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# The Impact of Death-Related Media Information on Consumer Value Orientation and Scope Sensitivity

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*ABSTRACT*

This research examines how incidental exposure to death-related information in media affects consumers' value orientation and their scope sensitivity to marketing stimuli. Five studies demonstrate that, in contrast to thoughts about one's own mortality, exposure to death-related information in media can shift consumers' focus from extrinsic to intrinsic values. This leads them to pay less attention to the marketing stimuli, which are generally associated with extrinsic values, and consequently results in lower sensitivity to the magnitude of products and services. These effects are reversed when the marketing stimuli are associated with intrinsic values. Moreover, we found that exposure to death-related media information will generate effects similar to those of mortality salience when the information is perceived to be self-relevant and thus could induce death anxiety. Implications and possible extensions are discussed.

*Keywords:* death-related media information, death awareness, value orientation, scope sensitivity, self-relevance

Death-related information is prevalent in today's information age. People frequently are exposed to lethal accidents, deadly diseases, wars, and killings as they view newscasts, movies, and commercial ads; listen to the radio; and read magazines and books. This type of information is ubiquitous even in mainstream media outlets; for example, the website of *The New York Times* has a section devoted to "Death and Dying" that includes commentary and archival articles related to this topic. How to best portray death-related information in media has long been a controversial issue. From the discussion about how Robin Williams' suicide should have been reported (Allen 2014) to the criticism of National Insurance's "dead kid" Super Bowl commercial (Boardman 2015), there has been a recent spike in the heated debate regarding when and how death-related information should be conveyed to consumers and the general public through media channels.

Death-related information is not only rampant in media but also often co-exists with marketing stimuli in the same media context. For example, promotional ads may appear on the same page of the newspaper with articles related to death, and commercials unrelated to death can be viewed in the breaks during TV shows that contain death-related scenes or stories. Given the prevalence of this unintentional coupling of death-related media information and promotional marketing, it is surprising that there is very little research investigating how consumers' responses to marketing stimuli may be affected by death-related media information (for exceptions, see Ferraro, Shiv, and Bettman 2005; Huang and Wyer 2015; Mandel and Heine 1999). In the current paper, we investigate the impact of death-related media information on consumers' value orientation and scope sensitivity, and we show that after incidental exposure to death-related information in news or ads, consumers tend to focus more on intrinsic versus extrinsic personal values. Consequently, they pay less attention to, and become less sensitive to the scope of, the marketing stimuli (which are generally associated with extrinsic values) compared to those who are not exposed

to such death-related information. Such effects were found to be opposite to those of mortality salience (i.e., thoughts about one's own death) and consequently cannot be explained by Terror Management Theory (Greenberg et al. 1990; Pyszczynski et al. 2004). In addition, we demonstrate that the observed effects will be reversed when the marketing stimuli are strongly associated with intrinsic instead of extrinsic values and/or when the death-related media information is perceived to be highly self-relevant.

The current research offers important theoretical contributions to the marketing and psychology literature. First, while it is generally believed that being heavily exposed to mass media could cultivate extrinsic values such as materialism (Shrum, Burroughs, and Rindfleisch 2005; Shrum et al. 2011), we show that exposure to death-related media information could actually decrease extrinsic value orientation and lead people to become less sensitive to the scope differences of marketing stimuli. Besides, differing from previous research on Terror Management Theory (Greenberg et al. 1990; Pyszczynski et al. 2004), which often implies that death awareness triggers focus on extrinsic values (Arndt et al. 2004; Kosloff and Greenberg 2009), the current research suggests that incidental exposure to death-related media information could have an opposite effect—one that leads to a shift from extrinsic to intrinsic personal values. Adding to the recent finding that incidental exposure to death can lead to different *cognitive* processing styles than mortality salience (Huang and Wyer 2015), the present research shows that important *motivational* differences—that is, changes in value orientation—also exist between incidental exposure to death and mortality salience. In addition, by extending previous literature showing that scope sensitivity can be influenced by the inherent nature of the scope or the evaluation task (Hsee and Rottenstreich 2004; Hsee, Rottenstreich, and Xiao 2005), the present investigation shows that a novel situational factor—incidental exposure to death-related media information—can also influence consumer scope sensitivity. Finally, as consumption is often driven by extrinsic

values manifested by materialism (e.g., Kasser and Kanner 2004), a shift from extrinsic to intrinsic values caused by exposure to death-in-media can make people less acutely aware of changes in marketing cues such as discount magnitudes and package sizes. Thus, the findings of this research bear implications for marketers who want to manage consumers' perception of changes in their marketing actions.

In the next section, we develop the theoretical rationale for how death awareness can lead to two divergent effects on consumers' value orientation, which further affects their scope sensitivity to various marketing stimuli. In doing so, we develop predictions about how incidental exposure to death-related media information would influence consumers' value orientation and their scope sensitivity to marketing stimuli in a way that differs from mortality salience. We then propose hypotheses about the underlying mechanism of this effect and its boundary conditions. Five studies testing the hypotheses are reported.

## *THEORETICAL BACKGROUND*

### *Death Awareness and Value Orientation*

One important difference that sets humans apart from other animals is the awareness that our lives will eventually end, and concerns about death are a major force driving human behaviors (Becker 1973). The human species' unique awareness of death largely contributes to the development of various psychological constructs such as self-esteem (Pyszczynski et al. 2004), attachment (Mikulincer, Florian, and Hirschberger 2003), and religious belief (Alexander and Alderstein 1959).

Awareness of death can also change the importance that people attach to different values. Personal values can be categorized into two broad types: extrinsic values and intrinsic values (Kasser and Ryan 1993; Pieters 2013). Extrinsic values refer to goals that are pursued

to receive external approval and rewards, such as money, fame, and beauty; whereas intrinsic values relate to goals characterized by inherent satisfaction, such as personal growth, intimate relationships, and contribution to the world. Personal values can have significant downstream consequences. For example, consumers who are more materialistic and extrinsic value-oriented tend to engage in more compulsive consumption (Rindfleisch, Burroughs, and Denton 1997). Compared to non-materialists, materialists are also more likely to sacrifice long-term well-being for instant pleasure when they perceive low economic mobility (Yoon and Kim 2016). These findings suggest that the personal values that consumers espouse can exert a significant impact on their subsequent behavior. The current research, however, investigates death awareness as an antecedent of one's value orientation.

Although there is considerable variance in people's chronic value orientation, previous research has shown that thoughts about death can shift people's values because of its significance to humans' life (e.g., Arndt et al. 2004; Cozzolino et al. 2009; Kasser and Sheldon 2000). Such effects can last at least momentarily (e.g. after several filler tasks; Cozzolino et al. 2009; Kasser and Sheldon 2000), although some researchers speculate that they may have impacts that persist over a longer period of time (Arndt et al. 2004). As will be elaborated below, existing literature has mixed findings on how death awareness might influence consumers' value orientation.

*Death awareness increases focus on extrinsic values*. Some research showed that thoughts about death could enhance extrinsic values (e.g., Arndt et al. 2004). As suggested by Terror Management Theory (TMT; Greenberg et al. 1990; Pyszczynski et al. 2004), when people are reminded of their own mortality, they tend to develop defensive responses to manage the terror, and materialism can often be used as a way to cope with death anxiety (Arndt et al. 2004; Kasser and Sheldon 2000; Rindfleisch, Burroughs, and Wong 2009). For example, Kasser and Sheldon (2000) showed that participants reminded of death expressed

higher expectations for their overall financial worth in 15 years and also indicated a greater willingness to acquire luxury. Mortality salience can lead to overconsumption, resulting in more purchase and intake of food products (Mandel and Smeesters 2008). Reminders of one's own mortality can also cause consumers to choose more indulgent food due to the reduction of self-regulatory resources (Ferraro, Shiv, and Bettman 2005). Moreover, after completing a fear of death scale, participants indicated a greater attraction toward luxury, high-status objects (Mandel and Heine 1999). Taken together, these findings jointly suggest that people may embrace consumerism and materialism to defend against the death anxiety induced by being reminded of mortality. If this is the case, it is plausible to expect that death awareness can increase people's orientation toward extrinsic (vs. intrinsic) personal values.

