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Mortality salience increases language style matching and well-being

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ABSTRACT
The present research examined whether people imitate the language style of others (i.e., the use of function words) as a form of liking when mortality concerns are salient. In Study 1, participants answered questions about death or public speaking and then engaged in an instant messaging conversation with a confederate. In Study 2, participant pairs verbally discussed a news article about increasing homicide rates or the rise in academic pressure. Next, everyone completed measures of self-esteem, life satisfaction, and relationship need satisfaction. The results revealed that, in comparison to the control conditions, participants exhibited greater language style matching (LSM) following reminders of death (Studies 1 & 2). Further, mediational analyses showed that higher LSM after mortality salience was associated with better psychological and social well-being (Study 2). Although the threat of death has been shown to make people more hostile and disparaging toward dissimilar others, the present work suggests that individuals, even strangers, may feel closer through language coordination following thoughts of mortality.

Individuals are confronted with mortality awareness on a daily basis. We hear about it in the news, we see it played out in the movies, or we may experience it firsthand with the passing of a close friend or a loved one. Although thinking about one’s mortality might seem unsettling, terror management theory (TMT) suggests that reminders of death can actually promote psychological well-being (Vail et al., 2012). Building on this, along with Mikulincer, Florian, and Hirschberger’s (2003) work demonstrating that close relationships serve a terror management function, the present research examined whether people match their language styles as a subtle form of liking when thoughts of mortality are salient. Specifically, research on behavioral synchrony suggests that people express greater feelings of attraction when they share their visual gazes, body postures (Chartrand & Lakin, 2013), and more recently, their language style in writing or speech (Ireland & Pennebaker, 2010). In the current experiments, Study 1 examined whether participants exhibited greater language style matching (LSM) with a task partner following reminders of death. Study 2, in turn, explored the beneficial effects of LSM on self-esteem, life satisfaction, and relationship need satisfaction after a mortality salience (MS) manipulation.
**Terror management theory**

Terror management theory (Greenberg, Pyszczynski, & Solomon, 1986) posits that the potential for anxiety rooted in the awareness of death plays a central role in human motivation. According to TMT, mortality concerns can be managed by maintaining faith in a cultural worldview (i.e., a belief system that provides meaning and value) and living up to the standards of value it prescribes (i.e., self-esteem). Although a considerable body of evidence supports hypotheses derived from the theory (Pyszczynski, Greenberg, Koole, & Solomon, 2010), a majority of this work has focused on the consequences of MS—that is, the extent to which people harm themselves and others to affirm their cultural beliefs and acquire self-esteem. More recently, Vail et al. (2012) have proposed a heuristic model of terror management outlining the conditions under which the beneficial effects of MS will emerge. Most relevant to the current work, researchers have argued that individuals pursue close relationships as a form of defense against mortality awareness. Thus, reminders of death can lead to positive trajectories as individuals gain existential security from feelings of love and romance, as well as having increased affiliations with others (e.g., family, friends, & community members).

There is a large body of evidence demonstrating that close relationships serve a TMT function (Mikulincer et al., 2003). For example, MS leads people to initiate interactions with others (Taubman Ben-Ari, Findler, & Mikulincer, 2002), heightens their desire to be a part of a group (Wisman & Koole, 2003), and increases relationship satisfaction and commitment (Florian, Mikulincer, & Hirschberger, 2002). Further, activating thoughts of a close relationship reduces defensive reactions in response to MS (e.g., worldview defense); and making problems salient in one's relationship increases the accessibility of death-related thoughts and instigates worldview defense (Mikulincer et al.). Although research demonstrates that people pursue close relationships because of the existential security that they provide, there are some limitations to this work. First, the majority of these studies have focused extensively on people's parental and romantic relationships. Thus, one question is the extent to which individuals turn to any person, even a stranger, when their need for support is aroused by mortality awareness. Second, whereas a handful of studies have examined the association between thoughts of mortality, close relationships, and self-esteem (Cox et al., 2008; Koole, Sin, & Schneider, 2014), research has yet to extend these terror management effects to other measures of well-being. The present research thus examined whether MS increases individuals’ psychological and social health through language coordination.

