This research used content analysis to measure how South African media covered risks associated with AZT to suggest whether the media may have served to either amplify or attenuate the risk of AZT based on President Mbeki's six relevant addresses between September 1999 and July 2001. Previous literature suggests that media may serve to amplify a risk event if the coverage contains (1) high frequency (2) high prominence (3) a greater reliance on political sources than other sources (4) high presence of sensational words and (5) strong negative tone.

Utilizing the above variables, this study analyzed news articles related to AZT in two major English- language South African newspapers in three frames: overall average, the issue cycle time frame, and the risk event time frame. Overall, it appears that the media may have served to amplify the risk of AZT immediately after individual risk events, but when compared to overall or issue cycle measurements, the effect of potential risk amplification seems less pronounced.

5.1 Frequency of coverage

It is unclear if the peaks in frequency near Mbeki's addresses were caused by Mbeki's views or because the addresses coincided with other newsworthy events. Examining the overall frequency by week, the peaks of frequency in periods 1,2,3 seemed to be based on specific events. The peak coverage (frequency=10) in November 1999 coincided with the debates over the provision and pricing of AZT, the peak coverage (frequency=10) in April

2000 coincided with deaths during clinical trials of Nevirapine, and the peak coverage (frequency=24) in July 2000 coincided with the AIDS conference in Durban. In contrast, the peaks of coverage in periods 4 and 5 seemed diverse and lasting. In period 4, the peak coverage (frequency≥10) in October 2000 lasted three weeks with political-oriented issues due to the coming local election. In period 5, it appeared that the frequency of every other week was above 6, and the news topics of AZT included pricing, policies, and new clinical studies. Regardless of the cause of the increase in frequency, the issue of AZT did increase within the newspaper's agenda over the time periods and included Mbeki's risk events.

Regarding the issue cycle time frame, the frequency more than doubled from period 1 (frequency=31) to period 5 (frequency=70). The increase in frequency time frame suggests that the issue of AZT gradually received media's attention, and media may have served to amplify the risk event in the long term.

Regarding the risk event time frame, the frequency nearly tripled and peaked one week after the risk event, and took two weeks to reach its half-peak coverage. Rowe et al (2000) argued that media coverage may influence social amplification not only in the number of news stories but also in the duration of coverage and the half-life coverage, the point at which half the risk reporting about a particular has occurred. In this case, the half-life of coverage is around two weeks, suggesting that the issue of AZT still received the media's attention three weeks after Mbeki's addresses.

5.2 Prominence of coverage

The overall average page number of AZT's coverage was 6.3, suggesting that the issue of AZT did not receive much prominence.

Regarding the issue cycle time frame, the prominence slightly decreased from page 5.6 to 6.9 from period 1 to 5. Although without significant differences, the constant low prominence given to AZT may suggest that media may have served to attenuate the risk of AZT in the long term.

Regarding the risk event time frame, the prominence slightly rose from its lowest point (pg=5) one week after the risk event. While prominence increased slightly, the change is small and overall values were not prominent.

In this case, the South African media did not give prominence to AZT in average. However, an average measure of prominence may not capture the impact of President Mbeki's risk events well because it may underestimate his role in gaining media's attention. Among the 27 news articles that appeared on page one, 9 included the keywords of "Mbeki" or " President" in their headlines. The future studies could examine the patterns of how the issue of AZT climbed on page one stories, and the role of Mbeki in making the issue of AZT prominent.

5.3 Number and types of sources

Concerning the source variable, the average number of sources within AZT's coverage was 3.3. The dominant source was political, followed by scientific and advocacy groups. Furthermore, media preferred federal over local government officials, and orthodoxy over dissident scientists. Overall, politicians dominated sources, suggesting that media may have served to amplify the risk.

It might be over-simplistic to view politicians and the scientific community acting in a competitive manner to each other. Maxwell (2003) argued that scientists might take a complementary or oppositional stance relative to government spokespeople, depending on

ideology, connections to networks and resources within government and professional norms of behavior and communication.

In this case, some dissident scientists cooperated with federal government officials to justify Mbeki's claims that AZT was toxic and related policies, but the majority of the scientific community, such as the orthodoxy scientists, clinical experts, and scientific journals, opposed the dissident's views.

Even for the political sources, the local government and opposing parties were not always in line with state policies. In 2000, the government-appointed Medicines Control Council (MCC) had licensed AZT as a suitable drug for both treatment and prevention of mother-to-child transmission of HIV, and AZT was available for those women had been raped and HIV-positive pregnant women in some research sites at the Western Cape due to "multi-partisan" collaboration, including ANC Western Cape government, opposing political parties, scientists and advocacy groups (The Cape Times, 2000).

