MORTALITY SALIENCE AND SMOKERS' REACTIONS TO

ANTI-SMOKING MESSAGES

by

Matthew M. Monin

B.A. in Psychology, SUNY Buffalo, Buffalo, 1999

B.A. in Social Sciences – Interdisciplinary, SUNY Buffalo, Buffalo, 1999

M.A. in Psychology, Duquesne University, Pittsburgh, 2001

Submitted to the Graduate Faculty of

Arts and Sciences in partial fulfillment

of the requirements for the degree of

M.S. in Psychology

University of Pittsburgh

2009

UNIVERSITY OF PITTSBURGH

ARTS AND SCIENCES

This thesis was presented

by

Matthew M. Monin

It was defended on

August 16th,2007

and approved by

William Klein, PhD, Associate Professor, Psychology

Martin Greenberg, PhD, Professor, Psychology

John Levine, PhD, Professor, Psychology

Thesis Director: William Klein, PhD, Associate Professor, Psychology

MORTALITY SALIENCE AND SMOKERS' REACTIONS TO ANTI-SMOKING

MESSAGES

Matthew M. Monin, M.S.

University of Pittsburgh, 2009

Terror management theory (TMT) states that self-esteem acts as a buffer to prevent humans from experiencing anxiety about their own mortality. TMT research on health behaviors has demonstrated that people are more likely to engage in risky health behaviors that are consistent with their self-image when under the influence of mortality salience (MS). The present study looks to reverse that tendency by coupling MS with messages that present self-image related risky health behaviors as socially threatening. When smokers were presented with socially threatening anti-smoking messages, participants who received an MS induction were more likely to report higher quitting intentions compared to controls. No such difference was found for participants who were presented with anti-smoking messages that threatened health. Implications for how TMT could be utilized to create more persuasive health messages is discussed.

TABLE OF CONTENTS

LIST OF TABLES

1.0   INTRODUCTION

Smoking is a major cause of heart disease and many types of cancer and has been established as the leading preventable cause of death in the United States (National Center for Health Statistics, 2006). Nevertheless, the number of smokers in the population remains surprisingly high, despite the obvious health risks and the proliferation of anti-smoking media. The NCHS reports that, as of 2005, 21% of people surveyed are current smokers. These figures include a disturbingly high percentage of high school students (23%) and pregnant women (10%). Even though anti-smoking advertisements utilize factual information about the chances of contracting a life-threatening disease coupled with striking visual messages, the effects they have had on getting current smokers to quit appear to be limited.

According to the NCHS National Health Interview Survey (2004) fewer than 4 in 10 daily smokers attempt to quit in a given year, and few of those attempts are successful. The U.S. Department of Health and Human Services (2000) estimates that only 5% to 16% of smokers successfully quit for at least six months without the use of any medication for nicotine withdrawal. Even with nicotine replacement techniques, the success rate only rises to between 17.7% and 30.5%. These figures suggest that fewer than 10% of daily smokers attempt and succeed at quitting smoking each year, despite ample evidence that doing so is prudent. Consequently, after reviewing dozens of empirical studies, Wakefield, Flay, Nichter, and

Giovino (2003) conclude that the most reliable positive effects of anti-smoking advertising appears to be preventing commencement of smoking in the first place.

It appears that Wakefield et al's conclusions stem from the fact that much more research has been done on preventing new tobacco use as compared to encouraging the cessation of current use, and research on the effects of anti-smoking messages on the latter have been mixed at best. For example, Henley and Donovan (2003) found that young smokers (ages 16-25) not only reported high levels of attitudinal, motivational, and intentional change in reaction to both death and non-death themed health messages, but that these responses were also higher than those given by older smokers. However, a California-based field study (Flay et. al., 1995) found a somewhat contradictory result; that neither social nor health-oriented interventions affected current school age smokers' intentions to quit. Further, these interventions failed to result in long-term behavioral differences in smokers or non-smokers compared to controls with regard to later smoking behavior. This lack of difference in future smoking behavior occurred despite a confirmed increase in informational awareness that students in the intervention groups experienced.

One reason that these studies have found mixed results may be that they do not adequately account for the motivations smokers have when processing threatening messages. Defensive processing, for example, sometimes leads people to find threatening information to be less credible when the threat posed by the information is personally relevant. For example, in a study by Liberman & Chaiken (1992), participants were given a report on a specific health-threat as well as additional reports, some of which confirmed and one of which failed to confirm the threatening information. Those for whom the threatening information was personally relevant showed a significantly stronger bias against the threatening information as compared to

participants who received a threat with low personal relevance. Similar to Flay et. al.'s (1995) finding, this bias did not appear to be due to inattention to the threatening message. Liberman and Chaiken suggest that this bias is a product of the systematic defensive processing of personally relevant threatening messages.