**Language style matching**

As people become acquainted, they may mimic each other's movement and action, which is known as behavioral mimicry (Chartrand & Lakin, 2013). Although research on behavioral mimicry has focused largely on gross motor behaviors, other work has found that people imitate the verbal characteristics of their interaction partners. For instance, individuals have been shown to mimic another person's syntax (Levelt & Kelter, 1982), accent (Giles, Coupland, & Coupland, 1991), rate of speech (Webb, 1969), and vocabulary level (Giles et al.). Recently, several studies have found that people copy the linguistic style of others, including the number of words spoken and type of language used (e.g., personalpronouns; Ireland & Pennebaker, 2010; Ireland et al., 2011). Whereas previous work has focused on the use of content words (e.g., verbs, nouns) in writing and speech (Campbell & Pennebaker, 2003),
even after thoughts of death (e.g., Hirschmüller & Egloff, 2016; Kashdan et al., 2014; Landau, Greenberg, Sullivan, Routledge, & Arndt, 2009), LSM is primarily interested in the use of function words (e.g., articles, pronouns) that individuals use in their conversations with one another.

According to Gonzales and colleagues (2010; also see Ireland & Pennebaker, 2010; Ireland et al., 2011), there are several reasons why function words are important to studying language coordination. First, function words are generally short and occur in higher frequency. Although there are approximately 400 different function words, they cover more than half of the vocabulary used in everyday conversation (Rochon, Saffran, Berndt, & Schwartz, 2000). Second, function words are context independent while content words are not. Whereas content words demand a shared understanding of what is being discussed, function words are small, filler words used to connect different sentences together. Third, function words are often processed rapidly and unconsciously during language production and comprehension (Segalowitz & Lane, 2004). This makes it very difficult for individuals to manipulate their use of function words in conversations. Finally, function words are important in people’s evaluation of others. Research has shown that individuals report greater relationship satisfaction and find their partner more engaging when they match their language styles with one another (Ireland et al., 2011). Given that conversations often serve as a basis of people’s liking and attraction to others, it is unfortunate that language coordination is overlooked as a topic of study in the social and behavioral sciences. Building on the work of Ireland and her colleagues (2010, 2011), the present research is the first to examine whether people engage in LSM as a subtle form of liking when mortality concerns are salient.

The present research

To the extent that MS heightens people’s need for close others (Mikulincer et al., 2003), individuals should be more likely to match their language styles following thoughts of death. Whereas Study 1 examined LSM after mortality awareness using online instant messaging conversations, Study 2 recorded verbal dialogs between participant pairs to assess for verbal coordination. Additionally, although much evidence supports the connection between reminders of death and relationship benefiting outcomes (e.g., commitment; Mikulincer et al.), little work has examined individuals’ well-being when their relationship needs are met after MS. There thus appears to be sizable gap in the terror management literature regarding positive spillover effects of relationship satisfaction when mortality concerns are salient. For this reason, and in light of the association between language matching and positive life outcomes (Gonzales, Hancock, & Pennebaker, 2010; Ireland et al., 2011), Study 2 tested a mediational model to explore whether increased LSM following reminders of death is associated with greater feelings of self-worth, life satisfaction, and relationship need satisfaction among participant dyads.

Study 1

The first experiment explored whether people engage in increased LSM in response to MS. Following previous terror management research, participants were randomly assigned to answer questions about their death or a control topic. Next, everyone engaged in an online instant messaging conversation with a confederate to assess for LSM. All conversations were
content analyzed with Linguistic Inquiry and Word Count software (LIWC; Pennebaker, Booth, & Francis, 2007), which consists of 70 pre-defined grammatical dictionaries including function word categories. To the extent that MS motivates people to initiate interactions with close others (Mikulincer et al., 2003), participants should mimic the conversational style of a confederate as a subtle form of liking when reminders of death are salient.

**Method**

**Participants and procedure**

Forty introductory psychology students (33 female; \(M_{\text{age}} = 19.05\)) recruited from a private university in the southwest United States participated in exchange for partial course credit. Following procedures recommended by Simmons, Nelson, and Simonsohn (2011) for psychological research, data in both experiments were collected until the end of each semester with the goal of obtaining at least 20 observations per condition. Materials were completed on an individual basis in a laboratory setting. In both studies reported herein, participants provided informed consent prior to the MS manipulation and LSM assessments. Upon study completion, participants were thoroughly debriefed about TMT and the nature of the experiment.