These findings disagree with Muula's (2008, p.118) statements that "President Mbeki and Health Minister Manto Tshabalala-Msimang were only reported to have said things. Also media have not mentioned that provincial governments have the possibility to override national government delays in scaling up highly active antiretroviral therapy (HAART)."

In the issue cycle time frame, political sources dominated in period 1,2,4,5, and scientific sources dominated in period 3. An AIDS international conference held by orthodoxy scientists in July 2000 likely explains the rise of scientists as a source category for period 3, and emphasizes that social groups compete for the media's attention, and the social perception of risk is dynamic in the long term.

Regarding the risk event time frame, the political sources increased, while both non-political categories decreased, and the total number of sources decreased, suggesting the diversity of sources decreased markedly after the risk event, leading to political sources becoming even more dominant. Therefore, media may have served to amplify the risk immediately.

5.4 Frequency of sensational words

The average frequency of sensational words within AZT's coverage was .32, less than one word in every three articles, suggesting that sensationalism and its effect of risk amplification seems small overall.

Regarding the issue cycle time frame, the sensationalism went down from period 1 (.742) to its nadir in period 3 (.07), and then peaked slightly higher than the average in period 4 (.43), suggesting that risk attenuated over time. The highest peak of sensationalism in periods 1 can be explained due to President Mbeki being quoted heavily when he first claimed that AZT was so toxic that it should not be used to prevent the transmission of HIV to infants. As time went on, coverage used Mbeki's initial quotes less and relied on other sources. The small peak in period 4 seemed tied to the provincial elections in December 2000, in which political parties again raised the issue of AZT.

Regarding the risk event time frame, the sensationalism consistently increased as time went by, and may be due to sensational words being more likely to be presented in later commentary news articles, such as opinions, letters, and news analysis rather than immediate straight news articles.

In this case, regarding the issue cycle time frame, the pattern of sensationalism and political sources seem similar. It is possible that sensationalism more often coincides with

political-oriented issues. However, the credibility of Mbeki, his health minister, and his party, may have been decreased by the challenges from mainstream scientists and mismanagement of the epidemic of HIV/AIDS, lessening their ability to sensationalize and leading to low levels of sensationalism overall.

5.5 Tone of coverage

The media generally opposed Mbeki's views with an average tone of -.38 between a range of fully support(+1) to fully opposition(-1), suggesting the strong opposition may have served to attenuate the risk.

Regarding the issue cycle time frame, the tone of coverage was consistently negative, suggesting media served to attenuate the risk of AZT. However, the tone of period 2(-.1) was less negative than the average tone (-.38). This coincides with when the government appointed a panel of experts on AIDS in March, including several dissident scientists who claimed that AIDS does not exist, that HIV does not cause AIDS and that the anti-AIDS drug AZT is partly responsible for AIDS-related illness. This is also the time period when five mothers died in the clinical trials of AIDS drug, Nevirapine, which might also contribute to the decrease of the opposition to the government's stance on AZT.

Regarding the risk event time frame, the opposition decreased slightly one week after the risk event, but was not significant according to the ANOVA tests, suggesting that an amplification effect seemed small in response to the risk event immediately.

Muula (2008) argued that South African media were negative to President Mbeki and Health Minister, and the results of the content study support that the South African media disagreed with the government's stance on AZT.

5.5 Comparison between black- and white-dominant readership papers

Sheckels (2004) analyzed Mbeki's scapegoating rhetoric on HIV/AIDS, and concluded that it may unite the people of his nation as victims of "The West." However, these findings showed his rhetoric was not effective because the average tone of both black- and white-dominant readership newspapers was similar and negative. Likewise, the only variable to have a significant difference between papers was prominence. Even this difference may be explained by the difference in page numbers between the two papers. Therefore, the data show no meaningful differences in amplification between papers, suggesting that Mbeki's anti-west scapegoating rhetoric was not effective at least within newspaper coverage.

5.6 Summary of findings

Combining all variables and time frames, the results lend some support to the idea that the media may have served to amplify the risk of AZT in South Africa, but emphasizes that other variables may have attenuated the extent of such amplification. The main amplification factors were frequency and the dominant political sources. However, consistent low prominence and tone represent factors that may have served to attenuate such risk perceptions. Table 3 shows a summary of the suggested effects on risk perceptions.