*Death awareness increases focus on intrinsic values*. In contrast to the previous research that suggested that mortality salience highlights extrinsic values, research on death awareness based on the Socioemotional Selectivity Theory (e.g., Carstensen 1995; Fung, Carstensen, and Lutz 1999) indicated that exposure to death-related information can induce an intrinsic value orientation. Lykins and colleagues (2007), for example, found that after adjusting to death-related information, people assigned greater importance to intrinsic goals (e.g., cultivating close friendship, giving and receiving love) than extrinsic ones (e.g., being attractive, having possessions). It was also found that when people consider the temporal limit of life, they are much more likely to form emotionally focused goals that often fall in the intrinsic domains, such as connectedness with significant friends or loved ones (Fung, Carstensen, and Lutz 1999). In contrast, when people perceive time as expansive, they show more behaviors characterized by extrinsic values, such as greater greed for money and less generosity to help people in need (Cozzolino et al. 2009). Of particular interest to our investigation, there is research suggesting that death cognitions can potentiate positive psychological changes, including a greater appreciation of life, more intimate relationships

with close others, and a changed sense of priorities (Tedeschi and Calhoun 1996). In sum, we might also expect to observe shifts in value orientation—specifically, from extrinsic to intrinsic—after individuals are exposed to death-related information.

*Disentangling the contrasting predictions*. Previous findings on the relationship between death awareness and value orientation have contradictory predictions. Such discrepancies, however, may reflect divergent psychological mechanisms triggered by death awareness. The enhanced extrinsic value orientation induced by mortality salience is mainly driven by the motivation to defend against anxiety regarding one's own inevitable death (e.g., Greenberg et al. 1990; Solomon et al. 1991), whereas the shift toward an intrinsic value orientation is often observed when death thoughts are activated without incurring anxiety (e.g., Cozzolino et al. 2009; Lykins et al. 2007). Indeed, previous research suggests that when death anxiety is *not* experienced—such as when people process information in a cognitive mode (Simon et al. 1997), when they think about death in general but not specific to themselves (Huang and Wyer 2015; Nelson et al. 1997), when they accept death with a sense of peace (Cozzolino, Blackie, and Meyers 2014), or when they have adjusted to the presence of death-related information (Lykins et al. 2007)—death awareness will not lead to the typical defensive responses. Activated death-related cognitions, in the absence of incurred anxiety, may lead people to focus on the meaning of life and thus foster a tendency to pursue intrinsic needs and values (Grant and Wade-Benzoni 2009).

It is worth noting that some previous research on Terror Management Theory has also shown that even when death anxiety is induced, thinking about one's own death could prompt people to engage in worldview defense and protect their in-group members (Greenberg et al. 1990; Mikulincer, Florian, and Hirschberger 2003), which seems to suggest a focus on intrinsic values. However, such in-group favoritism is accompanied by escalated aggression toward out-group members (Greenberg et al. 1990), which is at odds with true intrinsic values

that feature big love, tolerance, and a transcendent view of the world (Kasser and Ryan 1993). Thus, a more parsimonious explanation is that people experiencing death anxiety are likely to conform to pre-existing values instead of focusing on real intrinsic values per se (Arndt et al. 1997; Greenberg et al. 1990). Given that the current society is inclined toward extrinsic values (Kasser and Kanner 2004; Richins 2013), it is reasonable to predict that this worldview defense will generally lead people to focus even more on extrinsic values when they are reminded of their own mortality. Indeed, when extrinsic values and intrinsic values are pitted against each other, people who have thought about their own death show a relative shift toward extrinsic rather than intrinsic values (Kosloff and Greenberg 2009). Therefore, as long as extrinsic values resonate more with mainstream values, mortality salience should generally further enhance them because of the cultural worldview defense. We will return to this point when we discuss how pre-existing values (e.g., materialism) may influence the effects of various types of death awareness in different ways.

*Death-related media information and value orientation.* The considerations above shed light on how the typical death-related information consumers are exposed to in media may influence their value orientation. To this extent, it is important to note that death-related media information differs from direct contemplation of one's own mortality. First, exposure to death-related media information is commonplace and almost inevitable in everyday life. The prevalence of death-related information in media may cause people to become accustomed to such information. Previous research has shown that extended exposure to similar death-related information can actually decrease anxiety over one's own death and encourage people to review the meaning of their lives (e.g., Grant and Wade-Benzoni 2009; Lykins et al. 2007). Second, while thinking about one's own mortality can easily induce feelings of existential anxiety, exposure to others' mortality in media may not have such effects (Grant and Wade-Benzoni 2009), especially when people are constantly overloaded

by other information (Huang and Wyer 2015). For the reasons summarized above, we propose that death-related media information may induce death-related thoughts but not death anxiety; hence, it may predispose people to prioritize intrinsic values over extrinsic values.

*Value Orientation and Scope Sensitivity to Marketing Stimuli*

One important marketing implication of the proposed effect of death-related media information on value orientation is that it may alter consumers' scope sensitivity to marketing stimuli, which refers to consumers' responsiveness to the magnitude of marketing cues (Chang and Pham 2017; Hsee and Rottenstreich 2004; Morewedge et al. 2009). Scope sensitivity concerns the extent of *difference* in perceived value between small and large scopes of stimuli (Hsee and Rottenstreich 2004). The perceived value of a stimulus is believed to vary as a concave function of scope, such that increments in subjective value diminish as the scope or magnitude becomes larger (Hsee, Rottenstreich, and Xiao 2005). For instance, a 10% increase in price may be less than twice as upsetting as a 5% one, and winning $200 in a lottery may be less than twice as elevating as winning $100.

The degree of concavity of this function between scope and subjective value (i.e., scope sensitivity) is subject to several factors. The first of these is the ease of evaluation (Morewedge et al. 2009). For example, people are more sensitive to differences in the durations of more familiar events, which they can evaluate more easily (Morewedge et al. 2009). Another factor is the valuation process (Hsee and Rottenstreich 2004). When people rely on more effortful, calculative valuation processes, they become more scope-sensitive than when they employ less effortful, affective processes.

Particularly relevant to the current research is the notion that attention also plays a critical role in determining people's sensitivity to the changes and differences (Rensink, O'Regan, and Clark 1997). If people do not pay any perceptual attention to the stimulus, it will be hard for them to sense the changes in that stimulus. In the classic example of

inattentional blindness (Simons and Chabris 1999), people whose attention is directed to one cue (e.g., people passing a basketball) had difficulty detecting other highly noticeable changes in the environment (e.g., a person in a gorilla suit walking by).

People tend to pay more attention to information and stimuli that are highly relevant to their goals and beliefs (Petty and Cacioppo 1986). For instance, when people's need for belongingness is heightened, they attend more to the social cues and thus become more sensitive to differences between facial expressions and vocal tones (Pickett, Gardner, and Knowles 2004). Indeed, this positive relationship between attention and sensitivity has been observed not only for physical perceptual stimuli (e.g., Moskowitz 2002), but also for conceptual information (e.g., Bodenhausen and Hugenberg 2009). Information that is relevant to personal values draws attention and can make people more sensitive to it for this reason.

These considerations suggest that consumers who are led to be extrinsically-oriented may become more sensitive to marketing stimuli, which are often portrayed to be associated with extrinsic values in mass media (Shrum, Burroughs, and Rindfleisch 2005; Shrum et al. 2011; see also Belk 1985). For example, the emergence of consumerism makes people sensitive to product information (Jacoby, Chestnut, and Fisher 1978). People with a greater extrinsic value orientation are more likely to pay attention to products because they are more sensitive to the products' value in improving their lives (Richins 2013). Extrinsic values (e.g., materialism) also lead people to care more about details of the price and product value (Tatzel 2002). These findings collectively suggest that scope sensitivity to marketing stimuli is often fueled by extrinsic values that affect consumers' allocation of attention.

To recap, exposure to death-related media information, in contrast to mortality salience, will encourage consumers to momentarily focus on intrinsic (rather than extrinsic) values. This implies that death-related media information exposure (vs. mortality salience) should decrease (vs. increase) the attention consumers pay to marketing stimuli, and

consequently make consumers less (vs. more) sensitive to the scope of them. Thus:

***H1a:*** *Exposure to death-related media information will decrease consumers' sensitivity to the scope of marketing stimuli, compared to exposure to media information not related to death.*

***H1b:*** *Thinking about one's own death (i.e., mortality salience) will increase consumers' sensitivity to the scope of marketing stimuli, compared to thoughts not related to one's own death.*

There are several qualifications on our hypotheses. First, extant research suggest that most of the media information can cultivate materialism and extrinsic values (e.g., money, fame, and physical appearance; Shrum, Burroughs, and Rindfleisch 2005; Shrum et al. 2011), and thus it is plausible to assume that marketing stimuli which are often presented via media are also associated with extrinsic values. However, it is possible that some marketing stimuli may highlight intrinsic values, and consequently the effects of death-related media information on scope sensitivity should be reversed on these stimuli. More formally:

***H2:*** *These effects of death-related media information on scope sensitivity will be reversed if intrinsic values are associated with the marketing stimuli.*