Engaging in biased information processing need not be the only defensive action taken. For example, when freshly confronted with threatening information, as in Henley and Donovan's (2003) study, one might be defensively motivated to express intentions to engage in behavioral change so as to alleviate the threat posed by the information. However, after the immediate threat has passed an individual might be defensively motivated to discount such information, particularly if heeding that information and the subsequent behavioral change would undermine one's current sense of self – as would be the case for someone who self-identifies as a smoker. These very different reactions to the same information can both be understood from the perspective of Terror Management Theory.

Evolutionary psychology has shown that our evolutionary heritage consists of not only physical adaptations, such as increased cranial capacity to allow for larger brain growth and higher intelligence, but psychological adaptations as well, such as a male's predisposition to view a female's friendliness as implying sexual interest (Haselton & Buss, 2000). Psychological adaptations affect information processing so that, like physical adaptations, the creature has a greater chance of personal survival and increased likelihood of successful transmission of genetic code to future generations. A male who is more likely to see all females as being flirtatious is also more likely to attempt to mate with more females, and thus will be more likely to sire offspring than a male without such a predisposition.

Terror management theory (TMT) is a relatively new perspective on human motivation based upon the premise that two of our inherited evolutionary traits – the survival instinct and our higher cognitive abilities -- have the potential to conflict. According to TMT, this potential for conflict necessitated the development of a specialized information processing adaptation. The survival instinct that most creatures have activates the "fight or flight" response in the face of perceived danger. Creatures that have such instincts benefit from enhanced speed and strength in stressful situations so as to better stay alive long enough to reproduce and raise their young. Our uniquely human cognitive abilities include greater intelligence and the capability to make the self the focus of attention. These contribute to the increased adaptivity of humans by creating the potential to cognitively override other adaptive instincts during situations in which those instincts are not appropriate. For example, when another person's food activates our instinct to want to eat when hungry we are able to override the instinctual response of trying to take the food that person is eating for ourselves in order to satisfy our needs immediately in favor of deferring satisfaction by finding food of our own.

In combination, however, the survival instinct and self-awareness create a paradoxical situation into which every human is born. We have a desire to live while simultaneously being aware that, ultimately, we have no chance to escape death. We see death in the world around us and realize that we too will fall victim to that fate inevitably, thus dooming the survival instinct to ultimately fail. Additional adaptations are needed to compensate for the side effects of our self-awareness lest we be rendered unable to take any goal-oriented action due to a permanent state of paralyzing anxiety. Pyszczynski, Greenberg, and Solomon (1999) propose that the psychological defenses against death-related anxiety occur at two distinct levels, with each level managing death-related thoughts in a different way.

Proximal defenses operate on thoughts that are the focus of consciousness, typically through processes of rationalization. The threat of death can be outright denied or pushed away as being something that will not occur until far in the future. In doing so, thoughts of death can be pushed out of consciousness entirely by discrediting the possibility and distracting oneself from the fact that it was brought into awareness in the first place. Alternatively, one could heed the threat and decide to take action to prevent death from happening. Either way, the threat of death has been pushed out of one's conscious thoughts and the proximal defense has served its purpose.

Once out of consciousness the *distal* defenses against mortality salience are thought to be engaged. The object of distal defenses is to buffer unwanted thoughts about the inevitability of our demise from re-emerging into awareness. These buffers consist of believing in and maintaining a stable worldview and engaging in cultural activities that offer and maintain self-esteem and self-identity (for examples of research and theoretical reviews on this subject see Greenberg, Pyszczynski, Solomon, Rosenblatt, Veeder, Kirkland, & Lyon, 1990; Harmon-Jones, Simon, Greenberg, Pyszczynski, Solomon, & McGregor, 1997; Mikulincer & Florian, 2002; Pyszczynski, Solomon, & Greenberg, 1997; Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989) TMT argues that all of these buffers provide the individual with a sense of immortality, either symbolic (being a part of something that will live beyond the self, such as an ideology or a nation) or literal (common in many religions). This sense of immortality lessens the catastrophic consequences of personal death, reducing its importance and thus reducing the need to consciously contemplate one's own death.

Anything that increases someone's awareness of his or her own mortality is thought to trigger these defenses. Simply writing a brief essay about what it would be like to die is enough

to engage proximal defenses. After a brief delay (most terror management studies use an interval of three minutes) the proximal defenses have served their purpose – conscious thoughts of death are no longer present – however unconscious mortality salience is heightened, thus engaging distal defenses (Arndt, Cook, & Routledge, 2004). People are so sensitive to death-related stimuli, in fact, that merely standing in front of a funeral home increases unconscious mortality salience to the point that reactions mirror those of participants in laboratory terror management studies (Pyszczynski et al., 1989), where mortality salience inducing stimuli are generally much more explicit.

As the proximal effects of terror management are both immediate and brief, most research on TMT focuses on the effects of unconscious thoughts of death and how they are manifest vis-à-vis the distal defenses. The present study is interested specifically in how these distal defenses against unconscious death-related thoughts might affect a smoker's reactions to anti-smoking messages.

