Authenticity and the Non-Defensive,
Growth-Oriented Processing of Death Awareness

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I’d like to dedicate this thesis to the past version of me who signed up for a PhD, having no idea just how much life would change over these years.

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Statement of Originality

I certify that this thesis is a product of my own work, and that to the best of my knowledge, it does not contain material previously submitted for any other degree or published in any other form than otherwise stated within this thesis. I certify that I am responsible for the intellectual content of this thesis, and to the best of my ability, all external sources and contributions have been duly acknowledged.

Andrew Arena
17.02.2020

Authorship Attribution Statement

In regards to the manuscripts submitted for publication that comprise Chapter 3 (“Death reflection as a pathway to authentic living”) and Chapter 4 (“Working with death: Predictors of authenticity among funeral and cemetery workers compared to a matched control sample”) of this thesis, I certify that in line with being named first author, I made substantial contributions to, and was predominantly responsible for:

- The conception and design of the studies
- The collection, analysis and interpretation of the data
- The writing of the manuscripts and the ideas expressed therein

I acknowledge the assistance of the co-authors in providing feedback on the data analysis plans, the written expression and structure of the manuscripts, and the critical evaluation of their content.

Andrew Arena
17.2.2020
As the primary supervisor of the candidate, I verify that the above authorship attribution statement is accurate.

Niko Tiliopoulos

17.2.2020
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<th>Meaning</th>
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<tr>
<td>SDT</td>
<td>Self-determination theory</td>
</tr>
<tr>
<td>PTG</td>
<td>Posttraumatic growth</td>
</tr>
<tr>
<td>NDE</td>
<td>Near-death experience</td>
</tr>
<tr>
<td>TMT</td>
<td>Terror management theory</td>
</tr>
<tr>
<td>MS</td>
<td>Mortality salience</td>
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<tr>
<td>ACT</td>
<td>Acceptance and Commitment Therapy</td>
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Publications Related to This Thesis


*This manuscript is presented in Chapter 3*


*This manuscript is presented in Chapter 4*

Conference Presentations Related to This Thesis


Abstract

Existential philosophers and psychologists theorize that openly confronting mortality can break down core assumptions about oneself and the world, providing an invaluable opportunity to reassess one’s value system and move toward a more authentic way of living. That is, to pursue goals based upon values that are fully self-endorsed, rather than values that are externally contingent or poorly internalized. While terror management theory has produced considerable evidence that individuals defensively cling to their cultural worldview more fervently after being primed with death in a subtle manner, various research traditions have also shown that people often experience positive personal development in response to deeper and more conscious contemplations of mortality. Authenticity is conceptualized as inherently non-defensive and bears many similarities to the growth experienced in the context of deeper death reflection; however, very little empirical research has directly assessed the construct of authenticity within these contexts. Therefore, this thesis aimed to clarify the role of authenticity within the non-defensive, growth-oriented processing of death awareness, and the influence of individual differences in moderating these processes.

Chapter 2 (Study 1) further developed a case for authenticity as a non-defensive orientation to experience, and to mortality specifically, by outlining the consistent theoretical and empirical associations between authenticity and several constructs previously found to decrease defensive responses to death. Despite confirming several of these correlations within Study 1, insufficient evidence was found for trait authenticity to buffer terror management defense mechanisms. Potential limitations of the first study were discussed which may have impacted the ability to detect the hypothesized effect.

Chapter 3 (Studies 2 and 3) moved away from examining defensive responses to subtle death awareness, and used Cozzolino’s (2006) model of dual existential systems as a basis for testing whether increased authentic functioning may emerge as a growth-oriented
outcome of deeper death reflection. Importantly, Chapter 3 also examined whether certain individual differences describe those more likely to respond in this way. Study 2 demonstrated that less autonomously (and thus, less authentically) motivated individuals exhibited more autonomous motivation after deeply reflecting on death compared to a control topic, supporting the argument that contemplating death can enhance authentic functioning. Study 3 manipulated the depth of the mortality cues, by comparing the effects of the death reflection induction used in Study 2, a subtle mortality salience prime, and a control topic. No moderating effect of prior autonomous motivation was observed; however, trait curiosity enhanced autonomous motivation after deeper death reflection (compared to subtle mortality salience), and psychological flexibility was associated with greater autonomous motivation in either death awareness condition (compared to the control). These findings suggest that both the depth of the mortality cues and aspects of personality are important for predicting more authentic, growth-oriented responses to death.

Chapter 4 (Study 4) extended the ecological validity of the findings in Chapter 3 using a quasi-experimental design, which compared a sample of funeral and cemetery workers that are chronically exposed to naturally occurring mortality cues (suggesting high levels of death reflection) against a demographically matched control sample. Groups were compared on levels of autonomous motivation, in addition to six individual differences constructs theorized to promote growth responses to death awareness. It was found that the funeral and cemetery workers exhibited greater autonomous motivation, in addition to higher levels of psychological flexibility, curiosity, neutral death acceptance and approach-oriented coping, and lower levels of death anxiety and avoidant coping. Furthermore, the positive effect of chronic exposure to mortality cues on authentic functioning was more pronounced among those high in flexibility and low in death anxiety, implying that these constructs may facilitate more authentic responses to death reflection.
Chapter 5 provides an overview of the thesis and highlights its implications for understanding the ways in which people respond to death awareness, and for whom the experience of death awareness may be conducive to living more authentically. The findings of this thesis may in turn have implications for how to foster more optimal psychological functioning for those grappling with issues of mortality (or perhaps existential issues more generally) in their daily life. Several promising directions for future research are outlined in this regard.
CHAPTER 1: Confronting Death and Living Authentically
Our Existential Predicament—perceived, perhaps, as ontological anxiety—is the rope by which we can climb out of the pit of inauthenticity; it is the handle by which we can grip our own beings.

First we must acknowledge our ontological anxiety. This includes peeling away the protective evasions we have so cleverly woven to protect ourselves from the deepest truth of our being... we must focus our lives around this 'threat'. Then our ontological anxiety can become the light of our being—purifying, refining, and integrating our otherwise diffuse, preoccupied, and fragmented existence. In the light (or in the shadow) of this constant internal threat-to-being, we are empowered to choose our Authentic projects-of-being... Returning to this deepest truth of our being can bring us back to ourselves.