**Materials**

**MS manipulation**

Following a series of filler questionnaires (need for structure, Neuberg & Newsom, 1993; neuroticism, Eysenck & Eysenck, 1967; social desirability, Crowne & Marlowe, 1960), participants completed the death manipulation. MS was manipulated by having participants answer 15 True/False statements from the Fear of Death scale (Templer, 1970; “I am very much afraid to die”). Conversely, in the control condition, participants were asked parallel statements about public speaking (e.g., “I am very much afraid to speak in public;” Cox, Goldenberg, Arndt, & Pyszczynski, 2007).

Research has found that MS effects emerge when reminders of death have been removed from conscious awareness, either by delay, distraction, or by subliminal presentation of mortality concerns (Pyszczynski, Greenberg, & Solomon, 1999). Following this, participants were asked to complete a word search task to provide a delay. The word search puzzle was a 10 × 10 matrix of letters with instructions asking people to search and circle 10 neutral words (e.g., book, movie).

**LSM task**

Next, everyone engaged in an instant messaging conversation on the computer. Participants were told that their conversation partner was a student in another room; the conversation partner was actually a trained confederate (blind to conditions) who engaged in a semi-structured interview consisting of questions/comments utilized in everyday conversations. For example, participants were asked to discuss their major, their hometown, and activities they like to do in their spare time (see Supplemental Data for a copy of the script and examples of low and high LSM). Conversations lasted approximately 10 min, and everyone was exposed to the same confederate in all conditions.

Nine function word categories provided by LIWC (Pennebaker et al., 2007) were examined for LSM: articles (e.g., a, the), auxiliary verbs (e.g., am, have), conjunctions (e.g., but, while)
high-frequency adverbs (e.g., very, well), impersonal pronouns (e.g., this, it), negations (e.g.,
not, no), personal pronouns (e.g., I, you), prepositions (e.g., in, around), and quantifiers (e.g.,
many, few). The word count program calculated the percentage of words that fell into each
of the categories using the following equation (articles are used in this example):

\[ LSM_{\text{ART}} = 1 - \left( \frac{|ART_1 - ART_2|}{ART_1 + ART_2 + .0001} \right) \]

ART\(_1\) represents the percentage of articles used by the first person whereas ART\(_2\) indicates
the percentage of articles used by the second person. The absolute difference in scores
ensured the number was always positive, and the addition of .0001 in the denominator guaran-
teed that there was no division by zero (Ireland & Henderson, 2014; Ireland & Pennebaker,
2010). Additionally, each fraction was subtracted from 1.0 so that LSM scores ranged from 0
to 1.0, with a higher score indicating greater language matching (Gonzales et al., 2010; Ireland
et al., 2011). The LSM coefficient consisted of the average of the nine function word dimen-
sions; and, the computation of scores in LIWC controlled for conversation length (Gonzales
et al.; Ireland & Pennebaker).

**Results and discussion**

**Primary data analysis**

An independent \( t \)-test revealed a significant effect of MS on LSM, \( t(38) = 2.15, p = .04, d = .69 \),
with participants who were reminded of death engaging in higher levels of language coordi-
nation (\( M = .85, SD = .05 \)) compared to the control condition (\( M = .80, SD = .09 \)). These results
demonstrate that people unconsciously imitate the language of others, even strangers, as
a means of managing existential anxieties.

**Supplemental data analyses**

Two sets of analyses were performed to rule out alternative explanations. First, it is possible that MS
participants were much more engaged with the confederate than individuals in the control condition
that, despite his/her training, the confederate was more responsive to those participants. To rule out
this possibility, two raters, who were blind to condition and the goals of the study, coded the confed-
erate’s language use for responsiveness (i.e., one’s ability to appropriately respond to and maintain an
interaction with a conversation partner; Hadley & Rice, 1991; inter-rater reliability \( a = .74 \)). There was
no significant difference between death and control conditions on responsiveness scores, \( t(38) = .02,\n\ p = .98 \). Alternatively, given that the confederate had some leeway to vary his/her word usage to sound
more natural in conversations, it is possible that the confederate was influencing the conversation
partner in a positive or negative manner (i.e., talking more or less). Additional results found that there
was no significant difference in the confederate’s use of function words based on the participant being
in the death vs. control condition, \( t_s (38) \leq 1.17, ps \geq .25 \). Overall, these results suggest that greater LSM
matching after MS was specific to thoughts of death instead of extraneous factors in the conversations.