Table 3 Summary of the suggested effects on risk perceptions

	Overall	Issue Cycle	Risk Event
Frequency	NA	↑↑	↑↑
Prominence	↓	↓	↑
Dominant Source	↑↑	↑↑*	↑↑
Sensational Words	↑	↓	↑↑
Tone to Gov & stance on AZT	↓↓	↓↓	↓

↑ : small amplification; ↑↑: large amplification; ↓: small attenuation; ↓↓: large attenuation; NA: no value is applicable; * except for Period 3

Previous health risk studies collected data from either several consecutive months after risk events or several weeks surrounding risk events. However, this study is the first study to examine the SARF in both time frames, and finds that the media had different effects on risk perceptions in both time frames.

Regarding the frequency of sensational words, the media may attenuate the risk of AZT in the issue cycle time frame, but may amplify the risk in the risk event time frame, suggesting that the sensationalism may decrease in the long term, but may increase in the short term. Therefore, using both time frames helps capture the changes in variables better than only one time frame.

5.7 Limitations and future study

The sample of this study was limited to English-language newspapers as well as to certain geographical regions within South Africa and therefore may not be representative of South Africa as a whole. The approach outlined in this study could be replicated in different language, or sectors within the country. For instance, future studies could focus on content analysis of dialect versus official language newspapers or rural versus urban newspapers, and it may be found that Afrikaans-language newspapers may be more supportive of Mbeki's views, or that rural newspapers pay less attention to AZT because local governments didn't have enough money and medical professionals to make it available without the federal government's support.

There are also gaps between periods 1 and 2 as well as between periods 4 and 5 because the 15 chosen sampling months were based on three-month-periods around each risk events and do not represent 15 consecutive months. These periods surrounding Mbeki's addresses were chosen because this study aimed to evaluate the trends of newspaper coverage related to

these specific risk events. However, it is possible that coverage in these gaps were meaningfully different and could influence the results.

Regarding the comparison of two papers, the quantitative methodology of this study didn't reflect the fact the coders felt that the Star seemed more supportive of Mbeki's dissident views on HIV/AIDS well because of quantitative methodology. For example, one article described that two HIV(+) patients lived well without any medications, such as AZT because of their healthy lifestyles and positive attitudes (The Star, October 12, 2000). This article implied that it was not necessary for HIV(+) patients to take anti-AIDS drugs, assuming that it strongly supported Mebki's dissident views on HIV/AIDS, but the measured tone did not capture this implication.

While this study content analysis to imply effects based on the SARF, this study lacks the public opinion surveys related to AZT in the sampling time periods to provide evidence of the media's actual effect in risk perception. Future studies could identify relevant survey data from the time periods in question to compare coverage with public perception or develop questionnaires to assess current public knowledge and attitudes towards AZT, such as avoidance and stigmatization of AZT, loss of credibility and trust in risk managers, and demands for regulatory actions, to identify "ripples" of secondary and tertiary consequences that may exist based on the events measured in this study.

In one study along these lines, Patterson (2006) found that Mbeki's support of dissident stance on HIV/AIDS might have increased public resistance to AIDS education messages. A 2002 survey found that over 20 percent of South Africans lacked the knowledge that HIV causes AIDS, and 5 percent affirmed that HIV does not cause AIDS (Human Sciences

Research Council 2002, as cited in Patterson 2006). Similar studies could help fill the gap between coverage and public risk perception of AZT in South Africa.

Future research could also evaluate the relationship between political identity and risk perception to see whether Mbeki's scapegoating strategy affected how individuals perceive the risk of AZT.

The mass media plays a significant role in the social amplification of risk as it often provides the only available information about certain risks to the public. This study examined how the South African media reported dissident views on AZT promoted by President Mbeki and his Health Minister.

The findings provide patterns of amplification factors in media coverage and highlight interactions within social and historical contexts that could offer recommendations for effective public health risk communication practices for the scientific community, advocacy groups in diseases prevention, or in mobilizing public support for combating diseases with scientific knowledge and cultural understanding.

APPENDIX A. A SUMMARY OF MBEKI'S STATEMENTS

The following Mbeki's statements are adapted from Sheckles, 2004.

1. Oct 1999

On Oct 28, 1999, Mbeki addressed the National Council of Provinces. He started to question the safety of AZT and further declared that his fellow government officials would gather their own independent information on the matter.

2. April 2000

As result of the previous questioning about AZT, Mbeki was criticized. In defense, on April 3, 2000, he addressed a letter entitled ''HIV-AIDS Controversy'' to fellow African leaders. He linked poverty to the epidemic of HIV/AIDS and stressed the differences between AIDS in ''the west'' and AIDS in Africa. HIV/AIDS is primarily transmitted by heterosexual behaviors in Africa, but in U.S.A. it is transmitted by homosexual behaviors or intravenous injection. He committed himself to finding the specific actions for which Africa's specific AIDS epidemic calls.