Second, as noted earlier, mortality salience can induce worldview defense, which *polarizes* people's pre-existing values including materialism (Arndt et al. 1997; Greenberg et al. 1990). This would suggest that mortality salience would make highly extrinsically orientated (e.g., highly materialistic) people even more extrinsic, but make those who are not oriented toward extrinsic values (e.g., low in materialism) even less extrinsically oriented. Mortality salience is expected to generally cause a shift toward extrinsic values because today's mainstream values are more extrinsic (e.g., Arndt et al. 2004; Kasser and Sheldon 2000). Hence, people's individual differences in chronic materialism would moderate the effect of mortality salience on value orientation and thus scope sensitivity. In contrast, we

predict that people who are incidentally exposed to death-related media information will not experience death anxiety and consequently will not need to engage in cultural worldview defense. Put in another way, exposure to death-related media information is more likely to prioritize intrinsic values *independently* of their pre-existing values, and hence materialism will not moderate the effect of death-related media information on consumer scope sensitivity. Thus, we hypothesize:

> ***H3a:*** *The effect of mortality salience on consumer scope sensitivity will be moderated by consumers' chronic materialism. Specifically, mortality salience will increase consumer scope sensitivity for people with high chronic materialism, but will decrease consumer scope sensitivity for those with low chronic materialism.*
>
> ***H3b:*** *The effect of death-related media information exposure on consumer scope sensitivity will not be moderated by consumers' chronic materialism.*

Finally, people are accustomed to death-related information via the media, and therefore they do not necessarily feel anxious about such information. Under certain circumstances, however, death-related media information may still evoke people's anxiety about their own mortality, which might lead to more extrinsic (vs. intrinsic) value orientation, thus reversing the effect we proposed. One such occasion is when the media-depicted death are highly self-relevant. Intensity of emotional responses to events is enhanced with increased self-relevance (Wong and Bagozzi 2005). For example, when a disease can potentially affect oneself (vs. others), risk perception is intensified, engendering greater worry and anxiety (Yan and Sengupta 2013). Of particular interest to the current research, people would experience death anxiety and take defensive acts when mortality is thought about in relation to oneself but not when it is self-irrelevant (Huang and Wyer 2015). Consequently, their focus might shift to extrinsic (vs. intrinsic) values, and they may become more sensitive to changes in marketing scope related to extrinsic goals. Hence, when death in the media is

perceived as self-relevant to consumers, they may feel anxious about the possibility of their own death, generating effects similar to mortality salience. Thus:

***H4:*** *The effect of death-related media information exposure in reducing consumer scope sensitivity will be reversed if the information self-relevant to consumers.*

Five studies investigated these possibilities. Study 1 showed that viewing ads containing death-related information decreased people's scope sensitivity to marketing stimuli, whereas thinking about their own mortality enhanced marketing scope sensitivity. These changes in marketing scope sensitivity were sequentially mediated by a shift of focus between extrinsic and intrinsic personal values and the attention paid to marketing stimuli (Study 2). In addition, these effects were reversed when intrinsic values were attached to the marketing stimuli (Study 3). People's chronic materialism moderated the effect of mortality salience but not that of death-related media information on scope sensitivity (Study 4). Finally, death-related media information generated effects similar to mortality salience only when the death-related media information was perceived to be highly self-relevant (Study 5).

## *STUDY 1*

We hypothesized that after being exposed to death-related information in media that is not pertinent to their own mortality, people will prioritize intrinsic values over extrinsic ones, resulting in lower scope sensitivity to marketing stimuli. In contrast, death-related thoughts that induce anxiety about one's own mortality (i.e., mortality salience) are expected to trigger a shift to extrinsic values and cause higher marketing scope sensitivity. Study 1 tested these predictions using an incentive-compatible behavioral measure of scope sensitivity.

### *Method*

For a nominal payment, 424 Hong Kong undergraduates (276 females, $M_{age}$ = 21.85)

participated in this study. They were randomly assigned to conditions of a 3 (death awareness: death-in-media vs. mortality salience vs. control) × 2 (scope: small vs. large) between-subjects design.

Participants were told that this study consisted of several independent tasks. We manipulated death awareness in the first task. Participants in the *mortality-salience* condition completed a classic manipulation of mortality salience (e.g., Arndt et al. 2004; Greenberg et al. 1990). Specifically, they were asked to respond to two open-ended questions: 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." The *death-in-media* condition mimicked the typical death-related media information that people encounter in a marketing context. Participants in this condition were asked to evaluate six print ads of an insurance company, all featuring casualties caused by various natural disasters (e.g., earthquakes and tsunami; see Web Appendix A). Participants in the *control* conditions skipped these tasks. Afterward, since a delay period is needed for typical mortality salience effects to occur (Arndt et al. 1997; Ferraro, Shiv, and Bettman 2005), participants completed a filler task (i.e., unscrambling sentences involving neutral words) and items from the Positive and Negative Affect Schedule (PANAS; Watson, Clark, and Tellegen 1988; 1 = "not at all" and 9 = "very much").[1]

We then measured participants' scope sensitivity under the guise of recruiting participants for another study. After the filler task and while participants were waiting for their next task, an experimenter entered the room and told participants that she needed to recruit participants for a different study that would be conducted the next day. Participants

[1] Indices of positive affect ($\alpha = .97$) and negative affect ($\alpha = .97$) were calculated by averaging the corresponding items in PANAS. Previous research indicates that death awareness does not influence general affect (Ferraro et al. 2005). Consistent with this notion, participants' positive affect and negative affect were not influenced by our manipulation ($ps > .10$). Similar null effects were observed for all studies reported in the current paper measuring PANAS; thus, we will not discuss this measure further.

were told that they could come at any time on the following day to complete the study. This new study was described as a study of about 5 minutes and participants in the *small scope* (vs. *large scope*) conditions were told that they would be paid 5 Hong Kong dollars (vs. 15 Hong Kong dollars) for their participation. After the study description, interested participants put down their names and contacts in the sign-up sheet provided by the experimenter.

After the experimenter left the room, participants were asked to finish the rest of the study. Specifically, they were asked to indicate to what extent this study evoked thoughts about death (1 = "not at all" and 9 = "very much"). They also responded to a 6-item death anxiety scale (e.g., "I felt afraid of thinking beyond the threshold of my death;" Huang and Wyer 2015; 1 = "strongly disagree" and 9 = "strongly agree;" $\alpha = .98$).

The next day, those who signed up for the additional study arrived at the lab to finish a filler survey and received their payments. Among participants who signed up for the study (N = 216), the show-up rate did not differ across death-in-media (51.7%), mortality salience (53.7%), and control conditions (50.0%; $\chi^2(2) = .69$, $p > .70$).

*Results*

*Death-related thoughts and death anxiety.* Death-related thoughts ($F(2, 418) = 259.22$, $p < .001$, $\eta_p^2 = .55$) and death anxiety ($F(2, 418) = 61.11$, $p < .001$, $\eta_p^2 = .23$) varied significantly as a function of the death awareness manipulation. Participants in the control condition reported less salient death-related thoughts (M = 1.94, SD = 1.32) than did those in the death-in-media condition (M = 6.13, SD = 2.15; $t(418) = 19.13$, $p < .001$, d = 2.28), and those in the mortality salience condition (M = 6.29, SD = 1.94; $t(418) = 20.12$, $p < .001$, d = 2.37), and the latter two conditions were not significantly different ($t(418) < 1$, NS). However, thinking about one's own mortality (M = 5.34, SD = 2.25) induced greater death anxiety than reading death-related ads (M = 3.30, SD = 1.84; $t(418) = 8.53$, $p < .001$, d = 1.02) or control (M = 2.93, SD = 1.88; $t(418) = 10.24$, $p < .001$, d = 1.21), and the latter two

conditions did not differ significantly ($t(418) = 1.55$, $p > .10$). These effects were independent of scope manipulation ($Fs < 2.16$, $ps > .10$).

*Scope sensitivity*. Results on scope sensitivity for all studies are shown in Table 1. We tested to what extent the sign-up rate for the new study was sensitive to the payment information across death awareness conditions. A logistic regression on the new study sign-up rate revealed a significant effect of scope ($\chi^2(1) = 48.25$, $p < .001$), qualified by a significant interaction ($\chi^2(2) = 17.78$, $p < .001$). Interaction contrasts were performed to test how different types of death awareness may influence scope sensitivity (i.e., differences in sign-up responses to small-scope and large-scope marketing information). Compared with the control (small-scope = 33.8% vs. large-scope = 69.0%; $\chi^2(1) = 17.20$, $p < .001$), the difference in sign-up rate between small and large payment in the death-in-media condition (small-scope = 38.8% vs. large-scope = 49.3%; $\chi^2(1) = 1.51$, $p > .20$) was less evident (interaction contrast: $\chi^2(1) = 4.44$, $p = .035$), indicating that participants in the death-in-media condition showed less scope sensitivity than those in the control condition. In contrast, the scope sensitivity was higher among those who had thought about their own death (small-scope = 30.7% vs. large-scope = 86.8%; $\chi^2(1) = 38.10$, $p < .001$), compared with their counterparts in the control condition (interaction contrast: $\chi^2(1) = 4.71$, $p = .030$).