Although the current results suggest that death awareness motivates people to coordinate their
language styles, there are some limitations to this work. One question is whether the increased use
of function words was the result of death concerns or language matching within a relational context.
For instance, research has shown that MS participants report a lower word count but greater positivity
in their writing compared to control participants (Arndt, Greenberg, Simon, & Pyszczynski, 1998). To
address this issue, we conducted a separate study where we assessed for the use of function words
following a MS manipulation (“Please briefly describe the emotions that the thought of your own
death arouses in you") vs. a control condition ("Please briefly describe the emotions that the thought of academic failure arouses in you"). The results revealed no significant difference in the use of function words across the two conditions, $t(55) = 0.63, p = .53, d = .17$, suggesting that increased function word usage in the current study was the result of LSM and not just reminders of death.

An additional problem with Study 1 was that it was conducted on the computer which may have affected the quality of individuals' conversations. For instance, differences in verbal (e.g., voice inflection) and non-verbal (e.g., body posture, eye contact) communication between online and face-to-face interactions may influence the amount of intimacy people experience. In order to see whether thoughts of death increase people's LSM, it seems especially important to examine individuals' naturally occurring conversations with one another. Study 2 addressed this limitation by recording and scoring persons' face-to-face interactions. Finally, although the first study examined how reminders of death increase individuals' need for close others through language matching, it did not test the beneficial effects of LSM on participants' well-being. As Vail et al. (2012) suggest, reminders of death have the potential to increase positive life trajectories as it motivates people to develop and maintain relationships. Study 2 built upon the results of our initial experiment by testing whether increased verbal coordination after MS leads to greater psychological and social health.

**Study 2**

Study 2 utilized a novel approach to the traditional MS manipulation by having pairs of participants read and discuss a news article about the rise in homicide rates in the community (death condition) vs. an article about the increasing academic pressures of college (control condition). By using news articles, we were able to increase the real-world applicability of our research findings. Additionally, the use of articles provided dyads a topic to discuss during their verbal conversations with one another. Following the interaction task, participants were asked to evaluate their partner, followed by several measures of well-being (self-esteem, life satisfaction, & relationship need satisfaction). Although there is some inconsistency in the terror management literature on the influence of MS on measures of self-esteem (see e.g., Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004), research has demonstrated that self-esteem is directly influenced by relationship processes following thoughts of death (Cox et al., 2008; Study 3). Further, the inclusion of self-esteem, relationship need satisfaction, and life satisfaction as dependent variables in Study 2 was to be consistent with other work on LSM (Babcock, Ta, & Ickes, 2014; Ireland et al., 2011) and TMT (Florian et al., 2002; Routledge et al., 2010) which have used the same or similar measures. Finally, an added goal of the second experiment was to test the effectiveness of public speaking (Study 1) and academic pressure (Study 2) in serving as control conditions. Given that participants in both studies were primed with aversive experiences, it could be that such threats decrease feelings of well-being and reduce individuals' willingness to communicate with others. To address this limitation, and following guidelines published by Gonzales et al. (2010), we calculated chance style matching scores in a supplemental analysis section to rule out this alternative explanation for both experiments. Overall, consistent with the first study, it was hypothesized that participant pairs would exhibit greater LSM following reminders of death compared to academic pressure. Also, to the extent that LSM increases positive life outcomes (Gonzales et al., 2010), dyads should report greater well-being when their language style matched after MS.

**Method**

**Participants**

Fifty-two same-sex student dyads (104 participants: 54 female; $M_{age} = 19.18$) completed the study in a laboratory setting. Similar to the first experiment, individuals were recruited
from a private university in the southwest United States and awarded partial course credit for their participation in the experiment.

**Materials**

**Article manipulation**

Participant pairs were randomly assigned to read one of two news articles: an article about the rise of homicide rates in the local community (death condition) or an article about the rise in academic pressure among college students (control condition; see Supplemental Data for a copy of the articles used). Consistent with other studies which have used subtle, real world MS manipulations (Pyszczynski et al., 1996), participants did not complete a delay task prior to the assessment of the dependent variables (also see Burke, Martens, & Faucher, 2010). Each dyad met in a central room where they were instructed to discuss the article for approximately 5 min. All verbal conversations were audio recorded and later transcribed to assess for stylistic similarity between participants. Upon completion, participant pairs went into separate cubicles to complete a questionnaire packet on the computer.

