
Gender, Intimacy, and Risky Sex: A Terror Management Account

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Three studies tested whether mortality salience would lead men to be more sexually risky than women. In Study 1, men reported greater intentions to engage in risky sexual behaviors than did women after a mortality prime, but not after a control prime. In Study 2, men desired more future sexual partners and had a lower need for intimacy than did women, but again, only when mortality was salient. Furthermore, need for romantic intimacy mediated the relationship between mortality salience, gender, and desired number of future partners. Using a behavioral rather than a self-reported dependent measure, Study 3 showed that men primed with mortality were less likely than women to select a package of condoms (versus a pen) as a free gift after the experiment. Implications for gender differences in responses to mortality salience, as well as for how to design effective safe-sex interventions, are discussed.

Keywords: *mortality salience; terror management; need for intimacy; sexual risk*

In the United States, more than 65 million people are currently living with an incurable sexually transmitted infection (STI), and the total number of infected persons increases by 15 million per year (Cates, 1999). The risk of sexually transmitted infections is particularly problematic among individuals from ages 15 to 24, who comprise just one quarter of the sexually active population, but represented almost half of the new STI cases in 2000 (Weinstock, Berman, & Cates, 2004). In fact, a recent *New York Times* article reported that 25% of teenage girls are infected with at least one STI (Altman, 2008). These data suggest that young adults have difficulty maintaining their sexual health, despite the large number of interventions in place to counteract STI transmission

within this age group (Advocates for Youth, 2008). Therefore, it is necessary to understand the different factors that may contribute to young adults' risky sexual behavior, as well as how best to communicate the potential dangers of engaging in such behavior.

Many STI interventions focus on HIV, an infection known to bear life-threatening consequences (Mullen, Ramirez, Strouse, Hedges, & Sogolow, 2002). As a result, these interventions have the potential to evoke images and thoughts of death, which may or may not be an effective strategy for preventing STI transmission. To determine whether and how death reminders affect risky sexual behavior among young men and women, the present research tests the interactive roles of mortality salience and gender. Based on previous findings that men and women differ in their sexual motives (e.g., Cooper, Shapiro, & Powers, 1998) and general risk taking propensities (e.g., Byrnes, Miller, & Schafer, 1999), especially after being primed with mortality (Arndt, Greenberg, & Cook, 2002; Hirschberger, Florian, Mikulincer, Goldenberg, & Pyszczynski, 2002), it was hypothesized that mortality salience would cause men to report greater intentions of engaging in risky sexual behavior than women, due to increased gender differences in intimacy motives. Such a finding could have implications for the characteristics of STI interventions that make them more or less successful among different populations.

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PSPB, Vol. 35 No. 8, August 2009 1046-1056

DOI: 10.1177/0146167209336607

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MORTALITY SALIENCE, GENDER, AND RISKY BEHAVIOR

Terror management theory (see Greenberg, Solomon, & Pyszczynski, 1997) posits that people's survival instincts, coupled with their knowledge of inevitable death, are capable of triggering high levels of internal conflict and anxiety. Upon being reminded of their mortality, people can mitigate this conflict by defending their cultural worldviews, bolstering their self-esteem, or both. For instance, they may punish those who violate the norms and values of the in-group (Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989), exaggerate perceptions of consensus on opinions they hold that are unpopular in reality (Pyszczynski, Wicklund, Florescu, & Koch, 1996), or accept positive but bogus personality feedback as real (Dechesne et al., 2003). Furthermore, individuals who have high self-esteem tend to be immune to mortality salience effects, presumably because high self-esteem facilitates the suppression of death-related constructs following mortality salience manipulations (Harmon-Jones et al., 1997; Mandel & Smeesters, 2008).

Ironically, people often respond to mortality salience by engaging in risky, potentially life-threatening behaviors. For example, reminders of death have been shown to trigger higher levels of reckless driving (Taubman Ben-Ari, Florian, & Mikulincer, 1999), substance abuse (Hirschberger et al., 2002), and use of tanning salons and products (Routledge, Arndt, & Goldenberg, 2004). Mortality salience researchers posit that the decision to pursue a risky activity is based on whether the activity's benefits outweigh the costs. When reminders of death are removed from focal awareness (e.g., following a delay; see Routledge et al., 2004), people's short-term concerns with preserving their self-esteem and cultural worldviews triumph their long-term concerns with biological self-preservation (Hirschberger et al., 2002). In other words, so long as death is primed but not brought to immediate attention, people become more present-oriented (i.e., willing to take more risks) and fail to take future negative outcomes into account. These effects are especially strong among people who see the behavior as self-enhancing (e.g., whose self-esteem is contingent on driving; Taubman Ben-Ari et al., 1999) or socially desirable (e.g., who associate tanning with physical attractiveness; Routledge et al., 2004), supporting the idea that risky activities can function to preserve one's self-esteem and cultural worldviews.