3. May 2000

On May 6, 2000, Mbeki gave a speech to the President's Advisory Panel on AIDS. He suggested that he had been a fool to ask controversial questions. All he wanted was the truth.

4. July 2000

On July 9, 2000, Mbeki attended an international conference on AIDS in Durban. He declared that there was more behind AIDS in Africa than '' the west'' wanted to revealed. He implied the major cause of AIDS pandemic in Africa was poverty rather than HIV, and safe sex was not enough.

5. October 2000

On October 5, Mbeki delivered an address to the parliamentary caucus of the African National Congress. He said that there was no proof that HIV causes AIDS and suggested that AZT may cause AIDS and that drug companies knew it.

6. June 2001

On June 28, 2001, Mbeki addressed the National Press Club in Washington, DC. He changed his stance. He pointed out that science had linked HIV and AIDS and his personal belief about that link was irrelevant. He cited that pharmaceutical companies are now working with the South African government to combat AIDS.

APPENDIX B. CODEBOOK

Unit of analysis: Complete news article in the South African newspapers

1.What is the headline of the story? Who is the author?

_____

2. Who is the coder? _____

1= Yenfang

2=Yoon

3. What was the publication? _____

1= The Cape Times

2= The Star

3= Both

4. What was the date of publication? MM/DD/YY _____

5. What is the section of the article? _____

1=First Sections

2=Business Section

3=Other

6. What is the page number?

____Page number (2-digit code) in *The Cape Times*

____Page number (2-digit code) in *The Star*

7. What is the type of news story? _____

1=News

2=Editorial

3=Letters or opinion analysis or columns

4=Feature

5=Other

8. How many sources of information were cited in the article? Sources refer to individuals or groups who have been cited as sources of information within the story.

Sources need appear in the direct quotes.

Ex: ‘‘We need to still push the ABC --- abstain from sex, be faithful, use a condom,’’ said Simela.

Sources need not appear in the direct quotes, but they offer the facts, opinions, suggestions or analysis.

Ex: Boehringer-Ingelheim has announced that the price of Nevirapine for long-term use in adults will also be reduced.

Ex: I believed the DA can, and rather better than the ANC.

8-1 Source _____The number of sources

8-2 Who were the first ten sources quoted in the article using the following codes?

Sources 1__ First source cited

Source 2 __ Second source cited

Source 3 __ Third source cited

Source 4 __ Fourth source cited

Source 5 ___Fifth source cited

Source 6 ___Sixth source cited

Source 7 ___Seventh source cited

Source8 ____Eighth source cited

Source9 ____Ninth source cited

Source10 ___Tenth Source cited

Identify each source with following categories:

(0) The article didn't mention any source

(1) South African federal government officials: President Mbeki, Mbeki's spokeperson, the Health minister, Manto Tshabalala –Msimang, Medicine control council (MCC), National AIDS Council of South Africa (NACOSA)

(2) South African local government officials: City council, South Peninsula Municipality, Members of the Executive Council (MEC)

(3) Politicians affiliated with African National Congress (ANC) party but not in the federal government: ANC spokeperson, Smuts Ngonyama

(4) Politicians affiliated with Democratic Alliance (DA) party: Leader of DA, Tony Leon

(5) Politicians affiliated neither ANC nor DA: New National Party (NNP), Pan African Congress Party (PAC)

(6) Foreign government officials: US President, Kenyan President, US Surgeon-general

(7) Dissident scientists refer to scientists who reject mainstream opinion that HIV causes Aids: Peter Deusberg, David Rasnick.

(8) Orthodoxy scientists refer to scientists who accept mainstream opinion that HIV causes AIDS or support the provision of AZT: Salim Abdool-Karim, Malegapuru, William Makgoba, Medical Research Council (MRC), International AIDS Vaccine Initiative (IAVI), the Durban Conference organizer, Jerry Coodia

(9) Unknown scientists: scientists who don't mention their stances on the cause of AIDS

(10) Scientific study and journals and journal editors;

(11) Clinical medical experts and health workers in South Africa

(12) Industry and industry associates: CEO's, cooperate spokepersons, Invest bank, Risk Management Consultancy (RMC)

(13) South African local advocacy group refers to organizations that have strong opinions and actions related to the government's AIDS policy: Treatment Access Campaign (TAC), and the Congress of South Africa Trade Union (COSATU), the AIDS Legal Network

(14) International not-for-profit groups that are not counted in the previous advocacy group: WHO, World Bank, MSF

(15) Ordinary citizens such as HIV-positive individuals and their friends and families

(16) Celebrity or public figures, but not in the groups listed above: Singers, Religious leaders

(17) Media: News Wire, Time Magazine

(18) Judiciary: Judge, Human Right Commission, The court, laws, acts

(19) Others: Not listed in above

9. Sensational loaded words:

The following list contains all the negative emotional words to be coded: toxic, dangerous, kill (only in the future tense), harmful, fatal, unsafe, detrimental, and lethal. Also, the following list contains all loaded phrases to be coded: genocide, guinea pigs, biological weapon.