**LSM**

Similar to Study 1, transcribed conversations were analyzed with LIWC to assess for language matching within individuals’ verbal discussions. A single LSM score was calculated for each dyad pair by averaging across the nine function word categories (Ireland & Pennebaker, 2010; Ireland et al., 2011).

**Death-thought accessibility**

To ensure that the MS manipulation increased thoughts of death, everyone completed a measure of death-thought accessibility. This task presented participants with 25 word fragments, 6 of which could be completed with a neutral or death-related word (Greenberg, Pyszczynski, Solomon, Simon, & Breus, 1994). The death completions included: DE _ _ (dead or deed), GRA _ _ (grave or grape), SK _ _ L (skull or skill), COFF _ _ (coffin or coffee), KI _ _ ED (killed or kissed), and BUR _ _ D (buried or burned). Death accessibility scores were the total number of death-related word completions.

**Partner liking**

Everyone answered five questions evaluating their conversation partner (“How nice was your conversation partner?,” “How much did you like this person?,” “How positive was your impression of this person?,” “How comfortable were you interacting with this person?,” and “How much did you want this person to get to know you as an individual?”). Responses ranged from 1 (Strongly disagree) to 9 (Strongly agree) and all items were averaged together to create a total evaluation score ($\alpha = .90$).

**Well-being measures**

Participants completed Rosenberg’s (1965) 10-item self-esteem scale to assess for feelings of self-worth (e.g., “I feel that I am a person of worth, at least on an equal basis with others”). The instructions were worded to measure state rather than trait levels of self-esteem (i.e., “answer with how you feel right now, at this very moment”). Items were reported on a
five-point scale (1 = Not at all; 5 = Extremely), and all statements were averaged together to create a measure of self-esteem ($\alpha = .90$).

Next, participants completed the five-item Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) to measure the extent to which people perceive satisfaction with one’s life (e.g., “I am satisfied with my life”). Scale items ranged from 1 (Strongly disagree) to 9 (Strongly agree) and were averaged together to create a life satisfaction composite ($\alpha = .88$).

Finally, to measure relationship need satisfaction, we used six items employed Sheldon, Abad, and Hinsch (2011), asking participants to rate their current relationship experience using a scale ranging from 1 (Strongly Disagree) to 9 (Strongly Agree). Three items assessed relationship need satisfaction (e.g., “I feel a sense of contact with people who care for me, and whom I care for”) and three items assessed relationship need dissatisfaction (e.g., “I feel unappreciated by one or more important people”). Items were averaged together for relationship need satisfaction ($\alpha = .85$) and dissatisfaction scores ($\alpha = .75$).

For all measures (i.e., death-thought accessibility, partner liking, well-being), scores were created by averaging responses across each dyad pair (see e.g., Ireland & Henderson, 2014).

Results and discussion

Manipulation check

An independent $t$-test revealed a significant effect of MS on death-thought accessibility, $t(50) = 2.34, p = .02, d = .64$. Specifically, participant pairs reported a greater number of death-related thoughts after reading the homicide article ($M = 2.02, SD = .74$) compared to the academic pressure article ($M = 1.60, SD = .55$).

LSM

Similar to Study 1, dyads who were reminded of death engaged in greater levels of LSM ($M = .84, SD = .04$) compared to dyads in control condition ($M = .81, SD = .08$), $t(50) = 2.15, p = .04, d = .47$.

Well-being and partner evaluation

Results revealed that in comparison to the control condition, participant pairs reported greater self-esteem, $t(50) = 2.34, p = .02, d = .65$, life satisfaction, $t(50) = 2.09, p = .04, d = .58$, and relationship need satisfaction, $t(50) = 2.87, p = .006, d = .79$, following reminders of death (see Table 1 for descriptive statistics). There was, however, no significant difference

<table>
<thead>
<tr>
<th>Table 1. Descriptive Statistics as a function of Condition (Study 2).</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Death</strong></td>
</tr>
<tr>
<td><strong>M</strong></td>
</tr>
<tr>
<td>LSM</td>
</tr>
<tr>
<td>Self-esteem</td>
</tr>
<tr>
<td>Life satisfaction</td>
</tr>
<tr>
<td>Relationship need satisfaction</td>
</tr>
</tbody>
</table>
between conditions on relationship need dissatisfaction, $t(50) = .79, p = .44, d = .22$, and how individuals evaluated their partners, $t(50) = 1.64, p = .11, d = .46$.