In many domains, including reckless driving (Taubman Ben-Ari & Findler, 2003) and substance abuse (Hirschberger et al., 2002), mortality salience leads to greater risk taking among men than women. One account for these results is that men are socialized to be relatively risk-oriented, whereas women are socialized to be relatively cautious (Hirschberger et al., 2002). Participation

in risky behaviors is therefore viewed as a more central component of men's than women's values, as it helps men increase their self-esteem and meet gender-specific cultural standards of mastery and courage (Wilson & Daly, 1985). Indeed, men are generally more sensation seeking (Zuckerman, Eysenck, & Eysenck, 1978) and more inclined to engage in risky activities as a default (Byrnes et al., 1999). Because mortality salience leads people to uphold their worldviews (Greenberg et al., 1997), it amplifies the preexisting differences in men's and women's risk-seeking propensities. A notable exception to this gender discrepancy, however, can be seen in tanning behavior. Tanning is more closely linked to the physical attractiveness of women than men, so women (but not men) are more likely to visit tanning salons and refrain from using suntan lotion in response to subtle reminders of death (Routledge et al., 2004). Thus, men—rather than being riskier than women in general—are riskier in domains that they consider central to their self-esteem and cultural worldview.

Risky sexual behavior, commonly defined as failing to use protection or having multiple sexual partners (Gebhardt, Kuyper, & Greunsven, 2003), is another possible consequence of mortality salience, though the moderating role of gender has yet to be fully tested. It is important to note that having multiple sexual partners may not be risky per se, particularly if a person uses protection with each of his or her partners. However, having multiple partners does tend to correlate with the likelihood of engaging in risky behaviors such as casual sex with acquaintances and strangers (Poppen, 1995), suggesting that it is a reasonable indicator of sexual risk. Furthermore, because many STIs (e.g., genital herpes) are not protected by condoms or other forms of birth control, it is important for researchers to consider other behaviors that might increase (decrease) people's risk of STI contraction, such as (not) sleeping with multiple people.

In the only study to date that examined the relationship between mortality salience and risky sexual behavior, college students reported an increased willingness to engage in such behaviors after being prompted to consider their own death (versus a control topic). The purported reason was that risky sexual activities, similar to other types of risk, can serve as a means of restoring self-esteem and preserving one's cultural worldview, particularly among young people (Taubman Ben-Ari, 2004; see also Goldenberg, Pyszczynski, McCoy, Greenberg, & Solomon 1999; Goldberg, Pyszczynski, Solomon, Simon, & Breus, 2000).¹ Taubman Ben-Ari (2004) found no main or interactive effects of gender in his study. This is quite surprising, given that men are thought to more closely link various other risky activities to their self-esteem (Hirschberger et al., 2002) and report being more sexually risky (Oliver & Hyde, 1993)

than women. Moreover, the social acceptance of men's risky sexual behavior reflects the worldview that men can and should be more sexually risky than women. Men who have unprotected sex or sleep with multiple partners tend to be criticized to a lesser extent than women who engage in the same activities. In fact, men may even gain social status as a result of engaging in risky sexual behavior (Mischel, 1966; Oliver & Hyde, 1993). Additional research is thus required to determine whether mortality salience—which triggers increased self-esteem preservation and worldview defense (Greenberg et al., 1997)—leads to gender differences in risky sexual behavior, as well as why these differences (if any) emerge.

MORTALITY SALIENCE, GENDER, AND INTIMACY MOTIVES

Research on the relationship motives of women and men has demonstrated that women place greater importance on romance and intimacy, while men place greater emphasis on pleasure seeking and physical gratification (Cooper et al., 1998).² Similar to the rationale behind the previously obtained gender differences in many risky behaviors (e.g., reckless driving, substance abuse), these effects may be due to the fact that women and men are socialized to act in gender-appropriate ways. Specifically, women are taught to value romantic intimacy and define themselves in terms of their relationships to others, whereas men are taught to downplay romantic intimacy and define themselves as independent (Mischel, 1996). Taken together, then, intimacy and relationships seem to be more compatible with women's than men's cultural values and self-esteem maintenance.

Findings from terror management theory are consistent with this characterization of gender differences in relationship motives. For instance, mortality salience has been shown to increase intimacy motives (Hirschberger, Florian, & Mikulincer, 2003), romantic commitment (Florian, Mikulincer, & Hirschberger, 2002), and appeal of the romantic aspects of sex (Goldenberg et al., 1999; Goldenberg, McCoy, Pyszczynski, Greenberg, & Solomon, 2000), suggesting that close relationships are a way of coping with reminders of death (see Mikulincer, Florian, & Hirschberger, 2003). However, these types of effects are especially pronounced among women, who place more importance on intimacy to begin with. Under mortality salience, women (relative to men) demonstrate greater intimacy needs (Arndt et al., 2002) and more intensified reactions to emotional as opposed to sexual infidelity (Goldenberg et al., 2003).