*Discussion*

Using an incentive-compatible measure of scope sensitivity, this study provides support to H1a and H1b by demonstrating that consumers showed lower marketing scope sensitivity after being exposed to death-related media information, compared to those in the control condition, whereas thoughts about one's own mortality had an opposite effect and led to greater marketing scope sensitivity.

Table 1

EFFECTS OF DEATH AWARENESS ON SCOPE SENSITIVITY

| Variables | Death-in-media | | | Mortality salience | | | Control | | |
|---|---|---|---|---|---|---|---|---|---|
| | Small scope | Large scope | *Difference* | Small scope | Large scope | *Difference* | Small scope | Large scope | *Difference* |
| **Study 1** | | | | | | | | | |
| Sign-up rate | 38.8%[a] | 49.3%[a] | *10.5%* | 30.7%[a] | 86.8%[b] | *56.1%* | 33.8%[a] | 69.0%[c] | *35.2%* |
| **Study 2** | | | | | | | | | |
| Price perception | 3.86[ad] (1.29) | 6.25[b] (1.59) | *2.39* | 3.41[a] (1.58) | 7.90[c] (1.28) | *4.49* | 4.10[d] (1.57) | 7.10[e] (1.10) | *3.00* |
| **Study 3** | | | | | | | | | |
| Extrinsic stimuli valuation | 16.39[a] (19.60) | 26.52[b] (30.89) | *10.13* | 22.85[ab] (21.48) | 59.94[c] (51.15) | *37.09* | 22.00[ab] (25.07) | 47.68[d] (44.48) | *25.68* |
| Intrinsic stimuli valuation | 21.96[a] (18.24) | 58.00[b] (51.40) | *36.04* | 21.55[a] (24.67) | 32.20[c] (35.56) | *10.65* | 21.42[a] (29.50) | 44.98[d] (56.67) | *23.56* |
| **Study 4** | | | | | | | | | |
| Reaction to discount magnitude | 4.36[a] (2.07) | 6.28[b] (2.05) | *1.92* | 4.19[a] (1.87) | 7.65[c] (1.50) | *3.46* | 4.16[a] (1.94) | 7.09[d] (1.45) | *2.93* |
| **Study 5** | | | | | | | | | |
| Reaction to discount magnitude | 22.92[a] (21.77) | 63.97[c] (20.92) | *41.05* | 14.90[b] (18.15) | 76.41[d] (20.86) | *61.51* | 17.69[ab] (18.58) | 67.20[c] (20.11) | *49.51* |

Note: Scope was a between-subjects factor in Study 1 and a within-subjects factor in Studies 2-5. Standard deviations are in parentheses. Means in each row with different superscripts are significantly different at $p < .05$. The difference column shows the differences between small and large scope conditions for each death awareness condition.

## *STUDY 2*

Study 2 has three objectives. First, our conceptualization stipulates that death-related media information and thoughts about one's own mortality influence consumer scope sensitivity because they shift consumers' value orientation, which subsequently influences the attention that consumer pay to marketing cues. This study tested this proposed mechanism by measuring value orientation and attention to marketing information. Second, previous

research has found that presenting participants with both large-scope and small-scope information would highlight the difference between the two and make people more scope-sensitive (Hsee, Rottenstreich, and Xiao 2005). In Study 2, as a conservative test, we used a within-subject measure of scope sensitivity to test whether the observed effect would still hold when participants could directly compare scope differences. Third, we measured decision style (affective vs. cognitive) to test whether different types of death awareness affect scope sensitivity because they change people's decision style (Hsee and Rottenstreich 2004).

*Method*

In this study, 127 Hong Kong undergraduates (97 females, $M_{age}$ = 21.32) participated for a nominal payment. This study adopted a 3 (death awareness: death-in-media vs. mortality salience vs. control; between-subjects) × 2 (scope: small vs. large; within-subjects) mixed design.

Participants first completed the same manipulation of death awareness, filler task, and PANAS as in Study 1. We then measured participants' marketing scope sensitivity in the context of price perceptions (Shen and Urminsky 2013). Participants read information about the nightly room rates of "Hotel Rio" in Rio de Janeiro, Brazil. Participants were asked to rate the expensiveness (1 = "not expensive at all" and 9 = "very expensive") of a hotel with a room rate of US$138 per night (*small* scope) *as well as* a hotel with a room rate of US$344 per night (*large* scope). The information for both hotels was presented in a counterbalanced order[2] on the same page. Unbeknownst to the participants, the time they spent reading and rating the hotel information was recorded as a measure of attention to this information (for the use of time spent on stimuli as an indicator of attention, see Nordgren and Chou 2011).

[2] In all studies treating scope as a repeated factor, the presentation order of small-scope and large-scope information did not influence the effects of death awareness on scope sensitivity (in all cases, $p > .10$).

Next, to measure value orientation, participants completed the 30-item Aspirations Index (Kasser and Ryan 1993; see also Cozzolino et al. 2009; Web Appendix B), including 15 extrinsic items ($\alpha = .95$) and 15 intrinsic items ($\alpha = .94$). This scale required participants to indicate their perceived importance of various extrinsic and intrinsic goals along scales from 1 ("not important at all") to 7 ("very important"). Participants also responded to a state version of the 6-item decision style scale (Hsee et al. 2015; e.g., "At this moment, I would focus on objective facts rather than subjective feelings when making decisions;" 1 = "not at all;" and 6 = "very much;" $\alpha = .70$). Finally, participants completed the death-related thoughts and death anxiety ($\alpha = .98$) measures used in Study 1.

*Results*

*Death-related thoughts and death anxiety.* Death awareness significantly influenced both death-related thoughts ($F(2, 124) = 62.12$, $p < .001$, $\eta^2 = .50$) and death anxiety ($F(2, 124) = 33.22$, $p < .001$, $\eta^2 = .35$). Participants in the control condition reported less salient death-related thoughts ($M = 2.52$, $SD = 1.81$) than did those in the death-in-media condition ($M = 6.93$, $SD = 2.30$; $t(124) = 9.98$, $p < .001$, $d = 2.15$) and the mortality salience condition ($M = 6.71$, $SD = 1.99$; $t(124) = 9.32$, $p < .001$, $d = 2.05$), and the latter two conditions were not significantly different ($t < 1$, NS). However, higher death anxiety was experienced after participants thought about their own mortality ($M = 6.08$, $SD = 2.50$) than after they read death-related ads ($M = 3.16$, $SD = 2.20$; $t(124) = 6.50$, $p < .001$, $d = 1.41$) or control ($M = 2.65$, $SD = 1.34$; $t(124) = 7.55$, $p < .001$, $d = 1.66$), and the latter two conditions did not differ from each other ($t(124) = 1.14$, $p > .20$).

*Decision style*. Participants' decision style did not vary significantly across death-in-media ($M = 3.94$, $SD = .83$), mortality salience ($M = 3.90$, $SD = .71$), and control conditions ($M = 3.88$, $SD = .59$; $F < 1$, NS).

*Scope sensitivity*. A mixed ANOVA yielded significant effects of scope ($F(1, 124) =$

732.59, $p < .001$, $\eta_p^2 = .86$) and death awareness ($F(2, 124) = 3.07$, $p = .050$, $\eta_p^2 = .05$), qualified by a significant interaction ($F(2, 124) = 26.17$, $p < .001$, $\eta_p^2 = .30$). Participants who had read death-related ads perceived smaller discrepancies between hotels with low prices ($M_{small\text{-}scope} = 3.86$, SD = 1.29) versus high ($M_{large\text{-}scope} = 6.25$, SD = 1.59; $t(124) = 11.56$, $p < .001$, d = 2.47), compared to control ($M_{small\text{-}scope} = 4.10$, SD = 1.57 vs. $M_{large\text{-}scope} = 7.10$, SD = 1.10; $t(124) = 14.18$, $p < .001$, d = 3.09; interaction contrast: $F(1, 124) = 4.26$, $p = .041$, $\eta_p^2 = .03$). However, thinking about one's own mortality ($M_{small\text{-}scope} = 3.41$, SD = 1.58 vs. $M_{large\text{-}scope} = 7.90$, SD = 1.28; $t(124) = 20.97$, $p < .001$, d = 4.63) resulted in greater scope sensitivity compared to control (interaction contrast: $F(1, 124) = 24.50$, $p < .001$, $\eta_p^2 = .16$).