James Park (2006, p. 226)
A pervasive and often fearful fascination with death can be observed across cultures throughout recorded history, permeating mythology and religion, art and literature. Indeed many diverse cultural beliefs and practices throughout time have centered on allaying the dread of death or negating the impermanence of existence, from the elaborate mummification rituals of ancient Egypt to the contemporary Mexican Day of the Dead festival (R. E. Menzies, 2018). At the individual level, psychological mechanisms that serve to deny the reality of death and shield the individual from death anxiety develop naturally from childhood (R. G. Menzies & Menzies, 2018) and become “deep-seated in each of us” (Yalom, 1980, p. 85). Establishing death-denying defense mechanisms or elaborate psychological structures to buffer death anxiety may be somewhat effective from an evolutionary perspective, allowing individuals to successfully function in their environment, despite the potentially paralyzing awareness of their inevitable mortality (Solomon, Greenberg, & Pyszczynski, 2004). However, one can never be fully protected from death—it is an omnipresent fact of human existence, one that each individual is bound to come face-to-face with sooner or later, personally or vicariously. In fact, avoidant attempts to cope with a threat such as death are seen from a clinical perspective to be predominantly maladaptive and, over the long-term, ineffective (Carver & Connor-Smith, 2010; May, 1953; R. G. Menzies & Menzies, 2018).

Prominent existential philosophers (e.g. Heidegger, 1927/2004; Kierkegaard, 1844/2000; Sartre, 1943/1958) and psychologists (e.g. May, 1950; Yalom, 1980) instead advocate the virtues of openly acknowledging and processing death, even though doing so is likely to expose individuals to death anxiety. In consciously confronting this anxiety without defensiveness, it is argued to become a ‘normal’ rather than a neurotic (pathological) anxiety.
one that is inherent to the human experience, and in the right conditions, can be fertile ground for personal growth. Literature, popular media and psychological research are replete with examples of individuals who have faced the reality of their death, and subsequently make profound, positive transformations in their life. By placing life within the context of its eventual end, death awareness has the potential to jolt individuals out of their habitual, unexamined way of living, instigating a recalibration of how to spend their remaining time and a reprioritization of what they value. Specifically, the existentialists argue that mortality acts as a “wakeup call” leading to greater **authenticity**, whereby individuals “guide their lives based on passionately chosen personal values rather than by passively internalized cultural values” (Martin, Campbell, & Henry, 2004, p. 437). Despite such acknowledgements in the psychological literature, very limited empirical research has directly examined the construct of authenticity in this context—a gap which this thesis was designed to address.

**The Philosophical Foundations of the Interplay Between Death Awareness and Authenticity**

In attempting to address “the so-called big questions of life” (p. 1)—for instance, how to live meaningfully, how to manage one’s countless potentialities, and how to come to terms with death—existential psychology has inherited a large theoretical foundation to draw from, in the form of existential philosophy (Jacobsen, 2008). As a distinct philosophical school of thought, existentialism is notoriously difficult to define given the considerably varied and sometimes conflicting perspectives offered by key existential philosophers (Aho, 2014). At its core, however, existentialism is a **phenomenological** line of inquiry, in that it takes the lived human experience as its primary concern; and aims to develop an understanding of what it means to exist as a human, within the context of our capacities of conscious awareness and
potential for self-expansion, in addition to our inherent limitations (Aho, 2014; Earnshaw, 2006). Sartre (1957/2004) famously claimed that the common thread within existential thought could be summarized by the slogan “existence precedes essence” (p. 344), meaning that the essential nature of a person’s being is not pre-defined or determined. A person first exists, but *who they are*, their ‘essence’, is subsequently self-defined and created over the course of their life. Hence, there is a great emphasis on freedom and personal responsibility, although there is also an acknowledgement that the individual is *thrown* into a world, subjected to elaborate conditions of their existence that they did not choose for themselves, including their inevitable mortality (Heidegger, 1927/2004). It is in the interplay between these two elements of human existence that an individual engages in self-development.

Kierkegaard (1849/2004) and Sartre (1943/1958), for instance, emphasized that the self is an ever-changing synthesis between two aspects of one’s being. On the one hand, the self is defined by what it currently is and all the constraining facts of its existence, including all of its antecedent choices, causes, history, biology and social context (referred to as *finitude, necessity, facticity* or the *in-itself*). On the other hand, the self is not just those things, as it is constantly engaged in a process of transformation, moving into an ever-new state of being. It is therefore also defined by its imaginative and reflective capacities to conceive of what it is not, to dream and to set goals, to desire change and thereby move toward future potentialities (referred to as *infinitude, possibility, transcendence* or the *for-itself*). For Sartre (1943/1958), “human beings are neither the one nor the other of these beings... We are what we are not and we are not what we are” (p. 575). Rather, the nature of the self is a perpetual synthesis between both our contextual determinants that have made us what we are, and our freedom to be other than what we currently are.

By striving toward a balanced synthesis of these two aspects of being, an individual is striving to fully engage their self, and thus, to be authentic—actively guiding themselves
toward a valued future while acknowledging their contextual boundaries (Aho, 2014). The project of becoming authentic is never complete, however, given that existence is never static and individuals are in a constant state of change from one moment to the next (i.e. the self is in a perpetual state of development, which may be more or less authentic). Therefore, when individuals are referred to as “authentic” within this thesis, they are proposed to be engaged in a process of authentic becoming, or striving for authenticity, rather than having achieved a state of complete authenticity. Furthermore, a perfect synthesis between the two aspects of being is an ideal, and given that people are unlikely or unable to achieve perfect authenticity, Kierkegaard and Sartre tended to focus on modes of being that are inverse to authenticity. The more unbalanced the two dialectical aspects are within any particular individual, the more that individual moves toward despair (Kierkegaard, 1849/2004) or bad faith (Sartre, 1943/1958), modes in which the individual denies some aspect of their being, impeding the authentic expression of their whole self.

One can excessively indulge in their potentialities, for instance, by becoming lost in fantasies of who they could be—or believing they could become anything at all—and thereby denying the boundaries of their existence. They may actively deny the reality of their being, choosing not to identify with their past actions or choices, but rather to imagine a self that is disconnected from the reality of its antecedents. Conversely, one can be overly consumed by their determinants, defining themselves predominantly or exclusively in terms of their past or context, while denying their capacity for change or progress. This is often the case in individuals who excessively define themselves by external objects (e.g. material possessions), how others perceive them to be, or general social expectations of how one ought to be. Such individuals lose themselves as an unquestioning and undifferentiated member of the crowd (Kierkegaard, 1849/2004) or the they (Heidegger, 1927/2004), and thereby deny the project of becoming their own individuated, authentic self.
It is clear that the existentialists place value on the individual’s responsibility for both who they currently are and who they choose to become. Thus, while authenticity necessarily involves the freedom to guide one’s own self-development, it is not an unbridled freedom from any deterministic influence. It is an honest awareness of one’s capacity to develop and commit to choices, within the context and limitations of the reality in which they are inextricably embedded—an *authentic being-in-the-world* (Heidegger, 1927/2004). Of course, when taking into account the limitations inherent to human existence, the existentialists are renowned for the importance they placed on the ultimate human limitation, mortality.