Higher intimacy needs have in turn been associated with lower levels of risky sexual behavior. For example,

people with a high need for intimacy report engaging in less casual sex (Gebhardt et al., 2003) and using condoms more frequently (Monahan, Miller, & Rothspan, 1997). One explanation is that these individuals, relative to their counterparts with a low need for intimacy, are more likely to desire mutual trust in relationships. They therefore are less inclined to engage in unsafe sex with casual partners, as unsafe casual sex may undermine trust among those involved (Gebhardt et al., 2003). Along with the findings that mortality-primed women take fewer risks in sex-irrelevant domains (Hirschberger et al., 2002) and have greater intimacy motives (Arndt et al., 2002) than do mortality-primed men, this research suggests that men and women may differ in their propensities for sexual risk under mortality salience because of increased gender differences in intimacy needs.

OVERVIEW OF THIS RESEARCH

Most previous work on mortality salience, gender, and risk taking (e.g., Hirschberger et al., 2002) has not specifically investigated sexual risk, and the one existing study on mortality salience and risky sexual behavior did not show significant gender differences (Taubman Ben-Ari, 2004). Thus, in the present experiments, we tested whether mortality salience would lead to gender differences in sexual riskiness. We also sought to determine whether gender differences in need for intimacy could explain these effects.

Participants in all studies wrote an essay about either their own death (mortality salience condition) or dental pain (control condition). In Study 1, willingness to engage in risky sex was assessed by asking participants to respond to a series of hypothetical scenarios (see Taubman Ben-Ari, 2004), whereas in Study 2, participants reported their number of desired future sexual partners. Study 2 also included a need for intimacy scale to test the idea that differences in men's and women's intimacy motives were responsible for the relationship between mortality salience, gender, and willingness to engage in risky sex. Study 3 built upon Studies 1 and 2 by using a behavioral-dependent measure—specifically, whether participants selected condoms or a pen as a gift for completing the experiment. Across all studies, it was hypothesized that men would demonstrate a greater willingness to pursue risky sex than women in the mortality salience (but not control) condition.

STUDY 1

Study 1 provided an initial test of the relationship between mortality salience, gender, and risky sexual

behavior. Participants in this study completed a mortality salience manipulation, followed by a self-reported measure of willingness to engage in risky sexual behavior. It was hypothesized that men would report a greater willingness than women to pursue risky sexual behavior after a mortality prime, but not after a control prime.

Method

Participants

Sixty-two Stanford University undergraduates (27 females, 35 males) participated in this experiment in exchange for \$7. Participants were randomly assigned to either the mortality salience ($n = 32$) or control ($n = 30$) condition. Three participants were omitted from the analyses because they expressed suspicion about the experimental hypothesis, and one participant was omitted because he did not complete the sexual history questionnaire. The data from the remaining 58 participants were retained in the final sample.

Materials and Procedure

Participants were run in groups of up to seven in a room with divided work stations. They were greeted by an experimenter, who explained that the purpose of the study was to explore the personality factors involved in risk taking. They were then instructed to complete a packet of paper-and-pencil questionnaires in the order in which they were provided.

Mortality salience manipulation. After completing a number of personality surveys to disguise the hypothesis, participants completed the experimental manipulation, which was adapted from previous research (Rosenblatt et al., 1989). In the mortality salience condition, participants responded to the following two essay prompts: (a) Please briefly describe the emotions that the thought of your own death arouses in you; and (b) Jot down, as specifically as you can, what you think will happen to you as you physically die and once you are physically dead. In the control condition, these prompts were reworded so that they pertained to dental pain rather than death. Dental pain was chosen as a control topic because, like the prospect of death, it is an aversive state that should induce negative emotions. Thus, any observed differences between the two conditions cannot be attributed to differences in affect.

Filler tasks. Following the experimental manipulation, participants completed the 20-item Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988), and several filler questions. Mortality

salience-induced increases in risky behavior are often only found when death thoughts are outside of focal attention (Routledge et al., 2004). Hence, the purpose of these tasks was to allow time for activation to spread, while removing thoughts of death from immediate consciousness (Greenberg, Pyszczynski, Solomon, Simon, & Breus, 1994). Consistent with previous research (e.g., Harmon-Jones et al., 1997), participants in the mortality salience and control conditions did not differ significantly in terms of their positive or negative affect. This null effect supports the notion that changes in affect were not responsible for the results of the current study.