*Attention*. As a proxy for participants' attention to marketing information, the time they spent reading and rating the information (in seconds) was significantly influenced by death awareness ($F(2, 124) = 18.07$, $p < .001$, $\eta^2 = .23$). Compared with those in the control condition (M = 32.11s, SD = 13.39s), participants who had read death-related ads spent less time (M = 23.50s, SD = 11.10s; $t(124) = 2.47$, $p = .015$, d = .53), whereas those who had thought about their own death spent more time (M = 44.51s, SD = 22.20s; $t(124) = 3.50$, $p = .001$, d = .77), on the price information.

*Value orientation*. Given that value orientation assesses the *relativity* of intrinsic values compared to extrinsic values, we followed Kasser and Ryan (1993; see also Cozzolino et al. 2009) in subtracting the extrinsic values score from the intrinsic values score to create a single index of value orientation (i.e., a higher score indicates greater emphasis on intrinsic values over extrinsic values). An ANOVA revealed that death awareness significantly shifted participants' value orientation ($F(2, 124) = 16.98$, $p < .001$, $\eta^2 = .22$). Compared with control (M = 1.70, SD = 1.27), exposure to death-related ads made people attach greater importance to intrinsic values than to extrinsic values (M = 2.81, SD = 1.75; $t(124) = 3.31$, $p = .001$, d = .71), whereas thinking about their own death shifted people's focus more toward extrinsic

ones (M = .85, SD = 1.60; t(124) =2.49, $p$ = .014, d = .55).

*Sequential mediation*. We predicted that exposure to death-related media information (vs. thoughts about one's own death) would make people more (vs. less) oriented toward intrinsic rather than extrinsic values, leading them to pay less (vs. more) attention to marketing cues that are typically associated with extrinsic values and, consequently, making them less (vs. more) scope sensitive to marketing information (i.e., death awareness → value orientation → attention to marketing cues → marketing scope sensitivity). To test this proposed causal chain, we built a single index for marketing scope sensitivity by computing the difference score in reaction to small and large price magnitudes (with smaller differences indicating less marketing scope sensitivity) and conducted sequential mediation analyses based on 5,000 bootstrap samples (PROCESS Model 6; Hayes and Preacher 2014) separately for death-in-media (1 = death-in-media, 0 = control) and mortality salience (1 = mortality salience, 0 = control). The analyses showed that value orientation and attention sequentially mediated the effects of both death-related media information (95% bias-corrected CI: [-.2789, -.0037]) and mortality salience (95% bias-corrected CI: [.0214, .3294]). To test whether attention to marketing cues is an antecedent, rather than a consequence, of value orientation (i.e., death awareness → attention → value orientation → marketing scope sensitivity), we performed another set of sequential mediation analyses. However, these alternative models were not supported (95% bias-corrected CIs: [-.2074, .0006] for death-in-media, and [-.0215, .2743] for mortality salience).

*Discussion*

Study 2 provided direct evidence that death-related media information and mortality salience affect consumers' marketing scope sensitivity because they alter people's value orientation at least momentarily, consequently influencing the amount of attention people allocate to marketing cues. Whereas mortality salience strengthens consumers' extrinsic

value orientation and increases their attention to marketing cues, exposure to death-related media information fosters consumers' intrinsic value orientation and decreases their attention to marketing cues. The alternative explanation that people's attentional resources are depleted by death awareness does not account for these results; if that were the case, various types of death awareness would not have divergent effects. In addition, the null effect of death awareness on people's decision style ruled out people' affective versus cognitive decision style as an alternative explanation of our findings.

## *STUDY 3*

Study 3 sought to provide further evidence for our proposed underlying mechanism. Our conceptualization predicts that death-related media information exposure can induce intrinsic value orientation, which can make consumers less attentive and consequently less scope-sensitive to marketing cues because these cues are more about extrinsic values. This implies that if a marketing stimulus is associated with intrinsic values, then exposure to death-related information in media should *increase* scope sensitivity to it. This study examined this contingency implied by our proposed mechanism.

### *Method*

Amazon's Mechanical Turk was used to recruit 332 US participants (176 females, $M_{age}$ = 41.09) who earned nominal payment. This study adopted a 3 (death awareness: death-in-media vs. mortality salience vs. control) × 2 (value association: extrinsic vs. intrinsic; between-subjects) × 2 (scope: small vs. large; within-subjects) mixed design.

First, to simulate another type of death-related information that is common in mass media, participants in the *death-in-media* condition were asked to read and summarize a news report about an airplane accident that killed dozens of passengers (see Web Appendix C).

Participants in the *mortality salience* condition completed the same two open-ended questions about their own death as in Studies 1 and 2. Those in the *control* condition did not complete any of these tasks. As in the previous studies, participants then completed a filler sentence scramble task and the PANAS scale.

Next, participants were asked to imagine a book-purchasing scenario. Intrinsic and extrinsic value associations were manipulated by varying the book titles. The book titles in the *extrinsic-value* condition were related to extrinsic values, such as money, fame, and physical attractiveness (e.g., *How to Make Money in Stocks: New and Advanced Investors Share Their Winning Secrets*). Books in the *intrinsic-value* condition were related to intrinsic values, such as personal growth, social relationship, and community involvement (e.g., *A Life with a Purpose: Finding True Meaning in Life*). Following previous research on scope sensitivity (e.g., Hsee and Rottenstreich 2004), participants reported—in a counter-balanced order—the amount of money (in US dollars) they would be willing to pay for a bundle of 5 books (*small scope*) and a bundle of 10 books (*large scope*).

Participants completed the same death-thoughts and death-anxiety ($\alpha = .98$) measures as in previous studies. Finally, as a manipulation check for value association, participants indicated their perception of the values related to the books in the value category they were exposed to (1 = "mainly about extrinsic values," 9 = "mainly about intrinsic values").

*Results*

*Death-related thoughts, death anxiety, and value association checks.* Death-related thoughts ($F(2, 326) = 245.33$, $p < .001$, $\eta_p^2 = .60$) and death anxiety ($F(2, 326) = 49.49$, $p < .001$, $\eta_p^2 = .23$) varied significantly as a function of death awareness. Participants in the control condition ($M = 2.01$, $SD = 1.81$) indicated fewer death-related thoughts than those in the death-in-media condition ($M = 7.29$, $SD = 2.40$; $t(326) = 18.98$, $p < .001$, $d = 2.53$) and the mortality salience condition ($M = 7.52$, $SD = 2.07$; $t(326) = 19.49$, $p < .001$, $d = 2.64$),

and the latter two conditions did not differ significantly ($t < 1$. NS). However, participants experienced greater death anxiety in the mortality salience condition ($M = 5.10$, $SD = 3.08$) than in the death-in-media condition ($M = 2.25$, $SD = 1.94$; $t(326) = 8.66$, $p < .001$, $d = 1.17$) or the control condition ($M = 2.34$, $SD = 2.23$; $t(326) = 8.39$, $p < .001$, $d = 1.13$), and the latter two conditions were not significantly different ($t < 1$, NS). Moreover, the manipulation of value association was successful ($F(1, 326) = 78.54$, $p < .001$, $\eta_p^2 = .19$). The action of buying books was indeed perceived to be more related to intrinsic values in the intrinsic-value-association condition ($M = 6.69$, $SD = 2.19$) and more related to extrinsic values in the extrinsic-value-association condition ($M = 4.28$, $SD = 2.71$).

*Scope sensitivity*. A 3 (death awareness) × 2 (value association) × 2 (scope) repeated-measures ANOVA revealed a significant main effect of scope ($F(1, 326) = 208.77$, $p < .001$, $\eta_p^2 = .39$) and a significant two-way interaction between value association and death awareness ($F(2, 326) = 7.01$, $p = .001$, $\eta_p^2 = .04$). More importantly, there was also a significant three-way interaction ($F(2, 326) = 20.94$, $p < .001$, $\eta_p^2 = .11$).

Consistent with our expectations, when consumption was associated with extrinsic values, people in the mortality salience condition ($M_{small\text{-}scope} = 22.85$, $SD = 21.48$ vs. $M_{large\text{-}scope} = 59.94$, $SD = 51.15$; $t(326) = 8.93$, $p < .001$, $d = 1.75$) showed greater scope sensitivity to the information compared to control ($M_{small\text{-}scope} = 22.00$, $SD = 25.07$ vs. $M_{large\text{-}scope} = 47.68$, $SD = 44.48$; $t(326) = 6.91$, $p < .001$, $d = 1.21$; interaction contrast: $F(1, 326) = 4.19$, $p = .041$; $\eta_p^2 = .01$). However, exposure to death-related media information ($M_{small\text{-}scope} = 16.39$, $SD = 19.60$ vs. $M_{large\text{-}scope} = 26.52$, $SD = 30.89$; $t(326) = 2.53$, $p = .012$, $d = .48$) made people less sensitive to marketing scope compared to the control condition (interaction contrast: $F(1, 326) = 8.10$, $p = .005$, $\eta_p^2 = .02$).