Death is a primal fact of human existence. It is a reality that every individual must confront, if not in relation to others around them, then eventually for themselves. It is an undoubtedly solemn fact, a distastefully penetrating “worm at the core” (James, 1902/2008, p. 200) of existence that many would rather ignore as best as possible—hence the elaborate death-denying function of many historical and contemporary cultural practices (R. E. Menzies, 2018). Simply put, however, to deny such a fundamental aspect of life would be to deny the reality of one’s existence, and thus, to live inauthentically. Authenticity necessarily involves a non-defensive orientation toward death. Heidegger (1927/2004) was particularly focused on the association between death awareness and authenticity, whereby an authentic self must not only openly acknowledge their finitude, but use it to inform their choices and life projects.

Through acknowledging that one’s most extreme and ultimate potentiality is non-existence, death awareness (and its associated anxiety) “shatters all one’s clinging to whatever existence one has reached” (Heidegger, 1927/2004, p. 332). It reveals the inherent uncertainty and impermanence of existence as a whole, that existence will not remain as it is, it can change entirely or cease altogether at any moment. This frees an individual from the assumptions they have made about their life. It can free them from an unquestioning
existence that has blindly accepted external influences and standards of value, by revealing the inherent groundlessness of existence where nothing is fixed or given—where existence precedes essence. Such freedom is itself associated with a profound anxiety, because it places supreme responsibility on the individual for the life that they live (Heidegger, 1927/2004; Kierkegaard, 1844/2000; Sartre, 1943/1958). Therefore, death places pressure on an individual to actualize their freedom, and within a multitude of possibilities, choose which potentialities are to be pursued. One’s time is limited after all, and with no indisputable, objective meaning or standards to live by, an authentic individual must make these decisions for themselves, based upon values that they have chosen to live by.

It becomes clear that according to the existentialists, openly confronting the anxiety associated with death and the groundlessness of existence creates an opportunity for authentic self-development. It presses the individual to make a commitment to particular values, to actively engage in the development of their unique self, and move toward a valued future state. By ignoring this responsibility—by shying away from one’s existential anxiety—an individual can all too easily live in the automatic acceptance of whichever values they happen to have been exposed to, or those pressed upon them by the they. To do so is to deny one’s capacity to authentically individuate oneself. That is not to say that cultural values are necessarily inauthentic, but that they must be fully self-endorsed to be authentic. It is also necessary to clarify that authenticity does not imply a life-long commitment to a single set of values, as the self is forever changing. As stated by Aho (2014),

when I make a commitment in the face of death, I not only inject my life with a dimension of intensity and seriousness that was missing; I am also providing a sense of cohesion and unity to my life as a whole. But… I need to continually ‘anticipate death’ and ‘repeat’ the commitment to who I am. But this does not mean I stubbornly cling to a particular identity. By anticipating death I realize there is no guarantee that
this commitment will matter to me for the rest of my life. Thus… I remain flexible and open to the possibility of “taking it back” if it is no longer significant or meaningful to my own situation. (p. 120)

To be authentic, therefore, is to remain conscious of one’s value commitments as life continually progresses, remaining receptive to one’s changing circumstances in order to ensure the full expression of their unique self. It is clear that this necessarily involves a capacity for self-awareness, a responsibility for the commitments one makes, the flexibility and openness to adjust these commitments as one’s life progresses, and a motivation to remain engaged in these processes. Through engaging in authentic self-development, the existentialists argue that an individual is able to live meaningfully and find fulfillment, even in the absence of any objective meaning in life (Aho, 2014). It is a challenging task, however, as it involves managing the anxiety at the core of existence, often through openly confronting death. Anxiety, death awareness and the threat of meaninglessness are therefore not inherently negative for the existentialists, as in these existential predicaments there lies the opportunity for growth and self-creation—as Nietzsche (1882/2008) wrote,

a weakened, thin, extinguished personality, one that denies itself and its own existence, is no longer good for anything good… all great problems demand great love, and only strong, round, secure minds who have a firm grip on themselves are capable of that. It makes the most telling difference whether a thinker has a personal relationship to his problems and finds in them his destiny, his distress, and his greatest happiness… (p. 202)

A Psychological Account of Authenticity

The existential conceptualization of authenticity was integrated into various related psychological frameworks, through prominent humanistic and existential clinicians and
theorists including Rollo May (1953), Carl Rogers (1962), Abraham Maslow (1962) and Irvin Yalom (1980). Despite differences in terminology, living authentically was invariably considered fundamental to psychological well-being and personal fulfillment, and often formed the ultimate goal of psychotherapy. Contemporary operational definitions of authenticity (e.g. Kernis & Goldman, 2006; Wood, Linley, Maltby, Baliousis, & Joseph, 2008) have grown out of the work of these theorists and continue to integrate core aspects of existential philosophy. The term ‘authenticity’ has historically been ambiguously defined (Medlock, 2012) and continues to be debated today (e.g. Jongman-Sereno & Leary, 2019).

However, in synthesizing the commonalities that comprise the construct of authenticity, Kernis and Goldman (2006) delineated four interrelated components, which collectively describe authenticity as an unbiased self-awareness that guides the expression of self-endorsed behavior and genuine self-expression in relations with others.

The first component is awareness, referring to the capacity to attend to one’s internal states and self-relevant information. This involves trusting one’s understanding of their preferences, beliefs, values and behavioral tendencies, in addition to being motivated to maintain or enhance self-knowledge. This component corresponds to the inverse of what Wood et al. (2008) labeled self-alienation. Importantly, Kernis and Goldman (2006) specify that authentic self-awareness does not imply a rigidly defined self-concept, but rather a self-concept that openly appreciates all of the complex, multifaceted, and occasionally contradictory aspects of oneself, as implied in the construct of functional flexibility. This is the ability to confidently enact different, well-defined aspects of oneself depending on the needs of the situation—for instance, comfortably being more agreeable or quarrelsome, introverted or extraverted, depending on the context. Even though one of these aspects may be generally more dominant for an individual, people are proposed to be neither purely one
nor the other of these behavioral dualities, implying that authentic self-awareness involves the acceptance and integration of a multifaceted self-concept.

This leads into the second component of authenticity, *unbiased processing*, which refers to the open, non-defensive acknowledgement of both positive and negative aspects of oneself, without “denying, distorting, or exaggerating externally based [self-relevant] evaluative information” (Kernis & Goldman, 2006, p. 297). The first two components therefore possess a clear theoretical relationship with the construct of *mindfulness*, defined as the self-regulation of attention to one’s present experiences or mental events, while retaining an open, accepting and non-judgmental orientation to those experiences (Bishop et al., 2004). There is a distinction to be made, however, as mindfulness refers to *present-focused* unbiased awareness of all experiences, whereas authenticity implies a *general* unbiased awareness of self-relevant information (Lakey, Kernis, Heppner, & Lance, 2008)—although Kernis and Goldman (2006) note that the former can lead to the latter. Several studies have revealed a moderate to strong empirical relationship between mindfulness and trait authenticity (Allan, Bott, & Suh, 2015; Kernis & Goldman, 2006; Lakey et al., 2008; Leroy, Anseel, Dimitrova, & Sels, 2013).