Willingness to engage in risky sexual behavior. Next, participants completed a 10-question measure of their willingness to engage in risky sexual activities. This measure was adapted from previous research on mortality salience and risky sex (Taubman Ben-Ari, 2004). An example question was, "You have been hooking up with a guy/girl for four months now. You both decide it would be sexy to sneak into the hot tub on campus and hook up there. Once you sneak in, things start heating up. The condom you and your partner were planning on using falls off during the intimate session. What are the chances that you will continue to have sex without the condom?" Although most remaining questions involved willingness to have sexual intercourse without a condom, some of them dealt with other forms of birth control (e.g., the pill, which provides protection against pregnancy but not STIs) or unprotected oral sex. Participants responded to each question on an 11-point scale, with 0 (0% chance of behaving the described way) and 10 (100% chance of behaving in the described way) as endpoints. Their responses were averaged to form a composite ($\alpha = .93$).

Sexual history questionnaire. After completing the risk measure, participants were told that, as part of a larger-scale examination of sexual risk taking, the researchers were interested in undergraduates' average sexual history. They then received a questionnaire in which they indicated (a) how many sexual intercourse partners they had had in their sexual history, and (b) whether they had engaged in certain sexual activities (sexual intercourse, receiving/giving oral sex, anal sex, activities involving touching others' genitals, kissing, no sexual activity with another person) at any point in the past. Although past history of risky sexual activity was not assessed, number of sexual partners tends to be correlated with risky sex, particularly among men (Poppen, 1995).

The number of sexual partners was recorded as reported. The sexual history responses were grouped in levels (0 to 4). Kissing was coded as 1, hand-to-genital stimulation as 2, oral sex as 3, and any form of penetration (i.e.,

sexual intercourse or anal sex) as 4. If participants had engaged in no sexual activity with another person, their history was coded as 0. If an individual had engaged in multiple levels of intimacy, the highest level was coded. Thus, higher scores on both questions reflected a more extensive sexual history.

The sexual history questionnaire was administered to control for the possibility that individuals with a more extensive history would report a greater willingness to engage in risky sexual behavior. Participants' responses to the two questions were included as covariates in each of the present studies.³

Suspicion probes. At the end of the experiment, participants completed a debriefing questionnaire in which they were probed for their suspicion about the purpose of the study or any relatedness among the different tasks. As noted above, three participants were eliminated on this basis. Finally, participants were fully debriefed and thanked.

Results and Discussion

It was predicted that men would report a greater willingness than women to pursue risky sex in the mortality salience condition, but not in the control condition. To test this prediction, participants' scores on the measure of willingness to engage in risky sexual behavior were submitted to a 2 (condition: mortality salience vs. control) \times 2 (gender: male vs. female) analysis of covariance (ANCOVA), with the two sexual history items as covariates.

There was an overall main effect of gender, such that men ($M = 4.46$, $SD = 2.54$) reported a greater willingness to be risky than women ($M = 2.07$, $SD = 2.18$), $F(1, 52) = 14.44$, $p < .001$, $\eta^2 = .22$. In addition, participants reported a greater willingness to be risky to the extent that they had previously engaged in higher levels of sexual activity, $F(1, 52) = 6.92$, $p = .01$, $\eta^2 = .12$. Most important, the interaction between condition and gender was significant, $F(1, 52) = 5.58$, $p = .02$, $\eta^2 = .10$. (See Table 1.) Whereas men and women reported an equal willingness to be risky in the control condition, $F(1, 52) = 1.12$, $p = .29$, $\eta^2 = .02$, men reported a greater willingness to be risky than women in the mortality salience condition, $F(1, 52) = 19.92$, $p < .001$, $\eta^2 = .28$. No other simple effects were significant ($ps > .08$).

The results of Study 1 confirmed the hypothesis that after being primed with mortality (but not a control topic), men would report a greater willingness to engage in risky sexual activities than women. The dependent measure in this study was based on responses to hypothetical situations, all of which involved having unprotected sex (rather than having multiple partners). To

TABLE 1: Mean (*SD*) Willingness to Engage in Risky Sexual Behavior as a Function of Condition (Mortality Salience vs. Control) and Gender (Male vs. Female), Study 1

	Males	Females
Mortality salience	5.16 (2.35), $n = 16$	1.48 (1.75), $n = 14$
Control	3.75 (2.65), $n = 15$	2.84 (2.43), $n = 13$

NOTE: All means are covariate adjusted.

determine whether the results would hold on a different indicator of willingness to pursue risky sexual behavior, participants in Study 2 indicated how many sexual partners they desired in their lifetime.