9-1 How often do negative emotional words from the supplied list appear in the article?

0= do not appear

1= once

2= twice

3= more than twice

9-2 Where did the first loaded words appear in the article?

0= do not appear

1= Headlines or lead paragraphs

2= First three paragraphs

3= Remainder of article

10. Tone of articles:

How did the article present the risk of AZT?

If a paragraph agreed with Mbeki's views, or it rejected the mainstream opinion that HIV was the cause of AIDS, or it opposed the South African government that should offer AZT for treatment and prevention of mother-to-child transmission of HIV, the paragraph is coded as positive.

If a paragraph disagreed with Mbeki's views, or it supported the mainstream opinion that HIV was the cause of AIDS, or it suggested that the South African government should offer AZT to pregnant HIV-positive women, rape survivors, and etc, the paragraph is coded as negative.

If a paragraph mentioned neither risks nor benefits of the drug, or it didn't cite whether HIV was the cause of AIDS, the paragraph is coded as neutral.

Each paragraph should be coded as positive, neutral, or negative. If more than two-thirds paragraphs are coded as positive, the tone of article will be coded as +1. If more than two-thirds paragraphs are coded as negative, the tone of the article will be coded as -1. If the

article neither positive nor negative to the risk of AZT, the tone of the article will be coded as 0.

+1=positive tone toward Mbeki's views of the risk of AZT (more than two/thirds paragraphs amplified the risk of AZT)

0=neutral (no more than two/thirds paragraphs amplified/attenuated the risk of AZT)

-1=negative tone toward Mbeki's views of the risk of AZT (more than two/thirds paragraphs attenuated the risk of AZT)

APPENDIX C. INSTRUCTIONS ON CODING SCIENTISTS

A guide for coding dissident and orthodoxy scientists, adapted from the South African Presidential Panel (The Cape Times, May 5, 2000).

1. Dissident scientists refer to scientists who reject the mainstream opinion that HIV causes AIDS

Prof Harvey Blaly, editor Bio/technology (US)

Prof Etienne de Harven, pathology, University Toronto (Canada)

Prof Peter Duesberg, professor of biochemistry and molecular biology, Berkley (US)

Dr. Chirstian Flala, specialist physician with experience in the African AIDS situation (Australia)

Dr. Glado Roberto, specialist in infectious and tropical disease (US)

Dr. Andrew Herxheimer, clinical pharmacologist (UK)

Dr. Klaus Koehnleln, AIDS practitioner, critical with practical experience in treating AIDS patients in Africa (Switzerland)

Prof Sam Mhlongo, head of family medicine, Medical University of Southern Africa (SA)

Prof Eleni Padadopolus-Eleopulos, biophysicist (Australia)

Prof David Rasnick, molecular pharmacologist (US)

Dr. Joseph Sonnabend, physician who treated many early AIDS cases in New York (US)

Prof Gordon Stewart, professor of emeritus of public health, University of Manchester (US)

2. Orthodoxy scientists refer to scientists who accept the mainstream opinion that HIV causes AIDS.

Prof Salim Abdol-Karim, head of HIV/AIDS research unit, Medical Research Council (SA)

Dr. Stephen Chandiwana, director of the Blair Institute of Research (Zimbabwe)

Dr. Stefano Betrozzi, public health policy maker (Mexico)

Dr. Ann Durerr, Center of Disease Control, Atlanta (US)

Dr. Helene Gayle, National Center for HIV/AIDS and TB prevention, Center for Disease Control and Prevention (US)

Dr. Cliffod Lane, direction of National Institute for Health (US)

Prof Malegapuru William Makgoba, president Medical Research Council (SA)

Prof Luc Montagnier, co-discoverer of HIV, director of the Center of Molecular and Cellular Biology (France)

Dr. Ramesh Paranjape, acting director National AIDS Research Institute (India)

Dr. George Perez, AIDS expert from Havana (Cuba)

Prof Walter Prozesky, leader of SA Vaccine Institute (SA)

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