The third component involves *behavior* that is intended to optimally align with one’s values, beliefs, psychological needs and other self-aspects, and thus, refers to using one’s awareness of their self to guide their actions. Jongman-Sereno and Leary (2019) have criticized this aspect of the authenticity construct, arguing that any intentional behavior will reflect some aspect one’s self, which implies that authenticity is inevitable. However, the current definition does not categorize authentic behaviors as those that align (versus do not align) with one’s self-aspects, but rather emphasizes the *degree* of perceived alignment and active endorsement of behaviors. This means that even in the presence of competing motives for acting in different ways (e.g. pursuing a career that will gain the respect of one’s parents...
versus a career that engages one’s talents and interests), an authentic individual regulates their behaviors according to what best expresses their own values or is most conducive to a valued future state (Kernis & Goldman, 2006). Furthermore, authentic actions may be externally prompted or influenced, as long as they are wholeheartedly affirmed. This is opposed to acting out of coercion or based upon external pressures that are poorly aligned with one’s self-aspects, and bears a clear relationship to the components of authentic living and accepting external influence under Wood et al.’s (2008) definition.

Lastly, the fourth component proposed by Kernis and Goldman (2006) was a relational orientation, otherwise termed genuineness (e.g. W. S. Ryan & Ryan, 2019), capturing a striving for sincerity and honesty in one’s close relationships. Given that an authentic person strives to behave in a way that optimally reflects their self-aspects (insofar as they are available to consciousness), this ought to extend to how they behave in relations with close others. Therefore, the authentic individual desires to facilitate an honest self-representation as best they can, making their self-aspects manifest to close others, as opposed to actively concealing or distorting self-relevant information. It is acknowledged that situations invariably arise where inhibiting the expression of one’s self-aspects in social contexts may be adaptive (Kernis & Goldman, 2006; W. S. Ryan & Ryan, 2019), for instance, to avoid conflict or rejection. Thus, while more authentic individuals are expected to generally exhibit greater relational authenticity, this component is also expected to vary within people to some degree, though largely as a function of contexts perceived as controlling or unsupportive (W. S. Ryan & Ryan, 2019). While selective self-concealment may have some adaptive value in these settings, it may also lead to self-denigration, internalized stigma and defensive processing; and the most positive outcomes emerge in environments that support relational authenticity (W. S. Ryan & Ryan, 2019).
It is important to note that many psychological definitions of authenticity (including those of Kernis & Goldman, 2006; Wood et al., 2008) propose that self-awareness and behavior ought to align with one’s true self. Both the empirical viability and the plausible existence of a unitary ‘true’ self, however, have come under serious skepticism (Baumeister, 2019; Jongman-Sereno & Leary, 2019). This concept implies that individuals possess an innate and immutable set of self-aspects which they can discover or come to know in some objective sense (Schlegel & Hicks, 2011). An individual’s self-aspects, however, tend to be fluid and complex, and there is mounting evidence that individuals are unlikely to ever possess entirely accurate, undistorted knowledge of their self-aspects (Baumeister, 2019; Jongman-Sereno & Leary, 2019; G. Rivera et al., 2019). Therefore, attempting to locate an individual’s true self, or requiring its existence in defining authenticity, is likely to be misguided. For these reasons, the term ‘true self’ is avoided in this thesis and I argue that the definition of authenticity offered so far remains tenable without invoking this term.

Kierkegaard (1849/2004) and Sartre (1943/1958) also referred to the concept of a true self; however, this was often in the context of fully being a self (e.g. effectively balancing one’s constraints and potentialities), and it was maintained that individuals have no fixed, essential qualities (existence precedes essence; Sartre, 1957/2004). It is not necessary for a viable definition of authenticity to require behavioral congruence with some objectively identifiable personal values that are ‘true’, opposed to others which are false. Rather, what is fundamental is the degree to which one values or endorses their actions (referred to as autonomy and elaborated upon in the proceeding subsection; R. M. Ryan & Deci, 2004). Authentic individuals mindfully intend to enact a valued identity and thereby feel a sense of phenomenological ownership and responsibility for their actions and experiences (Baumeister, 2019; Vess, 2019). In this way, even if individuals believe that they have a true self and it is important to live in line with it, this is likely to express the possible self that is most valued,
more akin to an *ideal self* that is used to guide behavior (Baumeister, 2019; G. Rivera et al., 2019). This frames authenticity as a subjectively experienced phenomenon, dependent upon an individual’s own assessment of how much they value particular goals or behaviors, thus restoring its empirical viability. Additionally, this reintegrates the construct’s phenomenological roots, as a mode of being in which the individual feels responsible for the commitments they freely choose to pursue, based upon values which they assess for themselves and refine over time (Heidegger, 1927/2004; Kierkegaard, 1849/2004; Sartre, 1943/1958).

**A goal-based approach.** Rather than an ultimate state of being, authenticity is described as a process of *becoming*, a striving to live in a way that moves oneself toward a valued future potentiality, or an ideal self, that is ever-changing (Eriksen, 2012; Kasser & Sheldon, 2004). Therefore, a valuable approach to studying the way that people authentically guide their movement into the future is to examine the reasons or motivations people report for pursuing their goals. Within self-determination theory (SDT; R. M. Ryan & Deci, 2002, 2004; W. S. Ryan & Ryan, 2019), authentic goals or motivations are those which are autonomous, meaning that they are fully self-endorsed, experienced as congruent with one’s self-aspects, and accompanied by a sense of personal responsibility for one’s actions. Autonomy therefore largely equates to the behavior component of Kernis and Goldman’s (2006) definition, though can be expressed within a relational context. It is also promoted by unbiased, mindful self-awareness which “allows for a fuller consideration of possibilities and, thus, a fuller endorsement of the actions in which one engages” (R. M. Ryan & Deci, 2004, p. 460). Nonetheless, one can still act autonomously when they have not consciously assented to a particular behavior in that moment, so long as it is fully endorsed upon reflection (Medlock, 2012; R. M. Ryan & Deci, 2004).
SDT outlines a continuum of motivational types, from the least to the most self-determined or autonomous (R. M. Ryan & Deci, 2002). As the type of regulation for behavior moves along this continuum, it becomes more deeply internalized by the individual and more fully integrated within their sense of self. At one end of the continuum is *amotivation*, which describes a general lack of motivation or intentionality. Here an individual is either not acting or only passively acting due to a lack of perceived control, contingency or value in the task or its outcomes. This differs from the other motivational types, as it captures the relative presence or absence of motivation, rather than describing the quality of one’s motivation or its perceived locus of causality.