Might TMT explain the relative ineffectiveness of anti-smoking advertisements that warn about the long-term health consequences of smoking? Such advertisements often try to get smokers to quit by confronting them with the ways they can die due to their behavior. However, many smokers include 'being a smoker' as part of their self-identities, and self-identity has been identified as a distal defense against mortality salience (Castano & Dechesne, 2005). When health-threatening behavior is also linked to one's distal defenses the intention to change is likely to last only until the proximal defense needs have been satisfied. Thus, once a smoker has consciously dealt with the health message, it might lose its impact and carry no lasting effect.

This is precisely what Routledge, Arndt, and Goldenberg (2004) found in studies on the effects of mortality salience on tanning behavior. When mortality was made salient to students

6

who associated tanned skin with personal image and self-esteem, they reported significantly more interest in purchasing high SPF sunscreen than did controls after being presented with information about exposure to UV rays and skin cancer while in the proximal mode of defense. Thoughts of death were in focal attention when participants evaluated the health information. However, when students' interest in purchasing sunscreen was assessed after receiving the same information while in the distal mode of defense, which the experimenters induced by interjecting a delay between the mortality salience induction and the presentation of the health information, those in the high mortality salience condition reported significantly *less* interest than controls.

The authors suggest that this counter-intuitive finding is due to the participants' linking of tanning behavior with self-esteem and self-identity. Even though proximal defenses demand that participants try to dissociate themselves with the behavior that was linked to a threat to their mortality, once that threat was out of consciousness it became more important to bolster self-esteem and self-identity to bolster distal defenses. This act of self-bolstering occurred even when it meant committing more to the same threatening behavior that would be denied in the proximal mode. The importance of keeping thoughts of death out of focal attention is so great that people will employ any means of bolstering a stable and positive sense of self, an identified distal defense mechanism, even when those very means actually increase the person's actual physical risk.

If smoking is something one initially takes up for self-presentational reasons, as is often the case (Leary, Tchividjian, & Kraxberger, 1994) the act of smoking can get tied up with one's self-esteem. In time, a behavior that started for reasons of self-presentation can become integrated into one's self-concept. Shadel and Mermelstein (1996) have shown that the identity

of being a 'smoker' can be an important part of one's self-concept and have empirically validated a scale that measures the degree to which this is the case.

TMT suggests that the reliance on distal defenses will result in a need to strengthen the structure of one's self-concept when mortality salience is induced, thus making one's attitude about smoking more resistant to change. So while an individual who has incorporated smoking into his or her self-concept may be influenced to quit by a health-threatening appeal in the short-term (while proximal defenses are activated), in the long-term such ads will have the ironic effect of making the smoker more committed to smoking as the unhealthy behavior satisfies his or her need to bolster distal defenses. Ads that focus on the risk of contracting heart disease or cancer might jar a smoker into thinking about quitting immediately after the message is received, but such intentions will only last as long as the threat is in focal attention. As soon as thoughts of death are out of consciousness the need to keep them out will drive a self-identified smoker to smoke more, as doing so helps reaffirm a stable sense of self and acts as a valuable distal defense against potentially paralyzing terror.

How can we influence someone to disassociate from a trait with which he or she identifies? Research has shown that social threats targeted at the self-identified trait can motivate change when distal defenses are engaged after mortality is made salient. For example, distal defenses can influence people to disassociate themselves from a group when identifying with that group is threatening to self-esteem maintenance (Arndt, Greenberg, Schimel, Pyszczynski, & Solomon, 2002). Consistent with previous terror management findings, women in conditions of increased mortality salience were more apt to identify with their gender as part of their identity. However, when negative stereotypes about females were also made salient (by having them take the math section of the SATs) the usual mortality salience findings of increased

in-group identification disappeared. Similarly, Hispanics primed with a negative stereotype (a newspaper article depicting a Hispanic drug lord) were more negative in their evaluations of paintings from allegedly Hispanic artists when mortality salience was induced.

These two studies have demonstrated how MS can lead people to distance themselves from an aspect of their self-identity (gender and ethnicity, respectively) when MS is high and is associated with those aspects that seem threatening. However, those identity elements are prescribed, not chosen. With smokers, the identity of being a smoker stems from a behavior in which the individual chooses to engage. It follows that if a smoker were to be sufficiently motivated to disassociate from the identity of being a smoker, he or she should choose to cease performing the behavior that is the source of that identity. The present study looks to extend these aforementioned findings to show that MS can lead people to make personal behavioral changes aimed at redefining one's identity when that identity seems threatening.

Anti-smoking advertisements generally do not couple mortality threatening health information with messages regarding the social consequences of smoking. Most anti-smoking advertisements use one strategy or the other – not both. If an anti-smoking advertisement uses social threats that present negative stereotypes about smokers but does not combine them with mortality themed health threats there is less demand for the distal defenses to be bolstered. Even though one's identity as a smoker may lead to lower self-esteem via messages about decreased social-acceptance, popularity, and attractiveness, it is inducing mortality salience in the first place that motivates the individual to want to disassociate with the identity of 'smoker.' Thus, an anti-smoking message that is socially stigmatizing in nature can be effective at motivating behavioral change in an attempt to disassociate from that stigmatized identity by appealing to

9

distal terror management defenses, but only when unconscious mortality salience is heightened in the first place.