However, the results are reversed when intrinsic values are attached to consumption. In this case, compared to the control condition ($M_{small\text{-}scope} = 21.42$, $SD = 29.50$ vs. $M_{large\text{-}scope}$

= 44.98, SD = 56.67; t(326) = 5.45, $p < .001$, d = 1.11), death-related media information made people more scope-sensitive ($M_{small\text{-}scope}$ = 21.96, SD = 18.24 vs. $M_{large\text{-}scope}$ = 58.00, SD = 51.40; t(326) = 9.00, $p < .001$, d = 1.70; interaction contrast: F(1, 326) = 4.52, $p = .034$, $\eta_p^2 = .01$), and mortality salience decreased marketing scope sensitivity ($M_{small\text{-}scope}$ = 21.55, SD = 24.67 vs. $M_{large\text{-}scope}$ = 32.20, SD = 35.56; t(326) = 2.61, $p = .009$, d = .50; interaction contrast: F(1, 326) = 4.72, $p = .031$, $\eta_p^2 = .01$).

*Discussion*

We argue that consumers who are exposed to death-related media information become less sensitive to the scope of marketing stimuli because the purchasing of products and services today is driven mostly by people's extrinsic values (e.g., Kasser and Kanner 2004; Richins 2013). Exposure to death-related media information (vs. mortality salience) shifted people more toward intrinsic (vs. extrinsic) values, consequently decreasing (vs. increasing) consumers' sensitivity to the scope of these marketing stimuli. Study 3 provided convergent support for H2 by showing that after exposure to death-related media information consumers became even more scope-sensitive to marketing stimuli when the consumption was believed to be related to intrinsic values, compared to consumers in the control condition. Mortality salience was found to have the opposite effect.

This moderation by value association also ruled out several alternative explanations. For example, the effects of death awareness are unlikely to be caused by feelings of depletion that may disrupt general attentional resources; otherwise, such effects should be observed independently of the values associated with consumption. Previous research has also suggested that death-related information that is not anxiety-inducing may provoke a global processing style, whereas mortality salience may not (Huang and Wyer 2015). However, this change in cognitive style could not account for the current findings. People with an enhanced global processing style would be less acutely aware of differences in stimuli (Henderson and

Hollingworth 2003; Rensink et al. 1997) and become less scope sensitive, but, again, such an effect should not be moderated by the values associated with consumption. Thus, our proposed motivational mechanism based on value orientation provides a more parsimonious and reasonable account for the current findings.

## *STUDY 4*

Study 4 tested whether people's chronic materialism would have divergent effects on the impact of mortality salience and exposure to death-related media information on marketing scope sensitivity. We hypothesized that anxiety about one's own mortality and defensive responses activated by it are likely to polarize people's values (e.g., Arndt et al. 1997; Greenberg et al. 1990), causing them to become more strongly oriented toward their pre-existing values. Therefore, we predict that mortality salience will increase marketing scope sensitivity when people are chronically oriented toward materialism that symbolizes extrinsic values but will decrease the marketing scope sensitivity among those who are not materialistic by default. Such a moderation effect, however, should not be evident for death-related media information that does not directly trigger fear about one's own death. Thus, instead, we predict that the exposure to death-related media information will decrease consumers' scope sensitivity, regardless of their chronic materialism.

### *Method*

Amazon's Mechanical Turk was used to recruit 415 US participants (202 females, $M_{age}$ = 40.79) who participated in this study for a nominal payment. This study adopted a three-factor design, manipulating death awareness (death-in-media vs. mortality salience vs. control) between-subjects and scope (small vs. large) within-subjects, and measuring individual differences in chronic materialism.

Participants first completed the nine-item materialism scale (Richins 2004; $\alpha = .94$; see Web Appendix D) as a measure of their chronic materialism. Participants then completed the same manipulation of death awareness as in Study 3 as well as the same filler task and PANAS. Next, participants were asked to imagine that they had been thinking about buying a new computer and had just found that a store was selling their desired model at a discount. To measure marketing scope sensitivity, we asked participants to indicate their likelihood of purchasing this computer (1 = "not likely at all," 9 = "very likely") if it was sold at a 10% discount (the *small scope*) or 40% discount (the *large scope*), presented in a counter-balanced order on the same page. Finally, participants completed the same death-thoughts and death-anxiety ($\alpha = .98$) measures as in previous studies.

*Results*

*Death-related thoughts and death anxiety.* Death awareness significantly influenced both death-related thoughts ($F(2, 412) = 115.73$, $p < .001$, $\eta^2 = .36$) and death anxiety ($F(2, 412) = 66.90$, $p < .001$, $\eta^2 = .25$). Participants in the control condition reported less salient death-related thoughts ($M = 2.51$, $SD = 1.85$) than did those in the death-in-media condition ($M = 6.28$, $SD = 2.77$; $t(412) = 12.60$, $p < .001$, $d = 1.51$) and the mortality salience condition ($M = 6.61$, $SD = 2.80$; $t(412) = 13.63$, $p < .001$, $d = 1.64$), and the latter two conditions were not significantly different ($t(412) = 1.09$, $p > .20$). However, participants experienced higher death anxiety after they thought about their own mortality ($M = 5.24$, $SD = 2.52$) than after they read death-related news ($M = 2.81$, $SD = 2.02$; $t(412) = 9.36$, $p < .001$, $d = 1.13$) or control ($M = 2.50$, $SD = 1.84$; $t(412) = 10.63$, $p < .001$, $d = 1.28$), and the latter two conditions did not differ significantly from each other ($t(412) = 1.16$, $p > .20$).

*Scope sensitivity*. Replicating our previous findings, a mixed-design ANOVA with death awareness as the between-subjects factor and scope as the within-subjects factor showed a significant death awareness × scope interaction ($F(2, 412) = 18.60$, $p < .001$, $\eta_p^2$

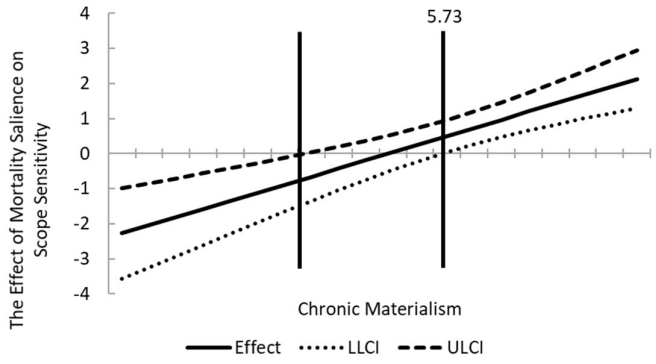
= .08). Compared to control ($M_{small\text{-}scope}$ = 4.16, SD = 1.94 vs. $M_{large\text{-}scope}$ = 7.09, SD = 1.45; t(412) = 16.39, $p < .001$, d = 1.95), participants in the death-in-media condition showed lower marketing scope sensitivity ($M_{small\text{-}scope}$ = 4.36, SD = 2.07 vs. $M_{large\text{-}scope}$ = 6.28, SD = 2.05; t(412) = 10.59, $p < .001$, d = 1.27; interaction contrast: F(1, 412) = 15.74, $p < .001$, $\eta_p^2 = .04$), whereas participants in the mortality salience condition showed higher marketing scope sensitivity ($M_{small\text{-}scope}$ = 4.19, SD = 1.87 vs. $M_{large\text{-}scope}$ = 7.65, SD = 1.50; t(412) = 18.88, $p < .001$, d = 2.30; interaction contrast: F(1, 412) = 4.29, $p = .039$, $\eta_p^2 = .01$).

*Materialism as moderator.* We next looked at the proposed moderating effect of materialism with a generalized linear mixed model, which included death awareness and materialism as fixed factors and scope as a repeated factor. This analysis yielded a significant three-way interaction (F(2, 818) = 8.74, $p < .001$). As this design involved a repeated-measure outcome that was expected to be influenced by a between-subjects factor (i.e., death awareness) and a continuous individual difference (i.e., chronic materialism), similar to Study 2, we built a single index of marketing scope sensitivity by calculating the difference score in reaction to small and large discount magnitudes for subsequent analyses (i.e., smaller difference score indicates less marketing scope sensitivity). We further separately tested the moderations of chronic materialism on the impact of death-in-media (vs. control) and that of mortality salience (vs. control). The results indicated that death-in-media decreased marketing scope sensitivity independently of materialism (i.e., null moderating effect of materialism; b = -.06, SE = .13, t < 1, NS). However, mortality salience interacted significantly with materialism (b = .58, SE = .13, t(273) = 4.57, $p < .001$), and further floodlight analysis (Spiller et al. 2013; see Figure 1) revealed that mortality salience increased marketing scope sensitivity for people with a chronic materialism score of 5.73 or more (54.2% of the participants) but decreased scope sensitivity for people with a chronic materialism score of 3.72 or less (11.9% of the participants).