At the other end of the continuum lies the most autonomous type of regulation, *intrinsic motivation*. This is a motivation toward things that are inherently valued by the individual (pursued for their own sake), because of the interest or enjoyment in the activity itself, commonly including the pursuit of self-acceptance, personal growth, exploration, intimacy or community activism (Kasser, 2002; R. M. Ryan & Deci, 2000b). *Extrinsic motivation* falls between these two polar ends, referring to actions that are motivated by the outcomes that they produce rather than the activity itself. While this has historically been directly contrasted against intrinsic motivation and hence considered non-autonomous (e.g. DeCharms, 1968), SDT outlines four types of extrinsic motivation that span from less to more autonomous (R. M. Ryan & Deci, 2002).

The least autonomous type of extrinsic motivation involves actions that are *externally regulated*, undertaken in order to obtain contingent positive outcomes (e.g. rewards), to avoid contingent negative outcomes (e.g. punishments), or are otherwise heavily controlled by forces external to the individual (e.g. societal demands). *Introjected regulation* occurs when an extrinsic motivation is partially internalized but not yet integrated within the self. Such behaviors are performed due to internalized pressures, often in order to avoid guilt or shame,
and therefore remain controlled rather than genuinely endorsed. Identified regulation is the point at which extrinsic motivations are considered autonomous, referring to the reflective endorsement of an instrumental goal because it is personally valued or important. Regulation finally becomes integrated when the goal’s outcome is not only valued, but is well aligned within one’s greater value system or self-concept.

Measures of overall autonomous motivation have been constructed based on this continuum (e.g. Guay, Mageau, & Vallerand, 2003; Guay, Vallerand, & Blanchard, 2000; Sheldon & Kasser, 1995, 1998), whereby the more an individual’s goals tend to be identified, integrated or intrinsic rather than introjected, external or amotivated, the more autonomous (and thus authentic) the individual is considered to be. Although some such measures are based upon the self-concordance model of autonomy (Sheldon, 2014) which theorizes the existence of a true self, it should be noted that the measures themselves do not mention nor rely upon the concept of a true self. As Sheldon (2014) himself notes, such a measure “does not require people to have direct insight into whether their goals fit their ‘deep’ personality; it merely requires people to be able to report that they feel some sense of pressure or constraint in pursuing their goals and that they do not really enjoy or believe in their goals” (p. 7).

**Relationships with well-being** Authenticity has often been viewed not only as a factor that is conducive to well-being, but a construct which is itself a form of well-being, proposed by existential philosophers as the way in which individuals live with a sense of meaning, purpose, vitality, and ultimately, fulfillment (Heidegger, 1927/2004; Kierkegaard, 1849/2004; Sartre, 1943/1958). It is integrated within the core of Rogers’ (1962) description of the fully functioning individual, Maslow’s (1962) theorizing on self-actualization, May’s (1953) concept of courage, and more recently, Seligman’s (2002) authentic happiness and Ryff’s (1989) definition of psychological well-being. A common distinction is made in the
literature between *hedonic* (or subjective) well-being, characterized by positive affect, and *eudaimonic* (or psychological) well-being—defined as the striving to fulfill one’s greatest possible potential (i.e. striving for personal growth), to engage one’s skills and core values, and to develop a sense of meaning or purpose in life (R. M. Ryan & Deci, 2001; Ryff, 2014). While eudaimonic well-being is also theorized to be generally conducive to hedonic well-being (hence the often blurred empirical distinction between the two, e.g. Disabato, Goodman, Kashdan, Short, & Jarden, 2016), there is an important conceptual distinction between these constructs, as what is pleasurable may not necessarily be meaningful or express one’s higher-order values. For instance, authenticity appears to bear some conceptual overlap with eudaimonic well-being yet is not always expected to involve positive affect, given that striving for authenticity may involve sacrificing certain desires for a more important goal, and can emerge through struggling with difficult identity crises (Kernis & Goldman, 2006). A slightly different perspective is offered within SDT, however, which proposes that autonomy is one of three basic psychological needs (in addition to *competence* and *relatedness*) that are essential to satisfy in order to achieve or maintain optimal psychological functioning (R. M. Ryan & Deci, 2002). In this case, autonomy is theorized to be conducive to well-being, rather than an aspect of well-being itself.

The positive relationship between authentic functioning and well-being has been consistently supported by empirical data, using various measures of authenticity and an extensive range of outcome measures. Trait measures of perceived authenticity, for instance, have been associated with greater psychological well-being, life satisfaction and positive affect (Grégoire, Baron, Ménard, & Lachance, 2014; Kernis & Goldman, 2006; Thomaes, Sedikides, Bos, Hutteman, & Reijntjes, 2017; Wood et al., 2008); higher and more stable self-esteem that is less contingent on external validation (W. E. Davis, Hicks, Schlegel, Smith, & Vess, 2015; Goldman & Kernis, 2002; Kernis & Goldman, 2006); positive relationship
functioning, secure attachment and relationship satisfaction (M. J. Bond, Strauss, & Wickham, 2018; Kernis & Goldman, 2006); gratitude (Wood et al., 2008); and self-reported use of more adaptive coping or emotion regulation strategies (English & John, 2013; Kernis & Goldman, 2006).

Measures of autonomous motivation have been associated with a similarly broad range of positive outcomes, including increased positive affect, life satisfaction, vitality and self-actualization (Sheldon & Kasser, 1995; Sheldon, Ryan, & Reis, 1996; Sheldon, Ryan, Deci, & Kasser, 2004); positive mental health and more adaptive coping (R. M. Ryan & Connell, 1989); self-esteem (Deci & Ryan, 1985); more positive, honest and satisfying social interactions (Holley S. Hodgins, Koestner, & Duncan, 1996); and greater engagement and satisfaction in psychotherapy (Pelletier, Tuson, & Haddad, 1997). Autonomous motivation has also consistently been associated with better performance and goal attainment outcomes, in addition to significantly greater longitudinal increases in well-being for autonomous compared to non-autonomous goal pursuits (Boiche, Sarrazin, Pelletier, Grouzet, & Chanal, 2008; R. M. Ryan & Connell, 1989; Sheldon & Elliot, 1999; Sheldon & Kasser, 1998). Based on the above evidence, feeling authentic or autonomously motivated are important indicators of positive psychological functioning in a wide range of contexts. Although much of the above research is correlational in nature, it implies that there is great value in further research investigating the factors which enhance the experience of authenticity.

Developmental accounts of authenticity over the lifespan and the role of death awareness. In examining psychosocial theories of development, it can be seen that despite the use of varied terminology, the individual’s theoretical progression toward a more mature, complex and well-integrated self over the lifespan often expresses a trajectory toward increasingly authentic modes of being. By demonstrating a relation to more advanced
developmental stages (which often involve coming to terms with mortality), authenticity can be framed not only as a construct with positive implications for well-being, but more specifically, as integral to the expression of personal growth.