To test this hypothesis, smokers participated in one of four conditions of a 2 x 2 design in which the type of health message received (image-related or health-related) and whether or not they received a mortality salience induction were manipulated. The primary prediction of this study is that quitting intentions will be highest when smokers are presented with socially themed anti-smoking messages while experiencing heightened mortality salience.

No specific predictions were made for the other three conditions. It is possible that quitting intentions will be significantly lower for participants who experience MS coupled with threatening health information, consistent with Routledge, Arndt, and Goldenberg (2004) tanning behavior studies. However, as their study involved only a mortality salience induction and this study includes a presentation of health threats, it is possible that the threatening information would counteract the effect of MS on intentions. Smoker-self-concept (SSC) will be controlled for in the analyses as it is predicted that the strength of the effects of MS will depend upon the amount with which the participants identify themselves as smokers.

2.0   METHODS

2.1   PARTICIPANTS

The participants were 125 University of Pittsburgh undergraduate smokers (69 male, 56 female) who were 18 or more years of age. Participants volunteered to take part in this study to partially satisfy a course requirement for their Introduction to Psychology class. To qualify as a smoker for the purposes of this study, participants must have smoked at least 10 cigarettes daily, and must have been maintaining this rate of smoking for at least six months.

2.2   MATERIALS AND PROCEDURE

Participants were run individually after being randomly assigned to one of four conditions in a 2 (MS vs. control) x 2 (health threat vs. social threat) between-groups factorial design. Participants were told that that the investigators were conducting research on how individual differences affect the way people interpret smoking-related messages.   Initial questions were asked to assess their smoking history, level of smoker self-concept using Shadel and Mermelstein's (1996) Smoker's Self Concept scale (e.g. "Smoking is part of my self-image", "Others view smoking as part of my personality", and "Smoking is part of who I am"), and their baseline intentions to quit smoking using 7-point Likert scales.

11

Participants in the MS conditions received the following questions, purportedly as part of a personality assessment: 'Please briefly describe the emotions that the thought of death arouses in you' and 'Jot down, as specifically as you can, what you think happens to you as you physically die and once you are physically dead.' Participants in the control conditions responded to parallel questions regarding failing an exam. This is a control condition used in other studies on TMT and was chosen because these parallel questions are aversive, just as the MS questions are, but do not touch upon issues of mortality or health. After answering these questions, all participants were given a three minute distraction task before moving on to the anti-smoking message portion of the study.

During the anti-smoking message portion, participants were exposed to a timed presentation of anti-smoking advertisements and information. Participants in the health-threat conditions viewed a presentation with material focusing on images that pertain to smoking-related disease and information highlighting the mortality rate of smokers and their risk of getting various types of cancer and heart disease. Visual advertisements depicted cartoon smoking skeletons or patients in hospital beds. Samples from the health related information presented include "Smoking is the leading cause of preventable death in the United States", "Smoking is a known or probable cause of approximately 25 diseases and is responsible for approximately five million deaths worldwide every year", and "Tobacco contributes to the hardening of the arteries, which can then become blocked and starve the heart of blood flow, causing a heart attack." Participants in the social-threat conditions viewed a presentation with material focusing on images pertaining to unattractiveness, such as yellowing teeth, and social rejection. The information highlighted social disapproval of smoking including statements such as "Cigarette smoke ages your skin and dries it out, causing wrinkles", "Smokers are more likely

to experience moderate and severe levels of tooth discoloration", and "67% of teens say that seeing someone smoke turns them off, and 86% say they'd rather date people who don't smoke". Pre-testing on the materials was conducted using a sample of 17 undergraduates who viewed the social and health threat information and rated it on a number of dimensions. These pre-tests determined that the different message types (social or health) were being differentiated between by viewers while being statistically equivalent in ratings of persuasiveness and overall threat level.

Finally, all participants responded to three questions assessing their intentions to quit smoking. These were the same questions that were asked at the beginning of the session: "How much do you plan to quit smoking in the next year?" "How interested are you in quitting smoking in the next year?" and "How likely are you to quit smoking in the next year?" In addition to this self-report measure of quitting intentions, participants were presented with a display of five different smoking cessation information pamphlets as they completed the session. Participants were told that they were allowed to take or leave these pamphlets as desired and did so out of view of the experimenter. The number of pamphlets available was counted both prior to and following each lab session to get a tally on how many each participant chose to take.

Participants were debriefed after completing the study. As part of the debriefing, the experimenter probed for suspicion as well as other factors that may cause their data to be removed (such as not smoking enough or currently in the process of quitting.)