**Mediational analyses**

Using Preacher and Hayes (2008) bootstrapping procedure (SPSS Multiple Mediation INDIRECT macro), self-esteem, life satisfaction, and relationship need satisfaction scores were regressed onto MS condition, with LSM entered as the mediator. One thousand bootstrap resamples were performed and the 95% confidence interval obtained for the indirect effect did not contain zero (self-esteem: $-.27, -.004$; life satisfaction: $-.46, -.007$; relationship need satisfaction: $-.44, -.01$; see Figure 1). Further, the effect of MS on self-esteem and life satisfaction became non-significant when LSM scores were entered as a covariate in the model, indicating full mediation: self-esteem, $b = -.22 \ (SE = .13), t = 1.67, p = .10$; life satisfaction, $b = -.46 \ (SE = .31), t = 1.48, p = .15$. However, the effect of MS on relationship need satisfaction remained significant, suggesting partial mediation, $b = -.51 \ (SE = .23), t = 2.21, p = .03$.

**Supplemental data analyses**

As previously mentioned, one concern with the current studies is whether the neutral primes (i.e., public speaking, academic pressure) served as adequate controls. Utilizing guidelines by Gonzales and colleagues (2010), we calculated chance style matching scores for all possible group member pairs (e.g., Person 1 with Person 2, Person 1 with Person 3, and so on) and compared these values with the dyadic-level scores (i.e., LSM matching between the person & his/her partner). In both studies, MS participants engaged in greater language matching compared to chance ($F$s $\geq 9.65, ps \leq .004$) whereas there was no significant difference between dyad and chance scores in the control conditions ($F$s $\leq .86, ps \geq .36$). These results demonstrate that public speaking (Study 1) and academic pressure (Study 2) are statistically equal to chance and, as a result, served as adequate control conditions.

![Figure 1](image_url)  
*Indicates significance at $p \leq .05$, ** indicates significance at $p \leq .01$. 

Figure 1. The indirect effect of MS on well-being and partner evaluations through LSM (Study 2). 

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Total effect, $b$</th>
<th>SE</th>
<th>Direct effect, $b$</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-esteem</td>
<td>$-.31^*$, $SE = .13$</td>
<td></td>
<td>$-.22$, $SE = .13$</td>
<td></td>
</tr>
<tr>
<td>Life satisfaction</td>
<td>$-.64^*$, $SE = .31$</td>
<td></td>
<td>$-.46$, $SE = .31$</td>
<td></td>
</tr>
<tr>
<td>Relationship Need</td>
<td>$-.66^{**}$, $SE = .23$</td>
<td></td>
<td>$-.51^*$, $SE = .23$</td>
<td></td>
</tr>
</tbody>
</table>
The current study revealed three important findings. First, following Study 1, dyads exhibited increased language matching following thoughts of death compared to academic pressure (the control condition). Whereas the previous experiment found these results within online, instant messaging conversations, Study 2 demonstrated similar effects within face-to-face interactions. Second, the present results found no significant difference between MS and control conditions on participants’ explicit liking for their partner. These findings were somewhat surprising in light of previous terror management research demonstrating that reminders of death increase people’s attraction toward others (Mikulincer et al., 2003). However, based on the language coordination literature, although differences in explicit evaluations may not be found (Ireland et al., 2011), LSM is a behavioral form of liking to the extent that individuals are engaged and are conversing with one another. Although future studies may benefit from manipulating individuals’ conversational engagement (e.g., providing feedback about low vs. high LSM) and its subsequent effects on liking, any manipulation that affects the way people naturally converse following MS may be problematic. Finally, although the relationship satisfaction findings were only partially mediated, the remaining results showed that participant pairs reported greater self-esteem and satisfaction with life when they mimicked each other’s language style after MS. Taken together, the results of two experiments demonstrate that people are likely to imitate the conversational styles of others after MS, and this increased language matching contributes to individuals’ well-being.