Robert Kegan’s (1982) constructivist account of personality development proposes six progressive stages which integrate the individual within their social environment in increasingly adaptive ways, based upon the development of increasingly complex orders of consciousness (cognitive capacities for knowing or meaning-making; Kegan, 1994). The penultimate stage describes an institutional self, whereby the individual distinguishes their identity from their relationships with others (developed in the previous interpersonal stage) and is primarily concerned with asserting their own unique identity. Within this stage, Kegan refers to the importance of independence and self-authorship in a way that clearly reflects a sense of personal autonomy—taking responsibility for constructing an identity and guiding one’s goal pursuits based upon personal values. The final stage builds upon these foundations with the development of an interindividual self, whereby one distinguishes themselves from the organized identity they have strived to maintain and is now able to openly evaluate that identity. The self finally becomes the coordinator of a dynamic and multifaceted identity, free to non-defensively alter self-aspects or behavior in dialogue with their social environment, in line with the way authenticity has been conceptualized within existential philosophy (e.g. Kierkegaard, 1849/2004) and SDT (R. M. Ryan & Deci, 2004).

Importantly, Kegan theorized that people spend much of their time in the transition between stages and placed a great deal of emphasis on growth as a gradual and often difficult process, akin to the notion of authenticity as a process of ‘becoming’ or striving. This process of transition between stages involves more than just informational learning (the incorporation of new information into existing ways of knowing or meaning-making), but is predominantly concerned with transformational learning (changes in the way that knowledge or meaning is
constructed; Kegan, 2009). It should be noted that the term meaning here is used to refer to the coherent understanding of the various internal and external aspects of experience, much like what has otherwise been termed frames of reference or schemas (Kegan, 2009; C. L. Park, 2010). Thus, Kegan’s conceptualization of personal growth reflects authentic self-development, and requires that one not only adds to their self-concept over time, but also acquires the flexibility to change the way their self-concept is constructed (much like the process of accommodation elaborated upon below; C. L. Park, 2010).

While Kegan proposed that self-development (toward authenticity) typically advances over the lifespan, Erik Erikson’s (1965, 1982) theory of psychosocial development explicitly incorporated the importance of confronting mortality in becoming increasingly authentic. Erikson theorized the existence of eight developmental stages, each defined by the struggle to resolve a characteristic crisis. The penultimate stage involves a crisis between generativity and stagnation, and was approximately associated with middle adulthood (although Erikson allowed for a wide temporal range in the ages corresponding to the three adult stages of development, so long as crises from prior stages had been effectively resolved). This stage is considerably (though not entirely) driven by an awareness of one’s mortality, whereby the individual struggles to establish a legacy that will benefit others and persist beyond their death (McAdams & de St Aubin, 1992). In resolving this crisis, the individual becomes generative by contributing positively to society and the next generation, and an individual decides which legacy to strive for based upon what they consider personally valuable or meaningful (McAdams & de St Aubin, 1992). As Erikson (1982) stated, it involves “a widening commitment to take care of the persons, the products, and the ideas one has learned to care for” (p. 67), thus framing generativity as a form of authentic goal pursuit.

Erikson’s final stage of personality development involves a crisis between integrity and despair, whereby an increasing awareness of one’s death causes a reflection on the life
they have lived, and an opportunity to evaluate or establish its significance. By overcoming this crisis and developing integrity, the individual gains a more holistic understanding of their life which integrates both its positive and negative aspects in order to feel a sense of coherence. The individual accepts, supports and takes responsibility for the life they have lived, feeling a sense of ownership for their choices in addition to the way they have been influenced by external forces (as opposed to regretting their life or denying aspects of it). Clear parallels can be drawn between Erikson’s concept of integrity and the existential concept of authentic responsibility (e.g. Sartre, 1943/1958), the unbiased processing component of Kernis and Goldman’s (2006) definition of authenticity, and the wholehearted endorsement of one’s actions at the center of SDT (R. M. Ryan & Deci, 2002).

Striving for greater authenticity can therefore be framed as a process of personal growth, which develops and is elaborated upon over time as an individual successfully adapts to change (Sheldon, 2009). Some empirical support has been found for the argument that personality development over the lifespan involves growth toward authenticity. Evidence shows that perceived authenticity has at least a modest positive relationship with age (W. E. Davis et al., 2015; Seto & Schlegel, 2018), and autonomous motivation for one’s goals has been found to increase with age using a variety of methods and in diverse cultural contexts (for a review, see Sheldon, 2009). Furthermore, people perceive their authenticity to be increasing over time and expect that they will become more authentic in the future (Seto & Schlegel, 2018). Support for the relevance of processing death awareness in developing more authentic ways of being, however, can be found in the literature pertaining to posttraumatic growth (PTG) and near-death experiences (NDEs).
Positive Growth Following Trauma and Near-Death Experiences

Tedeschi and Calhoun (2004) define PTG as "the experience of positive change that occurs as a result of the struggle with highly challenging life crises" (p. 1). While the types of trauma that have been studied in this context vary widely, a majority center on an acute confrontation with mortality (e.g. bereavement, serious illness or injury, natural disasters and combat exposure). Severe traumas such as these are theorized to undermine or break down an individual’s *assumptive world*, a term used to denote the collective set of beliefs and expectations through which individuals interpret their experiences and upon which they base their goals—analogous to the concept of schemas, frames of reference, worldviews or meaning frameworks referred to elsewhere in the literature (Heine, Proulx, & Vohs, 2006; Kegan, 2009; C. L. Park, 2010). Of course, such traumatic experiences are inherently distressing, although when an individual’s meaning frameworks are sufficiently challenged, trauma can also lead to the re-assessment and restructuring of one’s meaning frameworks (and associated goals or values) in a way that incorporates the reality of the trauma and increases resistance to future destabilization. Thus, the construction of more adaptive meaning frameworks (i.e. growth) may occur concomitantly with distress (or other negative effects of trauma, e.g. psychopathology), which aligns with the conceptual distinction between hedonic and eudaimonic well-being outlined above (R. M. Ryan & Deci, 2001; Ryff, 2014). Indeed posttraumatic growth has been explicitly conceptualized as change in eudaimonic well-being (Joseph & Linley, 2008), and meta-analytic findings suggest that reports of growth are uncorrelated with measures of distress (Helgeson, Reynolds, & Tomich, 2006). Furthermore, it appears that reports of positive growth far outweigh incidences of psychiatric disorders in response to trauma (Jayawickreme & Blackie, 2014; Tedeschi & Calhoun, 2004).
A separate though related field of research has examined positive growth following NDEs, which I define in line with Martin and Kleiber (2005) as a close brush with death (life-threatening circumstances where one narrowly avoids death or is declared clinically dead for a time). These experiences often differ from the types of traumas described above, in that there may not be any objective impact on the individual’s life circumstances beyond the event. For instance, an individual may come very close to a serious motor vehicle accident but avoid it, or come close to drowning but have no injury and experience no objective loss.