One limitation of the present results is that it remains unclear why men are more willing to be sexually risky than women under mortality salience. Study 2 addressed this issue by including a measure of need for intimacy after the mortality salience manipulation. As noted earlier, previous research has shown that mortality salience increases differences in men's and women's needs for intimacy (Arndt et al., 2002), and that need for intimacy typically predicts lower levels of risky sexual behavior (Gebhardt et al., 2003; Monahan et al., 1997). Thus, it may be that mortality salience increases gender differences in willingness to have risky sex due to increased differences in men's and women's intimacy needs.

STUDY 2

Study 2 tested whether need for intimacy would mediate the relationship between mortality salience, gender, and willingness to pursue risky sexual behavior. Participants completed a mortality salience manipulation, a need for intimacy scale, and a measure of desired number of future sexual partners. This study employed a different dependent measure to increase the generality of the results from Study 1. It was predicted that men in the mortality salience condition, relative to women in the mortality salience condition, would have a lower need for intimacy and hence desire more sexual partners. These results were not expected to emerge in the control condition.

Method

Participants

Eighty-seven individuals (38 females, 49 males) were recruited from a national Web-based pool to participate in this experiment. The pool, maintained by Stanford University, consists of persons from all areas of the country who have indicated an interest in completing online studies for pay. To be eligible for the present

study, potential participants must have identified themselves as college students. Participants were randomly assigned to either the mortality salience ($n = 47$) or control ($n = 40$) condition. Upon completion of the experiment, they received a \$5 gift certificate from a major online retailer.

Six participants who expressed suspicion about the experimental hypothesis and two participants with extreme scores (i.e., more than 3 standard deviations from the mean) on the primary dependent measure were omitted from the analyses, leaving 79 individuals in the final sample.

Materials and Procedure

All materials were presented online. Participants read on the introductory screen that the study concerned the relationship between personality characteristics, experiences, and life choices. After completing a series of personality measures that were included to bolster the cover story, they completed the same experimental manipulation from Study 1, followed by the PANAS and another filler survey. As in the previous study, participants' PANAS scores were not affected by condition.

Next, participants responded to two questions about their desired number of future sexual partners: (a) How many sexual partners would you ideally like to have in your lifetime? (b) How many sexual partners do you think you should or ought to have in your lifetime? To respond, they simply filled in the appropriate number for each. Participants' answers to these questions were averaged to form a composite ($\alpha = .77$).

After answering these questions, participants completed Sanderson and Cantor's (1995) Need For Intimacy scale. This scale consists of nine items measuring people's motives to establish and maintain deep romantic commitments. Example items include, "In my dating relationships, I try to share my most intimate thoughts and feelings," and "In my dating relationships, I try to consistently date someone." Participants responded to each item on a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*), and their responses were averaged together ($\alpha = .88$).

At the end of the experiment, participants completed the sexual history questionnaire used in Study 1. They were then probed for suspicion and fully debriefed. Finally, they submitted their e-mail address in order to receive payment.

Results and Discussion

Desired Number of Future Partners

To test the prediction that men would desire a higher number of sexual partners than women in the mortality

TABLE 2: Mean (SD) Desired Number of Future Sexual Partners as a Function of Condition (Mortality Salience vs. Control) and Gender (Male vs. Female), Study 2

	Males	Females
Mortality salience	7.09 (7.16), $n = 22$	2.09 (3.37), $n = 14$
Control	4.51 (3.76), $n = 24$	3.95 (4.58), $n = 19$

NOTE: All means are covariate adjusted.

TABLE 3: Mean (SD) Need for Intimacy as a Function of Condition (Mortality Salience vs. Control) and Gender (Male vs. Female), Study 2

	Males	Females
Mortality salience	3.99 (.68), $n = 22$	4.54 (.70), $n = 14$
Control	4.19 (.63), $n = 24$	4.08 (.63), $n = 19$

NOTE: All means are covariate adjusted.

salience (but not control) condition, participants' scores on this measure were submitted to a 2 (condition: mortality salience vs. control) \times 2 (gender: male vs. female) ANCOVA, with the two sexual history items as covariates. As in Study 1, there was a main effect of gender: Men ($M = 5.80$, $SD = 5.94$) desired more sexual partners than did women ($M = 3.02$, $SD = 4.07$), $F(1, 73) = 6.74$, $p = .01$, $\eta^2 = .08$. Both covariates were also significant: Participants desired more sexual partners to the extent that they had had more partners in the past, $F(1, 73) = 8.06$, $p < .01$, $\eta^2 = .10$, and to the extent that they had previously engaged in higher levels of sexual activities, $F(1, 73) = 5.12$, $p < .03$, $\eta^2 = .07$.

Consistent with predictions, there was a significant interaction between condition and gender, $F(1, 73) = 4.60$, $p < .04$, $\eta^2 = .06$ (see Table 2). Simple effects tests revealed that in the mortality salience condition, men wanted to have more future sexual partners than did women, $F(1, 73) = 10.34$, $p < .005$, $\eta^2 = .12$. In the control condition, however, men and women wanted to have equal numbers of future sexual partners, $F(1, 73) = .15$, $p < .70$, $\eta^2 = .00$. No other simple effects were significant ($ps > .06$).