*Discussion*

Results of Study 4 showed that mortality salience makes highly materialistic consumers more sensitive to the scope of marketing information but decreases less materialistic consumers' marketing scope sensitivity, supporting H3a and H3b. In contrast, death-related media information made consumers less sensitive to the scope of marketing stimuli *independently* of their materialism. It should be noted that despite the moderating effect of chronic materialism, as we predicted, mortality salience overall increased marketing scope sensitivity. We believe that this result can be attributed to current heavy promotion of materialism and extrinsic values (Kasser and Kanner 2004; Richins 2013), which was corroborated by the observation that the average materialism score was significantly higher than the scale mid-point (M = 5.78, t(414) = 8.41, $p < .001$, d = .83).

Figure 1
STUDY 4: CHRONIC MATERIALISM MODERATES THE EFFECT OF MORTALITY SALIENCE ON SCOPE SENSITIVITY (FLOODLIGHT ANALYSIS)




Note: The graph, drawn on the basis of a floodlight analysis (Spiller et al. 2013), illustrates how chronic materialism value moderates the effect of mortality salience on scope sensitivity. Confidence bands are presented, and the Johnson-Neyman points are obtained at chronic materialism = 3.72 and chronic materialism = 5.73 ($p = .05$).

## *STUDY 5*

Study 5 tested the self-relevance of the death-related event reported in media as a

moderator of the observed effect of death-in-media. The more self-relevant people consider death-related information to be, the more likely they are to associate it with their own death and feel anxious about it (Wong and Bagozzi 2005). Thus, we predict that death-related media information that involves events that are highly self-relevant may induce death anxiety, leading consumers to prioritize extrinsic values and, consequently, increasing their marketing scope sensitivity.

*Method*

One hundred eighty-five US participants (85 females, $M_{age}$ = 40.66) recruited from Amazon's Mechanical Turk participated in this study for a nominal payment. This study adopted a 3 (self-relevance of death-in-media: self-relevant vs. self-irrelevant vs. control; between-subjects) × 2 (scope: small vs. large; within-subjects) mixed design.

Participants first read and summarized a news article about a novel scientific finding that body height can reliably predict the level of a hormone, AD3, that plays an important role in the development of testicular cancer in men and ovarian cancer in women (adopted from Arndt et al. 2007; see Web Appendix E). Participants in both the *self-relevant* and *self-irrelevant* death-in-media information conditions were told either that a high level of AD3 (evidenced by a body height at or above 5 ft. 4 in. for women and 5 ft. 9 in. for men) or a low level of AD3 (evidenced by a body height below these thresholds) indicated a high risk for the cancers. Whether these participants belonged to the self-relevant or self-irrelevant death-in-media conditions was determined by their body height, which was reported later in the study. The use of 5 ft. 4 in. for women and 5 ft. 9 in. for men as a cut-off point was based on the median body height of Americans (National Center for Health Statistics 2012). Those in the *control* condition read a news article reporting that one's level of AD3 could predict diabetes, but no information about the relationship between body height and AD3 was given.

After completing the PANAS scale to measure scope sensitivity, participants read the

same computer shopping scenario as in Study 4 and indicated their likelihood of purchasing this computer at a 10% or 40% discount (in a counter-balanced order) by moving a slider from 1 ("not likely at all") to 100 ("very likely"). Participants then responded to the same value orientation measure used in Study 2. Next, to measure the activation of death-related thoughts and death anxiety, participants were asked to indicate the extent to which the article they read evoked thoughts about death, and the extent to which the article made them feel afraid of their own death (1 = "not at all" and 9 = "very much"). Finally, participants reported their body height. As noted above, participants' self-reported body height, together with the information about the relationship between body height and AD3 level, determined whether participants who read about the death-related news belonged to the self-relevant or self-irrelevant death-in-media conditions (Arndt et al. 2007).

*Results*

*Death-related thoughts and death anxiety.* Death-related thoughts ($F(2, 182) = 25.05$, $p < .001$, $\eta^2 = .22$) and death anxiety ($F(2, 182) = 41.06$, $p < .001$, $\eta^2 = .31$) varied significantly across conditions. Participants in both the self-relevant ($M = 5.73$, $SD = 2.24$; $t(182) = 5.88$, $p < .001$, $d = 1.06$) and self-irrelevant death-in-media conditions ($M = 5.85$, $SD = 1.73$; $t(182) = 6.28$, $p < .001$, $d = 1.12$) reported significantly more death-related thoughts than did those in the control condition ($M = 3.55$, $SD = 2.17$), and the former two conditions did not differ from each other ($t < 1$, NS). Participants in the self-relevant death-in-media condition ($M = 5.42$, $SD = 2.78$) also reported higher death anxiety than did those in the self-irrelevant death-in-media condition ($M = 2.27$, $SD = 1.56$; $t(182) = 8.20$, $p < .001$, $d = 1.49$) and control condition ($M = 2.55$, $SD = 1.85$; $t(182) = 7.53$, $p < .001$, $d = 1.36$), and the latter two conditions were not significantly different ($t < 1$, NS).

*Scope sensitivity*. A mixed ANOVA showed a significant main effect of scope ($F(1, 182) = 967.06$, $p < .001$, $\eta_p^2 = .84$), qualified by a significant interaction between scope and

self-relevance ($F(2, 182) = 12.98$, $p < .001$, $\eta_p^2 = .13$). Consistent with our expectations, compared to control ($M_{small\text{-}scope} = 17.69$, $SD = 18.58$ vs. $M_{large\text{-}scope} = 67.20$, $SD = 20.11$; $t(182) = 17.87$, $p < .001$, $d = 3.16$), participants in the self-irrelevant death-in-media condition showed lower scope sensitivity ($M_{small\text{-}scope} = 22.92$, $SD = 21.77$ vs. $M_{large\text{-}scope} = 63.97$, $SD = 20.92$; $t(182) = 14.59$, $p < .001$, $d = 2.62$; interaction contrast: $F(1, 182) = 4.59$, $p = .033$, $\eta_p^2 = .02$), whereas participants in the self-relevant death-in-media condition showed higher scope sensitivity ($M_{small\text{-}scope} = 14.90$, $SD = 18.15$ vs. $M_{large\text{-}scope} = 76.41$, $SD = 20.86$; $t(182) = 21.32$, $p < .001$, $d = 3.93$; interaction contrast: $F(1, 182) = 9.00$, $p = .003$, $\eta_p^2 = .05$).

*Value orientation and mediation*. Like Study 2, a single index of value orientation was calculated based on the difference between intrinsic items ($\alpha = .95$) and extrinsic items ($\alpha = .97$) of the Aspirations Index. Participants' value orientation differed significantly across conditions ($F(2, 182) = 18.31$, $p < .001$, $\eta^2 = .17$). Compared to the control condition ($M = 2.34$, $SD = 1.45$), participants in the self-irrelevant death-in-media condition were more oriented toward intrinsic values ($M = 3.56$, $SD = 2.03$; $t(182) = 3.33$, $p = .001$, $d = .59$), whereas those in the self-relevant death-in-media condition were more oriented toward extrinsic values ($M = 1.31$, $SD = 2.58$; $t(182) = 2.78$, $p = .006$, $d = .50$). Then, on a single index of marketing scope sensitivity calculated from the difference score in reaction to small and large scopes, a mediation analysis (PROCESS Model 4, using indicator coding for a multi-categorical independent variable and treating the control condition as the reference group; see Hayes and Preacher 2014) was conducted to test the mediating roles of value orientation in the effects of self-relevant death-in-media (vs. control) and self-irrelevant death-in-media (vs. control). The analyses confirmed that both death-in-media conditions influenced scope sensitivity through value orientation, but in opposite directions (self-irrelevant: 95% CI [-10.1027, -3.0801]; self-relevant: 95% CI [1.5760, 9.8747]).

*Discussion*

Consistent with H4, Study 5 showed that the self-relevance of the death-in-media served as a moderator of our observed effect. Death-in-media decreases consumers' scope sensitivity when the death is perceived to be self-irrelevant. This effect, however, was reversed when the death-in-media was believed to be relevant to consumers themselves.

A question arises as to whether the manipulation of death awareness in this study causes distorted perception of body height difference from the reference point. The procedure of this study suggests that this is less likely. In this study, the perception of one's own body height *determines* the death awareness condition. That is, this perception does not occur after (and thus is unlikely to be dependent on) the death awareness manipulation.