Furthermore, while NDEs studied in the literature frequently involve the paranormal-type experiences described by Moody (1977) and Ring (1984; e.g. visions of light at the end of a dark tunnel or reunions with deceased loved ones), they do not necessarily involve such experiences, nor are these necessary to elicit subsequent positive changes (Martin & Kleiber, 2005). What appears to be a rather important factor in determining the degree of growth experienced, however, is the depth of the NDE—i.e. the more one truly believes and accepts that they are dying in that moment (Greyson & Stevenson, 1980; Martin & Kleiber, 2005; Noyes Jr, 1980, 1983). As with PTG, and in line with May (1950, 1953) and Yalom (1980), confronting death in such a tangible and personal way is theorized to challenge an individual’s basic assumptions and way of life, which while distressing, often leads to a difficult though rewarding process of building new assumptions and ways of living (Furn, 1987; Martin & Kleiber, 2005). For instance, a NDE likely undermines the common assumption that death will occur to a far removed self in the distant future, which instigates a reconceptualization of how one perceives and values the amount of time they have, and a consequent re-evaluation of which goals they plan to pursue. Growth can emerge not only through challenging positive assumptions (e.g. that the world is safe) which are subsequently reconstructed, but also through challenging negative assumptions (e.g. I need to be thin for others to accept me) which are subsequently let go (Martin & Kleiber, 2005).
Many thematic similarities have been identified within the experiences of growth reported by trauma survivors and near-death experiencers (summarized by Groth-Marnat & Schumaker, 1989; Martin & Kleiber, 2005; Ring, 1984; Tedeschi & Calhoun, 1996, 2004). Firstly, there is a tendency to perceive changes in one’s sense of self, whereby individuals report gaining a greater understanding of themselves, an increased motivation to understand themselves, and an increased sense of self-worth, personal strength or self-reliance (e.g. Schwaninger, Eisenberg, Schechtman, & Weiss, 2002; Threader & McCormack, 2016).

Partly stemming from this, individuals report a re-prioritization of what is important in their life, shifting away from extrinsic values like physical attractiveness, social status or materialistic success, and toward those perceived to be more personally fulfilling (e.g. Groth-Marnat & Summers, 1998; Kinnier, Tribbensee, Rose, & Vaughan, 2001). One of the most commonly observed shifts in values involves a greater appreciation for, and investment in, personal relationships, in addition to an increased motivation to help others (e.g. Groth-Marnat & Summers, 1998; Schwaninger et al., 2002; Tedeschi & Calhoun, 2004).

Additionally, there is a commonly reported shift in one’s general orientation toward life, whereby one becomes more present-focused, gains a greater appreciation for the ‘small things’ which are intrinsically valuable, and feels as though they are participating in and enjoying life more (e.g. Noyes Jr, 1980; Tedeschi & Calhoun, 1996). While it has been acknowledged that these themes imply more authentic functioning (Joseph & Linley, 2005; Martin et al., 2004), research in these fields has not directly assessed perceived (trait) authenticity or autonomous motivation.

The ways in which goal pursuits are adjusted after confronting one’s mortality have been studied in considerable depth within cancer survivors (those living with, or after recovery from, cancer; Mullan, 1985). It is suggested that one of the main adaptive challenges survivors face is learning how to maintain or adjust their goals in a way that
enables them to continue pursuing meaningful activities in the face of existential uncertainty (Low, Beran, & Stanton, 2007). The openness to revising one’s goals based upon their ever-changing life circumstances, and disengaging from goals that are no longer appropriate or meaningful, are important aspects of authentic goal pursuit (Kasser & Sheldon, 2004). Cancer survivors seem to engage in a process of reassessing their life goals, such that their priorities shift and the importance attached to goals is altered, however the perceived attainability of goals tends to be quite high or increases over time (Janse, Fleer, Smink, Sprangers, & Ranchor, 2016; Janse, Ranchor, Smink, Sprangers, & Fleer, 2015; Pinquart, Fröhlich, & Silbereisen, 2008). Furthermore, flexibility in goal adjustment or coping strategies appears to be quite common and fosters better well-being outcomes (Janse, Fleer, et al., 2016; Janse, Sprangers, Ranchor, & Fleer, 2016; Low et al., 2007; Von Blanckenburg et al., 2014). These findings suggest a pattern of adaptability to a cancer diagnosis related to the processes involved in striving for authenticity, where individuals re-consider what they are striving for and make changes depending on what is both important and attainable in their life.

Theories of meaning-making are valuable for understanding the underlying processes involved in the above growth responses (C. L. Park, 2010). An event where one is personally confronted with mortality is threatening to the degree that it is discrepant with one’s established, global meaning frameworks or schemas. This elicits distress which motivates efforts to reduce this discrepancy, make sense of the event and thereby re-establish coherent meaning frameworks. This may be achieved in several ways, although an important distinction is drawn between assimilation (re-interpreting the event so that it aligns within one’s established meaning frameworks and is no longer threatening) and accommodation (adjusting one’s meaning frameworks in order to integrate the event). Individuals may use a combination of strategies, although growth toward greater authenticity requires accommodation by definition, as it implies changes to one’s self-concept, values and/or goals.
Furthermore, while meaning has been discussed so far in terms of comprehensibility, meaning-making has also been applied to a sense of meaning (i.e. meaningfulness, significance or purpose in life; Janoff-Bulman & Frantz, 1997). One’s sense of meaning can be threatened and re-established in similar ways following a traumatic event (Janoff-Bulman & Frantz, 1997), and given the relationship between authenticity and eudaimonic well-being (Kernis & Goldman, 2006), re-constructing a sense of meaning is also tied to authentic self-development.

**Defensive Responses to Death Awareness within Terror Management Theory**

In contrast to the flexible, growth-oriented responses to death awareness described above, terror management theory (TMT; Greenberg, Pyszczynski, & Solomon, 1986; Solomon et al., 2004) is a prominent evolutionary, socio-motivational theory centered on the ways in which death awareness leads to rigid, defensive responses. It argues that an individual’s cultural worldview grants a sense of existential security, as it provides stability, structure and meaning to an otherwise chaotic and groundless world. Moreover, by identifying with and defending a cultural system that will outlast the individual’s physical death, it is proposed that one gains a sense of symbolic immortality which buffers death anxiety. Following from this, individuals are hypothesized to employ two defensive strategies under conditions of mortality salience (MS; conditions in which one is reminded of or threatened by their mortality). When thoughts of death are conscious, individuals are theorized to engage in rational, proximal defense mechanisms, whereby they avoid and suppress thoughts of death by denying their immediate vulnerability and framing death as a remote problem in the distant future. When the concept of death remains outside of conscious awareness but is still highly accessible, individuals are theorized to engage in distal defense mechanisms. The distal defense mechanisms also aim to avoid the threat posed by death and
the potential for death anxiety, by reinstating the security provided by one’s cultural worldview. This can be expressed through the rigid or biased affirmation of shared, pre-existing meaning structures (worldview defense), or the bolstering of one’s perception of living up to the standards of their cultural worldview (self-esteem striving).