3.0   RESULTS

Data from nine participants were removed from the sample: two participants revealed during debriefing that they were currently attempting to quit smoking and seven participants did not smoke enough cigarettes per day to qualify for the study. As these participants were not evenly distributed across the four experimental conditions, the elimination of their data resulted in unequal cell sizes. The number of cigarettes which participants reported consuming in a typical day ranged from 10 to 40 ($M = 13.91$, $SD = 5.05$). Controlling for cigarette use did not affect any of the analyses and will not be discussed further. Likewise, there were no significant differences by gender, so this variable will also not be discussed further. Participants' responses to the three quitting intentions questions were combined to form a single intention score ($\alpha = 0.95$). Likewise, smoker self-concept scale items were combined to create a single score ($\alpha = 0.87$) .

First, as the primary hypothesis focuses on a single specific condition differing significantly from the other three, a planned comparison was conducted in which the MS/Social threat condition was compared against the other three in terms of the resulting quitting intentions. However this analysis did not provide a significant result, $F(1, 121) = 1.96$, $p > .05$. The residuals were also non-significant, $F(2, 121) = 0.20$, $p > .05$. Next, a traditional 2 x 2 analysis of variance (ANOVA) was conducted to look at the effects of mortality salience and threat type on quitting intentions. This analysis yielded no main effect of MS ($F[1,121]=1.70$,

p=.20), no main effect of message type (*F*[1,121]=0.22, *p*=.64) and no significant interaction (*F*[1,121] = 0.40, *p*=.53). As can be seen in Table 1, mortality salience led to slightly higher quitting intentions overall, and the pairing of mortality salience with socially themed anti-smoking message resulted in the highest mean overall, however the differences were not enough to produce significant main effects or an interaction.

Table 3.1: Dependent variables by condition

| | Threat Type | | | |
| | Health | | Social | |
Mortality Salience Level:	*Low* *(n=29)*	*High* *(n=31)*	*Low* *(n=33)*	*High* *(n=32)*
Quitting intentions	4.06 (2.10)	4.30 (2.07)	4.00 (2.02)	4.70 (1.87)
Pamphlets taken	1.90 (2.26)	1.71 (2.05)	1.79 (1.98)	1.46 (1.88)

As the effects of mortality salience on quitting intentions will vary in accordance with the smoker self-concept (SSC) level of the participants, the above analysis was run again in the form of a regression, this time including SSC as an additional independent variable. Again, no main effects were significant, nor were any of the 2-way interactions, nor the 3-way interaction (all *p*s > .05). However, as SSC is strongly correlated with quitting intentions (*r*=-.46, *p*<.001) it was treated as a covariate and controlled for in further analyses. A repeat of the initial analysis, this time controlling for SSC, still did not result in significant main-effects of MS or of message, nor a significant interaction (all *p*s >.05).

A closer look at the distribution of the quitting intentions variable via the Kolmogorov-Smirnov test revealed that the mean scores in the sample were not normally distributed (*z* =

1.406, $p = .038$), thus the variable violates one of the assumptions for ANOVA. To correct for this a new nonparametric variable was formed. The quitting intentions measures featured a 7-point scale on which the upper end reflected agreement with statements related to quitting, the lower end reflected disagreement, and "4" was a neutral midpoint. Therefore, participants were categorized as either having intentions to quit (defined as having a mean of 5.00 – 7.00 on the scale) or as having no intentions to quit (defined as having a mean of 1.00 – 3.00 on the scale). Table 2 shows the number of participants that were categorized as having either intentions to quit or not by condition. Nineteen participants fell between 3.01 and 4.99 and were thus not included in this analysis.

A logistical regression was used to analyze this new dichotomous variable, again using MS condition and message type as independent variables and controlling for differences in SSC level. There was no main effect for MS condition ($\beta = 1.415$, $p = .364$), no main effect of message type ($\beta = 2.498$, $p = .110$) and no interaction ($\beta = -1.516$, $p = .124$).

Although the results of the logistical regression were insignificant, looking at the distribution of quitting-intention participants vs. no quitting-intent participants across the four conditions (Table 2) indicates that the condition combining mortality salience with a social threat was the only one to lead over half of the participants to be in the quitting intention group. This suggests that there should be an association between these variables. Indeed, a chi-square analysis looking at the association between whether or not mortality salience was induced and what quitting intent category the participant fell in yields a significant result ($\chi^2 = 4.51$, p = .034) for those participants who received social threats. In other words, when participants are presented with a social threat, there is an association between MS and quitting intentions such

that 59.26% of participants who received a mortality salience induction reported having intentions to quit compared to only 31.03% of participants in the control condition.

Table 3.2: Percentage of participants reporting quitting intentions by MS level

	Mortality Salience Level	
	Low	*High*
Health Threat	34.62%	45.83%

	Mortality Salience Level	
	Low	*High*
Social Threat *	31.03%	59.26%

* p<.05

On the other hand, there was no association between MS condition and quitting intentions when participants received a health threat (χ^2 = 0.65, p = .419). Evidently, unlike participants who received social threats, the percentage of participants who reported high intentions to quit smoking was not influenced by whether the participants received a mortality salience induction (45.83%) or were in the control group (34.62%) when they were presented with anti-smoking messages that threatened their health.