Need for Intimacy

It was hypothesized that under mortality salience, men would exhibit significantly lower scores on the Need For Intimacy scale than women. This hypothesis was tested using a 2 (condition: mortality salience vs. control) \times 2 (gender: male vs. female) ANCOVA, controlling for sexual history. There were no main effects of condition, gender, or either of the two covariates. As predicted, however, the interaction between condition and gender was significant, $F(1, 73) = 4.66$, $p = .03$, $\eta^2 = .06$ (see Table 3). Decomposition of the interaction indicated that

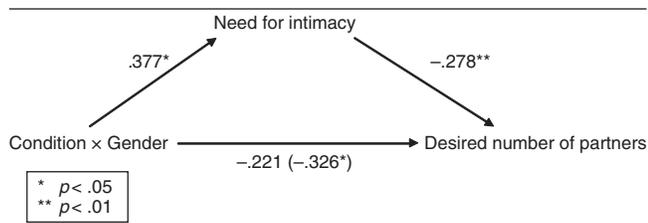


Figure 1 Mediation analysis, Study 2.

men had a lower need for intimacy than women in the mortality salience condition, $F(1, 73) = 5.78$, $p < .02$, $\eta^2 = .07$, but not in the control condition, $F(1, 73) = .27$, $p < .61$, $\eta^2 = .00$. No other simple effects were significant ($ps > .05$).

Mediation Analysis

To determine whether need for intimacy accounted for the relationship between mortality salience, gender, and desired number of future partners, a moderated mediation analysis was conducted (Muller, Judd, & Yzerbyt, 2005; Preacher, Rucker, & Hayes, 2007). We conducted three separate regressions to test for moderated mediation (see Figure 1). In a regression with the two sexual history items as covariates, condition (0 = control, 1 = mortality salience) and gender (0 = male, 1 = female) interacted to predict desired future partners (the proposed outcome variable), $\beta = -.326$, $t(73) = -2.14$, $p < .04$. A second regression showed a Condition \times Gender interaction on need for intimacy (the proposed mediator), $\beta = .377$, $t(73) = 2.16$, $p = .03$. Finally, in a third regression, when the Condition \times Gender interaction on desired future sexual partners was rerun controlling for need for intimacy, the interaction term dropped to nonsignificance, $\beta = -.221$, $t(72) = -1.48$, $p = .14$, while the relationship between need for intimacy and desired future partners remained significant, $\beta = -.278$, $t(72) = -2.86$, $p < .01$. To further interpret these findings, we conducted a bootstrapping analysis to examine the conditional indirect effects in the mortality salience and control conditions (Preacher et al., 2007). These effects indicated that this mediation was significant among participants in the mortality salience condition, $z = -1.93$, $p = .05$, but not among participants in the control condition, $z < 1$. Thus, all criteria for mediation were met. Consistent with the hypothesis, mortality salience caused men to be more willing than women to engage in risky sexual activities because of increased gender differences in intimacy needs.

STUDY 3

Study 3 used a behavioral measure to test whether gender would moderate the relationship between

mortality salience and risky sexual behavior. Participants in this study were primed with either mortality or a control topic. They were then asked to choose between two free gifts of equal value: a package of condoms and a pen. As noted earlier, risky sexual behavior typically refers to having unprotected sex (e.g., not using a condom; Monahan et al., 1997), rather than having sex in itself. Thus, the condoms were considered the “safe” choice, and the pen was considered the “risky” choice. It was predicted that men in the mortality salience (but not control) condition would be more sexually risky, or less likely to select the condoms, than women.

Method

Participants

One hundred and eleven undergraduates (58 females, 53 males) of a Dutch university participated in this experiment in exchange for €5 payment and a free gift. One participant did not complete the experiment and was removed from the analysis. The remaining participants were randomly assigned to either the mortality salience condition ($n = 56$) or the control condition ($n = 54$).

Materials and Procedure

Upon arriving at the laboratory, participants were greeted by a research assistant and were told that the study concerned risk taking. They were then instructed to complete a packet of paper-and-pencil questionnaires in the given order.

Participants first completed the experimental manipulation (i.e., they responded to either the death or dental pain essay prompts) from Study 1. The manipulation was followed by the PANAS and other filler questionnaires. Participants’ levels of positive and negative affect were once again unaffected by experimental condition.