**General discussion**

This research was the first to examine the interplay between terror management, language coordination, and well-being. Specifically, the results revealed that participants exhibited greater LSM in response to reminders of death compared to aversive control topics (Studies 1 & 2). Further, mediational analyses showed that increased LSM after MS was associated with higher feelings of self-esteem, life satisfaction, and relationship need satisfaction (Study 2). Although there is no general consensus regarding the specific mechanism(s) underlying behavioral coordination (e.g., language use, eye gaze, body postures; Pickering & Garrod, 2004; Shockley, Richardson, & Dale, 2009), we argue that LSM functions to increase people’s relationships with close others, with reminders of death being one of the reasons why individuals have a need to feel socially connected.

The current studies contribute to the growing body of work demonstrating that close relationships serve an important function for individuals when mortality concerns are salient (Mikulincer et al., 2003). Whereas previous work has focused extensively on people’s relationships with romantic partners, the present results suggest that reminders of death draw strangers closer together through their use of language matching. This is important as much terror management literature has demonstrated that MS motivates individuals to identify with others who uphold their cultural beliefs and distance themselves from those who do not (Pyszczynski et al., 2010). Additionally, according to the heuristic model of optimal terror management (Vail et al., 2012), individuals should experience positive life outcomes after MS to the extent that they develop and maintain caring relationships, invest in their community, and support intergroup cooperation. In support, we found that the well-being effects in Study 2 were relationship specific as participants exhibited greater self-esteem, life satisfaction, and relationship need satisfaction when their language style matched following thoughts of death. These results are consistent with other TMT work demonstrating that people report greater psychological health in response to mortality awareness and thoughts of a supportive relationship (Cox et al., 2008; Koole et al., 2014). Unlike previous research, however, the present studies found that participants’ need for close others after MS was subtly acknowledged through their use of language coordination.
The current work also has important implications for research on language matching and behavioral synchronization. First, we found that LSM occurs in both online and face-to-face interactions. The fact that language matching was found to occur in instant messaging conversations on the computer replicates the results of previous research (Gonzales et al., 2010), and suggests that being in the actual presence of another person is not necessary for verbal coordination to occur. Additionally, although there is little agreement regarding the causes of behavioral synchronization (Chartrand & Lakin, 2013), it is generally agreed upon that body posture, visual gaze, and language matching helps to facilitate communication and promote understanding between persons. For instance, research has shown that individuals report greater relationship satisfaction and find their partner more engaging to the extent that they match their language styles with one another (Ireland et al., 2011). The present research adds to this literature by suggesting that such coordination is especially likely to happen when people feel threatened. This seems important in light of today’s technologically advanced and interconnected world. Individuals are often bombarded with reminders of death on a daily basis (e.g., news headlines, health risk information), with some of these reminders occurring outside of focal attention. Thus, people’s conversational engagement through computer-based (e.g., chat rooms, emails, message boards) and natural interactions may play a critical role in preserving adaptive psychological functioning in the face of these threats.

The present research is not without its limitations. To begin, although our sample sizes and effect sizes were comparable to other work on LSM (Gonzales et al., 2010; Ireland & Pennebaker, 2010; Ireland et al., 2011) and TMT (see e.g., Burke et al., 2010 for a review), future research should attempt to replicate the current findings with a much larger and diverse sample of participants. This is especially important in lieu of social psychology’s growing emphasis on power and reproducibility. Moreover, future research should assess LSM and well-being effects using different MS and control manipulations. For instance, Lakin, Chartrand, and Arkin (2008) found that individuals were more likely to mimic the actions of others following threats of social exclusion. Although TMT research has found that MS effects are specific to thoughts of death and do not generalize to other aversive experiences (including social exclusion; Burke et al., 2010), it would be interesting to assess whether attacking the integrity of close relationships through social exclusion increases the accessibility of death-related thoughts, which in turn leads to greater LSM behavior. Along similar lines, participants’ tendency to engage in greater LSM after MS may reflect a desire to seek coalitional alliances in response to adaptive threat (Kirkpatrick & Navarrete, 2006; Navarrete & Fessler, 2005). Although this perspective provides an alternative explanation for the obtained results, a discussion on the lack of compatibility between TMT and coalitional psychology is beyond the scope of this paper (see e.g., Landau, Solomon, Pyszczynski, & Greenberg, 2007; Pyszczynski, Greenberg, Solomon, & Maxfield, 2006 for more detailed critiques).