Finally, to look at the behavioral effects of MS and message type, a 2 x 2 ANOVA looking at the effects of condition on the number of information pamphlets was conducted. This analysis yielded no main effect of MS (F[1, 121]=0.54, p=.46), no main effect of message type (F[1,121]=0.27, p=.60) and no significant interaction (F[1,121] = 0.05, p=.82). A repeated

measure analysis using both reported intentions and the behavioral measure as factors for an overall quitting intentions dependent variable likewise yielded no main effect of MS (F[1, 121]=2.56, p=.11), no main effect of message type (F[1,121]=0.61, p=.44) and no significant interaction (F[1,121] = 0.45, p=.51).

4.0   DISCUSSION

Studies on terror management theory and health have shown that reminders of death lead people to make riskier health decisions when those decisions are consistent with self-image concerns (Routledge, Arndt & Goldenberg, 2004). The present study examines the hypothesis that people will be more willing to abandon an aspect of their self-concept that is linked with unhealthy behaviors after being reminded of their own mortality when they are presented with threatening information that casts their behavior in a socially negative light. The results lend weak support to this hypothesis. Although the mean self-reported quitting intentions by condition showed the expected pattern, the differences observed were not statistically significant. After categorizing participants as displaying either quitting intentions or not it was found that reminders of death were associated with higher instances of intentions to quit smoking when participants were exposed to socially threatening messages. No such association was found for participants exposed to health threatening information. However logistical regression failed to show the expected interaction, and there were also no effects of mortality salience or message type on a behavioral measure of quitting intentions (leaflet taking).

A significant limitation of the present study is the lack of attention to the factor of nicotine-dependence. Obviously, one of the main reasons smokers continue to smoke is the highly addictive nature of nicotine. It stands to reason that, much like Smoker Self-Concept, the degree to which one is dependent upon cigarettes may have a significant impact on his or her

quitting intentions. Future research should include a measure of nicotine dependence, such as Fagerstrom's nicotine tolerance questionnaire (1978) so that, like SSC, nicotine dependence can be controlled for in the analyses.

A second is the use of the university student population to draw the sample for the present study. The average age of all participants was 19.6 ($SD = 2.78$). It is possible that self-identifying as a smoker doesn't occur until one has been smoking for many years. Considering that the mean age participants reported starting smoking was 16.2 ($SD = 1.59$) this indicates that the average smoker in the sample had only been smoking for a little over three years. Thus the weak findings may be due to the majority of the sample not having a great investment in smoking as part of their self-concept – a critical component of the hypothesized effect that the combination of mortality salience and social-threat would have on quitting intentions. Indeed, 74% of the sample scored at the midpoint of the Smoker Self-Concept scale or lower. Using a community sample with a wider range of participant ages and smoking histories may help strengthen the findings.

A third weakness is a lack of information concerning the effectiveness of both the health threats and social threats presented to the participants. The literature on fear appeals conceives perceived threat as having two dimensions: perceived susceptibility to the threat and perceived severity of the threat (see Witte and Allen (2000) for a review). Though pre-test data were collected to confirm that neither message type used in the present study was significantly more threatening or more persuasive than the other, these pre-tests used a general undergraduate population rather than specifically using undergraduate smokers and thus their ratings of perceived severity of the message may differ from those of our laboratory participants, which were not measured. Likewise, there was no measure of perceived susceptibility to the threat. By

measuring both factors in future studies we will be able to control for variability of participants' perceived threat within conditions.

Regarding the lack of a behavioral manifestation of increased quitting intentions, it is possible that participants in the MS/social threat condition satisfied their need to deal with thoughts of death by simply reporting higher quitting intentions. Previous research has shown that once one type of distal defense had been used to buffer against reminders of death, further distal defenses are unnecessary (McGregor, Lieberman, Greenberg, Solomon, Arndt, Simon, & Pyszczynski, 1998). Thus, participants in the present study who had already buffered themselves against existential anxiety by reporting their intent to quit were no more motivated to separate themselves from the self-concept of "smoker" than other participants when it came time to select the informational pamphlets. Future research could use only the behavioral dependent variable to examine if differences arise when it is the most immediately available method for reducing MS induced anxiety. Unfortunately, this suggests that the effect of MS on quitting intentions is quite ephemeral, making it difficult to use this method towards developing an effective intervention.

It is also possible that participants in the critical MS/Social threat condition did not actually have higher quitting intentions, but were instead attentive to potential demand characteristics. The socially-threatening information coupled with reminders of death may have primed participants in this condition to make more social connections in order to deal with the threat. With the most immediate social connection available during the experiment being with the experimenter, participants in this condition may have felt pressure to be a "good" research subject to satisfy the anxiety provoked by the MS heightened social threat. Thus, participants may have reported higher quitting intentions for social reasons rather than reflecting their true intentions. Future research should include a second social-threat condition which is unrelated to smoking.