## *GENERAL DISCUSSION*

Death-related information often co-exists with marketing cues in the same media context. Despite the prevalence of this co-existence, it is not clear whether or how exposure to death-related media information may influence consumers' response to marketing stimuli. Across five studies using both real and hypothetical measures, we find that, unlike those who have thought about their own mortality, people exposed to death-related media information tend to be less sensitive to the magnitude of marketing stimuli. This effect occurs because death-related media information predisposes people to focus more on intrinsic values than on extrinsic ones, resulting in less attention to marketing stimuli that are normally associated with extrinsic values (e.g., money, fame) and consequently decreasing sensitivity to their scope. Our studies also identify important boundary conditions for the observed effects, which are reversed when the marketing stimuli are associated with intrinsic values (Study 3). This effect of death-related media information exposure is fundamentally different from that of mortality salience, in that the former is not dependent on people's chronic materialism

while the latter is (Study 4). In addition, when death-related media information is considered to be self-relevant (Study 5), it triggers death anxiety, leading people to take defensive action and to become even more sensitive to external marketing stimuli.

Several alternative explanations were ruled out. First, these effects were not due to a change in the system (i.e., affective vs. cognitive) that people use to make judgments, as neither death-related media information nor mortality salience affected people's decision style (Study 2). Second, death awareness may lead to ego depletion, which can reduce the attention people spend on marketing information, thus making them less sensitive to it. If this were the case, thinking about one's own mortality and exposure to death-related media information should be both depleting and uniformly decrease scope sensitivity. The effects on scope sensitivity also should be independent of values attached to the marketing stimuli if ego depletion is driving the effects. However, these possibilities were refuted by the data (Study 3). The use of a delay between the manipulations of death awareness and measures of scope sensitivity in our studies also made this account less plausible because the dual processing model of Terror Management Theory (Arndt et al. 1997) suggested that effortful death-thought suppression would only occur immediately after death awareness. Third, the effect of death-related media information on scope sensitivity cannot be explained by enhanced global processing (Huang and Wyer 2015) that may influence sensitivity independently of motivations; otherwise, value association should not have moderated this effect (Study 3).

*Theoretical Contributions*

The present research extends the literature on how exposure to media information shapes consumer behavior. While past research in this area has shown that frequent media exposure can construct consumers' perception of social reality and *increase* materialism in general (Shrum, Burroughs, and Rindfleisch 2005), we found that exposure to death-related information in media can *decrease* materialism and foster a focus on intrinsic values,

resulting in less marketing scope sensitivity. Future research is needed to explore the distinct impacts of various types of media exposure on consumer behavior.

Our findings contribute to research on death awareness by providing a systematic framework to understand its effects on people's value orientation. Prior research has shown mixed effects regarding the impact of death awareness on value orientation (e.g., Greenberg et al. 1990; Lykins et al. 2007). As an attempt to reconcile the contradictory findings in the existing literature, the current research suggests that when death anxiety is not induced, exposure to death-related information does not trigger defensive actions and increases the focus on intrinsic values. People become more extrinsically-oriented only when the death-thoughts evoke anxiety about their own death. In addition, the current findings provide a nuanced understanding of the dynamics between pre-existing values such as materialism and death awareness. While mortality salience enhances pre-existing values, exposure to death-related media information shift people's values toward the intrinsic end regardless of the pre-existing values. The present research also demonstrates that self-relevance is a key factor that can reconcile the mixed effects of death awareness on value orientation.

More broadly, the current research contributes to our knowledge regarding the motivational implications of different types of death awareness. It has been shown that the mere activation of death-related concepts has *cognitive* effects that are different from those of anxiety-inducing death-related thoughts (i.e., mortality salience), in that the former can trigger a global processing style (Huang and Wyer 2015). The current research shows that death-related media information that does not induce mortality anxiety can have *motivational* consequences as well, such that it can alter the goals to which people attach importance (i.e., value orientation). This novel motivational effect of death-related media information accounts for phenomena that cannot be explained by a change in cognitive styles. The current research thus opens a promising avenue to study the different motivational implications of

anxiety-inducing versus non-anxiety-inducing death awareness.

Finally, this research also contributes to the literature on scope sensitivity by identifying a new antecedent—namely, value orientation. Previous research on scope sensitivity has mainly focused on factors related to the nature of the evaluation task (e.g., Hsee and Rottenstreich 2004; Hsee, Rottenstreich, and Xiao 2005). To the best of our knowledge, the current research is the first to examine whether and how one's intrinsic or extrinsic value orientation affects consumers' scope sensitivity. By examining the underlying processes through which one's value orientation influences marketing scope sensitivity, the current research also verifies attention as an important antecedent of scope sensitivity.

*Managerial Implications*

This research also offers implications for marketing practitioners. Our current findings indicate that marketers should tailor their marketing communication strategies carefully in a media environment that is rich in death-related information, especially when such information does not make people anxious about their own mortality (e.g., commercial breaks after TV programs that involve reports or stories on deadly accidents, newspaper sections in which incidents related to death are reported or discussed). Under such circumstances, it may not be wise to broadcast or place ads to inform consumers of changes in marketing offers (e.g., price discounts, updated packaging), because such consumers will be less likely to sense the difference. Alternatively, marketers may frame their messages in a way that is consistent with intrinsic values (e.g., describing discounts at a fitness center as an offer to help consumers achieve personal growth) when death-related media information is likely to be present. In these situations, the focus on intrinsic values induced by exposure to death-related media information can make people more sensitive to marketing cues.

Marketers may further refine their communication tactics depending on the nuances of death-related media information. The decrease in scope sensitivity caused by death-related

media contexts can be reversed when the death-related events described are directly pertinent to the audience. Hence, if print ads are intended to draw consumers' attention to changes in marketing offers, they may be placed near death-related news or the obituaries section of a local newspaper. Of course, there may be situations in which marketers can benefit from decreased sensitivity to changes in marketing stimuli. For example, marketers may wish to make consumers less sensitive to price differences to increase their likelihood of choosing a higher-priced product. In such cases, practitioners may advertise the products in a media context containing death-related information.

*Future Directions*

It is noteworthy that some research based on Terror Management Theory also used media information to induce death anxiety (e.g., Ben-Ari, Florian, and Mikulincer 2000; Pyszczynski, Solomon, and Greenberg 2003). To this extent, we observed that these studies are still likely to make death relevant to the participants themselves and induce death anxiety. For example, a study that employed a car crash ad (Ben-Ari, Florian, and Mikulincer 2000) only recruited drivers and asked them to respond to driving-related questions before exposure to the ad to make them think about the possibility of their own death in car crashes. Writing about 9/11 (Pyszczynski, Solomon, and Greenberg 2003) is also likely to invoke thoughts about one's own mortality, as the studies that used this manipulation were conducted with US participants, and the 9/11 terrorist attack targeted US citizens specifically. Hence, these death-related stimuli, although media-related, are pertinent to the participants themselves. Future research may verify that these manipulations indeed evoke self-relevant death anxiety and shed light on the conditions under which people may experience existential anxiety in response to death-related information in media.

The effects revealed in this research might be observed in contexts other than those covered in the current studies. For example, having seen death-related media information

may make consumers less sensitive to the time or effort they spend on searching for material goods (which is still pertinent to extrinsic values). It is worth examining further what types of marketing scenarios are perceived to be more or less related to extrinsic values.

This research potentiates a number of other interesting future directions. First, people can process death-related information in different ways, by being directed to think about either "how I will feel about the death" or "how I will handle the death" (Cozzolino, Blackie, and Meyers 2014). We suspect that leading people to think about *how* to handle death can reduce death anxiety, which might decrease scope sensitivity. Second, individual differences may play a role in response to death-related media information. For example, people with lower self-esteem might be more predisposed to feel anxious after exposure to death-related information (Pyszczynski et al. 2004), and thus the effect of death-related information on scope sensitivity can be moderated by self-esteem. Finally, an important direction for future work is to understand how specific types of media information might affect scope sensitivity. Heavy exposure to television in general can cultivate extrinsic values such as materialism (Shrum, Burroughs, and Rindfleisch 2005). However, the present research demonstrates that a specific type of media information—death-related information—can actually encourage people to espouse intrinsic values while also making them less scope-sensitive to marketing cues. These findings call for an investigation into the effects of other specific types of media information on value orientation and scope sensitivity. For example, news or articles about festivals (e.g., Christmas, Thanksgiving) may lead people to think about shopping, which may foster an extrinsic value orientation. Alternatively, their thoughts may encourage sharing with other people, which is related to intrinsic values. As a consequence, scope sensitivity to marketing cues may vary. These implications are worthy of further investigation.

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