Upon submitting their questionnaire packets, participants were offered their payment (€5) as well as a “gift”—either a pen publicizing sexual health resources or a small, clear plastic bag containing three condoms. The pen was a promotional pen from a national organization (SOA AIDS) that distributes sexual health information and resources. It was an ordinary, click-style ballpoint pen with the following Internet address: <http://www.safesex.nl>. Once the participants left, the research assistant recorded each participant’s choice, which served as the dependent measure in this study. Despite that it promoted safe sex, the pen (coded as 1) was considered the “risky” choice because pens do not in themselves protect people against STIs and pregnancy. By contrast, the condom (coded as 0) was considered the

TABLE 4: Percentage of Participants Who Selected Pen (Risky Choice) as a Function of Condition (Mortality Salience vs. Control) and Gender (Male vs. Female), Study 3

	Males	Females
Mortality salience	71% (<i>n</i> = 28)	36% (<i>n</i> = 28)
Control	56% (<i>n</i> = 25)	48% (<i>n</i> = 29)

“safe” choice. Thus, higher scores reflected a greater willingness to engage in risky sexual behavior.

After choosing between the condom and the pen, participants completed the sexual history questionnaire from Studies 1 and 2. Finally, they were probed for suspicion and debriefed.

Results and Discussion

It was predicted that in the mortality salience condition, but not in the control condition, men would exhibit greater intentions to have risky sex (i.e., be less likely to choose the condoms) than women. This prediction was tested using logistic regression. In the first step of the model, choice (condom vs. pen) was regressed onto condition (0 = control, 1 = mortality salience), gender (0 = male, 1 = female), and the two sexual history items. In the second step of the model, choice was regressed onto all of these variables, along with the interaction between condition and gender.

There were main effects of condition, gender, and number of past sexual partners. Specifically, participants were more likely to choose the pen (versus the package of condoms) in the mortality salience condition than in the control condition (Wald's $\chi^2 = 7.54$, $p < .01$), men were more likely to choose the pen than were women (Wald's $\chi^2 = 7.81$, $p < .01$), and participants were less likely to choose the pen the higher their number of past sexual partners (Wald's $\chi^2 = 4.13$, $p < .05$).

Most germane to the hypothesis, the interaction between condition and gender was significant, Wald's $\chi^2 = 7.55$, $p < .01$ (see Table 4). Men were more likely than women to choose the pen over condoms in the mortality salience condition (Wald's $\chi^2 = 7.29$, $p < .01$), whereas there were no gender differences in the control condition (Wald's $\chi^2 = 1.00$, $p > .31$). Additional analyses revealed that men in the mortality salience condition were more likely than men in the control condition to choose the pen over condoms (Wald's $\chi^2 = 8.24$, $p < .01$), whereas women's choice of gift did not differ across conditions (Wald's $\chi^2 = 1.80$, $p = .18$).

Study 3 thus provided behavioral support for the hypothesis that mortality salience would amplify gender differences in risky sexual behavior. In so doing, the results supplemented the self-reported data obtained in

Studies 1 and 2. After being reminded of their mortality, males not only reported a greater willingness to have unprotected sex and a desire for more future sexual partners than did females, but they also were less likely to actually accept a free pack of condoms (i.e., to protect themselves from STI contraction).

GENERAL DISCUSSION

The current studies investigated whether gender differences in risky sexual behavior would emerge among college students who were primed with mortality. Study 1 assessed self-reported intentions to engage in risky sexual activities and found that men are riskier than women under mortality salience. Study 2, in addition to employing a new dependent measure (desired number of future partners), showed that increased differences in men's and women's intimacy motives under mortality salience are responsible for the obtained effects. Upon being reminded of death, men have a lower need for intimacy than do women, which in turn leads men to be more sexually risky than women. Upon being reminded of a control topic, no gender differences in need for intimacy emerged. Study 3 demonstrated that mortality salience also leads to gender differences on a behavioral measure of intentions to have risky sex. In this study, mortality-primed men were less likely than mortality-primed women to select a package of condoms as a “free gift” for participating in the experiment.

These findings are the first to demonstrate that mortality salience and gender can have interactive effects on risky sexual behavior. As noted earlier, the one existing study on mortality salience and risky sex did not find gender to be a significant moderator (Taubman Ben-Ari, 2004). Future research should more thoroughly investigate the conditions under which mortality salience does and does not lead to gender differences in risky sexual behavior. For example, because fear of romantic intimacy is positively correlated with willingness to engage in risky sexual activities (see Taubman Ben-Ari, 2004), it may be that when mortality-primed people are induced to perceive romantic intimacy in a negative light, both men and women become more sexually risky. Conversely, a mortality prime alone may lead men to become more sexually risky than women.