21

This will allow us to see whether social threats in general will produce this effect, suggesting that it is indeed a social response, or if it is necessary that the social threat attack the self-concept consistent behavior, suggesting that the subsequent reported intentions are genuine.

Another possible interpretation is that participants are reacting to a threat of ostracism represented by the social threats, rather than feeling the threat personally. The distinction is subtle, but important. The threat of ostracism due to identifying with a stigmatized is an indirect threat to the self as that identity potentially threatens one's social relationships, rather than the stereotype being threatening to the individual directly. Hirschberger, Florian, and Mikulincer (2002) have shown that people under the effects of mortality salience are more willing to compromise their standards when selecting a romantic partner. This not only suggests that people use relationships as a buffer against mortality-related anxiety, but that people are willing to sacrifice in order to attain relationships while under the influence of MS. It may be that MS creates a generally heightened need-to-belong. If the social threats from this study (as well as the stereotype threats posed to Hispanics in Arndt et al's 2002 study) were interpreted as a threat of ostracism, it stands to reason that a heightened need to belong may very well lead participants to publicly denounce their stigmatized self-identity, and in doing so compromise one of their usual standards of living, in hopes of maintaining their other social relationships. Teasing apart the difference between a personally felt threat and a threat posed by potential ostracism would be an important next step in this line of research.

If these findings are strengthened, they would suggest that coupling death-related thoughts with casting negative health behaviors in a socially negative light would lead to a more persuasive message. In fact, recent TMT research suggests that the death-related thoughts must be explicit; simply thinking about cancer is not enough to bring up thoughts of one's own mortality. Arndt,

Cook, Goldenberg, & Cox, (2007) found that thinking about cancer did not increase death-thought accessibility unless participants were under high cognitive load. This is consistent with the notion that we naturally suppress death-related thoughts posited by TMT. Particularly interesting was the finding that high perceived vulnerability to cancer lead participants to have *even lower* death-thought accessibility than participants who had low perceived vulnerability. Therefore it is crucial that one's own mortality be made explicit for MS to be an effective tool of persuasion.

As noted earlier, even with a more persuasive formula the effects may be short-lived, thus interventions cannot rely on such messages alone. One way in which this effect may be made to last longer is to tap into the desire for personal consistency as shown in research on cognitive dissonance (Festinger & Carlsmith, 1959). If the most immediate way to reduce death-related anxiety was to express intentions to adopt healthier behaviors to a friend or loved one personally, rather than anonymously on a questionnaire, people would feel more pressure to behave consistently with their expressed intentions.

These findings would have implications in domains outside of health as well. Research has already shown that MS can increase motivations to disassociate with inherent parts of one's identity, such as gender or ethnicity, when membership in those groups is perceived as threatening to self-esteem (Arndt, Greenberg, Schimel, Pyszczynski, & Solomon, 2002). The present study suggests that self-imposed social identities can be similarly affected. It stands to reason that this method may also be used to influence individuals to abandon group memberships. One could imagine a social worker using such techniques to persuade kids to leave a gang, or a recruiter trying to lure a prospect away from his or her current organization. Research exploring the question of whether such methodology could indeed lead to disassociation from actual group membership, rather than just broad social categories, would be a worthy next step.

In summary, the present research found that there is an association between being reminded of one's mortality and being more likely to report high quitting intentions when presented with socially threatening anti-smoking messages.   Though current anti-smoking advertisements have been successful at preventing people from becoming new smokers, there may be value in combining socially themed advertisements with death related imagery to increase their effectiveness at persuading current smokers to quit the habit.

BIBLIOGRAPHY

Arndt, J., Cook, A., Goldenberg, J. L, & Cox, C. R. (2007). Cancer and the threat of death: The cognitive dynamics of death thought suppression and its impact on behavioral health intentions. *Journal of Personality and Social Psychology, 92,* 12-29.

Arndt, J., Cook, A., & Routledge, C. (2004). The blueprint of terror management: Understanding the cognitive architecture of psychological defense against the awareness of death. In J. Greenberg, S. L. Koole, & T. Pyszczyski (Eds.), *Handbook of Experimental Existential Psychology* (pp. 35-53). New York, NY: Guilford Press.

Arndt, J., Greenberg, J., Schimel, J., Pyszczynski, T., & Solomon, S. (2002). To belong or not to belong, that is the question: Terror management and identification with gender and ethnicity. *Journal of Personality and Social Psychology, 83,* 26-43.

Castano, E., & Dechesne, M. (2005). On defeating death: Group reification and social identification as immortality strategies. *European Review of Social Psychology, 16,* 221-255.

Fagerstrom, K (1978). Measruing degree of physical dependence to tobacco smoking with reference to individualization of treatement. *Addictive Behaviors, 3,* 235-241.

Festinger, L. & Carlsmith, J.M. (1959). Cognitive consequences of forced compliance. *Journal of Abnormal and Social Psychology*, *58,* 203–210.