Additionally, both studies consisted of undergraduate college students with a majority of the participants (Study 1) being female. Previous research by Arndt, Greenberg, and Cook (2002) suggests that women are more likely to pursue close relationships as a form of defense following thoughts of mortality, whereas men are more likely to seek validation of their cultural beliefs (e.g., being an American). Even though there was no evidence of gender differences in the current research, future studies should continue to examine individual differences in LSM behavior. Moreover, although the present research found that individuals are likely to match their language style as a subtle form of liking after MS, one question is whether similar effects would emerge if participants were explicitly aware of their language
coordination. On one hand, from the perspective of TMT, people should turn toward close others following reminders of death because of the comfort and security that these relationships provide (Mikulincer et al., 2003). This would suggest that language coordination should occur just as much, if not more, if people are consciously aware that they are engaging in LSM after MS. On the other hand, however, thoughts of mortality often motivate individuals to identify with social groups and communities who share similar backgrounds and beliefs and distance themselves from those who are dissimilar (Pyszczynski et al., 2010). In this case, being explicitly aware of matching language styles might lead to either positive or negative interpersonal outcomes. We encourage future research to examine how MS affects both implicit and explicit forms of LSM, and how blurring in-group and out-group boundaries might reduce stereotypical and prejudicial beliefs when managing concerns about death.

It is also important to consider the relationship implications of increased LSM after MS. Although we argue that language coordination serves as a form of liking in response to reminders of death, it can also serve as a way to be understood and liked by others (Pickering & Garrod, 2004). This should not impact the interpretation of our results given that previous work suggests a bidirectional relationship between LSM and its underlying psychological processes (Ireland et al., 2011). However, it would be interesting for future studies to identify other self (e.g., meaning in life, basic psychological needs) and relationship benefiting outcomes (e.g., relationship satisfaction, commitment) that emerge from LSM following reminders of death. Finally, although Bowlby (1969) believed that people are born with behaviors aimed at maintaining proximity to attachment figures, he recognized individual differences in the way people evaluate attachment figures and how they respond to threats in the environment. Contemporary research on adult attachment has found that securely attached individuals are more likely to seek support from close relationships, whereas anxious and avoidant individuals do not (Mikulincer & Shaver, 2007). Following this, Mikulincer and Florian (2000) found that secure persons reacted with a heightened desire for intimacy and commitment in their relationships with a significant other after MS, whereas anxious and avoidant persons responded with defensive attempts to validate their cultural worldview. Thus, while it is clear that attachment style plays an important role in moderating the effects of MS on commitment to romantic partners, future work is needed to uncover whether attachment style similarly moderates the types of effects reported herein.

In spite of these limitations, the current findings have important implications for research on well-being. For example, the psychological threat posed by the awareness of death has been shown to make people more hostile, disparaging, and aggressive toward dissimilar others. However, in light of previous work exploring ways in which to induce universal human experiences (Motyl et al., 2011), the present studies suggest that individuals, even strangers, may feel closer to one another when reminders of death are salient. Although not examined in the current work, it would be interesting to explore the limits of mortality-induced language coordination among individuals with opposing viewpoints (e.g., out group members, radicalized others), and the implications that it has for health (e.g., propagating hate & violence). Hopefully, future research will continue to examine the relationship between terror management and language matching to better understand the function that this coordination serves, the mechanisms behind it, and the role that it plays in fostering social relationships and well-being.
Notes

1. Participants’ gender did not moderate any of the obtained results in both studies, $F_s \leq 1.60$, $p_s \geq .18$.

2. To the extent that LSM serves a death-denying function, it could be argued that individuals would experience lower death-thought accessibility as a result of mortality-induced language coordination. In the current study, however, participants in the death condition talked about the rise in homicide rates throughout the entire course of their conversations with one another. Given the saliency of the death manipulation in people’s discussions, it makes sense for dyad pairs to report a greater accessibility of death-related thoughts as a manipulation check.

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References