The present research (i.e., Study 2) also provides an account for why gender moderates the relationship between mortality salience and willingness to engage in risky sex—specifically, because men and women differ in their needs for intimacy when reminded of death. Risky sexual behaviors, similar to many other types of risk (e.g., reckless driving, substance abuse), have been shown to comport more with men's than women's core

values and self-esteem (Oliver & Hyde, 1993). One reason is that men, relative to women, are socialized to be more courageous and independent (Mischel, 1966), and these gender differences increase when mortality is primed (Hirschberger et al., 2002). By contrast, intimacy motives, which predict lower levels of risky sexual behavior (Gebhardt et al., 2003), are more prevalent among women than men (Cooper et al., 1998), especially under mortality salience (Arndt et al., 2002). One reason is that women, to a greater extent than men, are socialized to value closeness and interdependence in romantic relationships (Mischel, 1966).

Men and women thus appear to use different strategies to cope with reminders of their mortality. When death is primed, men and women differ significantly in their intimacy needs, leading men to be more willing than women to engage in risky sexual behavior. When death is not primed (i.e., when motives for self-esteem and cultural worldview maintenance are not as salient), these gender differences are less pronounced. The main comparison of interest in all three studies was between men and women within the mortality salience and control conditions. However, there were at least trends suggesting that men become more risky (and women less so) after a mortality salience than control manipulation, hence, suggesting that men and women respond to mortality salience in opposite ways.

One possibility, which merits further investigation, is that the greater need for intimacy among mortality-primed women than mortality-primed men makes the former more likely to take intimacy-related risks (e.g., being upfront about their romantic feelings for another person). In other words, mortality salience may not always trigger more risky behavior among men than women; instead, it may be capable of inducing risky behavior among either men or women, depending on how the type of risk relates to intimacy motives. In the future, it may be worthwhile to investigate additional, complementary explanations for the observed effects, such as men's desire to have more children than women under mortality salience (Wisman & Goldenberg, 2005; but see Fritsche et al., 2007). For example, because mortality salience leads men to want more offspring than women, this could in turn lead men to be more willing than women to have sex without a condom or with multiple partners, though the link between desire for offspring and these different indicators of risky sexual behavior has yet to be tested.

Given that mortality salience engenders a greater willingness to engage in risky sexual behavior among male than female adolescents, many current STI interventions that highlight the possibility of personal danger (i.e., death from HIV/AIDS) could sometimes undermine their own purpose. That is, although young women may change their behavior in the desired direction, young men may subsequently engage in more risky

sexual activities. From a practical standpoint, perhaps these studies will inspire more specific investigations of which interventions (and the messages used to promote them) are successful for males versus females. For example, messages that focus on deaths resulting from HIV/AIDS may be more effective for women than men. By contrast, messages that focus on the negative emotional consequences of unprotected sex (i.e., one's partner becoming too invested in the relationship) may be more effective for men than women.

Taken together, the present results suggest that in designing STI interventions, it may be worthwhile to frame them based on the predominant gender of the audience (e.g., whether a magazine advertisement appears in *Cosmopolitan* or *GQ*, whether a television advertisement is broadcast after *Sex and the City* or a NASCAR race), as men and women will likely respond to these appeals in different ways. Indeed, interventions that address gender norms (e.g., machismo) tend to be more successful than those that do not (Herbst et al., 2007). Furthermore, interventions delivered to same-gender samples are more effective than those delivered to mixed-gender samples (Noar, 2007), perhaps because the former include strategies that are more appealing to the targeted gender (e.g., condom use skills for men versus information for women; Albarracin et al., 2005).

CONCLUSION

The current studies introduce a new way in which men's and women's responses to mortality salience differ. Specifically, reminders of death cause men to be more willing to engage in unprotected sex, and to want more sexual partners, than women. By showing that romantic intimacy motives mediate the observed effects, the present studies integrate the existing mortality salience literature on close relationships (e.g., Mikulincer et al., 2003) and risky behavior (e.g., Hirschberger et al., 2002). More broadly, however, the findings in this article suggest that there is no single "correct" way to decrease the rates of STI transmission among young adults. Researchers and practitioners should instead consider features of the message recipients themselves (e.g., gender; Albarracin et al., 2005; Herbst et al., 2007; Noar, 2007) in determining how to design appropriate interventions for specific populations.

NOTES

1. Although Goldenberg et al. (1999, 2000) found that mortality salience increases the appeal of romantic relative to physical aspects of sex, at least among those high in neuroticism, they acknowledged that sex can buffer people against the threat of death in other ways as well. For instance, perceiving oneself as sexually attractive and desirable,

perhaps as a result of having had multiple partners, may help to boost one's self-esteem.

2. Throughout this paper, intimacy refers to romantic or relationship intimacy, rather than physical or sexual intimacy.

3. When these sexual history items were removed as covariates, the predicted Condition \times Gender interaction on sexual riskiness remained significant in every study, and the interaction on need for intimacy in Study 2 held at $p = .06$.

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Received May 19, 2008

Revision accepted March 1, 2009