Flay, B. R., Miller, T. Q., Hedeker, D., Siddiqui, O, Britton, C. F., Brannon, B. R., Johnson, C. A., Hansen, W. B., Sussman, S., & Dent, C. (1995). The television, school, and family smoking prevention and cessation project: VIII. Student outcomes and mediating variables. *Preventive Medicine: An International Journal Devoted to Practice & Theory, 24,* 29-40.

Greenberg, J., Pyszczynski, T., Solomon, S., Rosenblatt, A., Veeder, M., Kirkland, S., & Lyon, D. (1990). Evidence for terror management theory II: The effects of mortality salience on reactions to those who threaten or bolster the cultural worldview. *Journal of Personality and Social Psychology, 58,* 308-318.

Harmon-Jones, E., Simon, L., Greenberg, J., Pyszczynski, T., Solomon, S., & McGregor, H. (1997). Terror management theory and self-esteem: Evidence that increased self-esteem reduced mortality salience effects. *Journal of Personality and Social Psychology, 72,* 24-36.

Haselton, M. G., & Buss, D. M. (2000). Error management theory: A new perspective on biases in cross-sex mind reading. *Journal of Personality and Social Psychology, 78,* 81-91.

Henley, N., & Donovan, R.J. (2003). Young people's response to death threat appeals: do they really feel immortal? *Health Education Research*, *18*, 1-14.

Hirschberger, G.; Florian, V.; & Mikulincer, M. (2002). The anxiety buffering function of close relationships: Mortality salience effects on the readiness to compromise mate selection standards. *European Journal of Social Psychology*, *32*, 609-625.

Leary, M. R., Tchividjian, L. R., & Kraxberger, B. E. (1994) Self-presentation can be hazardous to your health: Impression management and health risk. *Health Psychology, 13,* 461-470.

Liberman, A., & Chaiken, S. (1992). Defensive processing of personally relevant health messages. *Personality and Social Psychology Bulletin, 18,* 669-679.

McGregor, H., Lieberman, J. D, Solomon, S., Greenberg, J., Arndt, J., Simon, L, & Pyszczynski, T. (1998). Terror management and aggression: Evidence that mortality salience motivates aggression against worldview threatening others. *Journal of Personality and Social Psychology, 74,* 590-605.

Mikulincer, M., & Florian, V. (2002). The effects of mortality salience on self-serving attributions—evidence for the function of self-esteem as a terror management mechanism. *Basic and Applied Social Psychology, 24,* 261-271.

National Center for Health Statistics (2006, September). *Health, United States, 2006. With chartbook on trends in the health of Americans.* Retrieved July 03, 2007, from http://www.cdc.gov/nchs/data/hus/hus06.pdf

National Center for Health Statistics (2004, February). *Health Behaviors of Adults: United States, 1999-2001.* Retrieved January 25, 2005, from http://www.cdc.gov/nchs/data/series/sr_10/sr10_219.pdf

Pyszczynski, T., Greenberg, J., & Solomon, S. (1999). A dual-process model of defense against conscious and unconscious death-related thoughts: An extention of terror management theory. *Psychological Review, 106,* 835-845.

Pyszczynski, T., Solomon, S., & Greenberg, J. (1997). Why do we need what we need? A terror management perspective on the roots of human social motivation. *Psychological Inquiry, 8,* 1-20.

Pyszczynski, T., Wicklund, R. A., Floresku, S., Koch, H., Gauch, G., Solomon, S., & Greenberg, J. (1989). Whistling in the dark: Exaggerated consensus estimates in response to incidental reminders of mortality. *Psychological Science, 7,* 332-336.

Rosenblatt, A., Greenberg, J., Solomon, S., Pyszczynski, T., & Lyon, D. (1989). Evidence for terror management theory: I. The effects of mortality salience on reactions to those who violate or uphold cultural values. *Journal of Personality and Social Psychology, 57,* 681-690.

Routledge, C., Arndt, J., & Goldenberg, J. L. (2004). A time to tan: Proximal and distal effects of mortality salience on sun exposure intentions. *Personality and Social Psychology Bulletin, 30,* 1347-1358.

Shadel, W. G., & Mermelstein, R. (1996). Individual differences in self-concept among smokers attempting to quit: Validation and predictive utility of measures of the smoker self-concept and abstainer self-concept. *Annals of Behavioral Medicine, 18,* 151-156.

U.S. Department of Health and Human Services (2000). *Reducing tobacco use: A report of the Surgeon General.* Retrieved July 03, 2007, from http://www.cdc.gov/tobacco/data_statistics/sgr/sgr_2000/sgr_tobacco_chap.htm

Wakefield, M., Flay, B., Nichter, M., & Giovino, G. (2003). Effects of anti-smoking advertising on youth smoking: A review. *Journal of Health Communication, 8,* 229-247.

Witte, K., & Allen, M. (2000) A meta-analysis of fear appeals: Implications for effective public health campaigns. *Health Education & Behavior*. *27*, 591-615.