Extensive evidence has been gathered in support of distal defense mechanisms, demonstrating that individuals appear to defensively inflate their adherence to cultural worldviews and associated values after experimentally induced MS (for a review, see Burke, Martens, & Faucher, 2010). MS is typically experimentally induced within the TMT literature using two open-ended questions regarding one’s thoughts and emotions about the prospect of their death (followed by a delay), though other manipulations (e.g. subliminal primes) have also been employed. There is evidence that the proposed defensive reactions to MS only emerge after a delay, when thoughts of death are no longer conscious (Greenberg, Arndt, Simon, Pyszczynski, & Solomon, 2000; Greenberg, Pyszczynski, Solomon, Simon, & Breus, 1994), and although some studies have found MS effects without implementing a delay, greater effect sizes tend to emerge for those with longer delays between the manipulation and dependent variable (Burke et al., 2010).

While effects have been elicited using an impressive range of dependent measures, terror management research has most commonly found that when given the opportunity, individuals tend to denigrate out-group members or those who threaten their cultural worldview, and increase their preference for those within or supportive of their in-group (e.g. Greenberg et al., 1990; Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989). In direct opposition to the motivational shifts reported by trauma and NDE survivors, terror management studies have also found defensive increases in the pursuit of largely culturally-derived extrinsic values such as materialism, physical attractiveness, and social status or recognition. After experimentally induced MS followed by a delay, individuals have been
found to express more greed, expect to be worth more overall and spend more on pleasure items in the future (Kasser & Sheldon, 2000); rate high priority extrinsic goals as more important (Kosloff & Greenberg, 2009); become generally more extrinsically-oriented (Sheldon & Kasser, 2008); and increase their preference for high status consumer items (Mandel & Heine, 1999). Such responses are interpreted as bolstering the individual’s investment in (western consumerist) cultural values, and the perception of living up to culturally sanctioned standards of self-worth.

The defensive responses described by TMT involve an orientation toward avoidance (of threat) and a biased clinging to one’s established worldview that is largely informed by the values of their culture. As elaborated upon in Chapter 2, such processes appear antithetical to the open, unbiased and self-determined nature of authenticity (Kernis & Goldman, 2006; R. M. Ryan & Deci, 2004). It should be noted that not all defensive responses have negative outcomes, however, given that individuals may bolster positive cultural norms (e.g. prosociality) when those are salient (see Vail et al., 2012). Nonetheless, these defensive responses are contrary to the approach-oriented growth responses following trauma or NDEs, which involve self-expansion toward more optimal functioning, often through making changes to one’s worldview or pursuing values that are more personally meaningful. Such processes appear more aligned with the nature of authentic self-development (Kernis & Goldman, 2006; R. M. Ryan & Deci, 2004). Defensive and growth responses therefore appear to involve incompatible styles of processing threatening information, representing “two sides of the same existential coin” (Cozzolino, 2006, p. 278; expanded upon in the proceeding section).

The meaning maintenance model (Heine et al., 2006) builds upon TMT and incorporates the potential for growth responses to some extent. It proposes that humans are driven to construct and maintain meaning frameworks, and that death is only one way in
which individuals’ underlying meaning frameworks can be threatened—similar to the way existentialists have argued that the threat of groundlessness (a lack of pre-determined meaning and a personal responsibility to create meaning) underlies death anxiety (Yalom, 1980). Meaning can also be threatened by stimuli which undermine self-esteem, certainty, or interpersonal relationships. Under conditions of threat to any of these domains of meaning, individuals are theorized to engage in a process of fluid compensation, whereby rather than addressing the threat itself, they defensively reaffirm other intact meaning frameworks in order to regain a sense of coherence (akin to the distal defenses within TMT). However, the meaning maintenance model also acknowledges the existence of two alternate responses to meaning threat—assimilation and accommodation, as described above. While responses involving the accommodation of one’s meaning frameworks are likely to constitute growth, research into the meaning maintenance model has focused exclusively on fluid compensation. This raises a question that is central to the aims of this thesis: if both defensive and growth responses to death awareness have been described in the literature, what determines the pathway an individual takes?

**Dual-Existential Systems**

One plausible explanation for the differential responses to death awareness rests upon the depth to which mortality is made salient. The confrontations with death studied in the PTG and NDE research are far more personally poignant, conscious and long-term than is experimentally induced within the TMT framework. Expanding upon these distinctions and drawing from dual processing systems within social, cognitive, perceptual and neuropsychological disciplines, Cozzolino (2006) proposed a model of dual-existential systems. He delineates two modes of death awareness, each involving distinct information processing systems and motivational consequences. Death is primed in an abstract manner
within TMT, eliciting subtle or non-conscious thoughts about the general concept of one’s death. This is argued to activate abstract information processing, which uses similarly abstract aspects of the self to inform behavior, such as group categorizations and cultural worldviews. Conversely, death is salient in a very specific manner within trauma and NDEs, where individuals consciously contemplate the reality of their personal mortality. This is argued to activate specific information processing, which uses specific and individuating aspects of the self to inform behavior, such as personal needs and values. This distinction may therefore help to explain the apparently paradoxical existence of both defensive and growth-oriented responses to death awareness.

Echoing these distinct abstract and specific existential systems, Vail et al. (2012) have also argued that nonconscious mortality salience induces symbolic, defensive motivations influenced by one’s culture (with either positive or negative outcomes); whereas conscious mortality salience leads to deliberate processing of how to live as meaningfully as possible (which often involves goal re-prioritization). Furthermore, Grant and Wade-Benzi (2009) have developed a contingency model of death awareness in the workplace, which proposes that brief, acute mortality cues are processed in the “hot” experiential system (involving reactive, anxious responses), which results in avoidant, self-protective behaviors. On the other hand, more enduring, chronic mortality cues are theorized to be processed through the “cool” cognitive system (involving intentional, reflective responses), leading to approach-oriented, generative and self-expansive behaviors. From each of these approaches, the two proposed processing systems are distinct, in that one cannot simultaneously process information in both systems.

The dual-existential systems model has been supported by experimental evidence comparing subtle MS inductions typical of TMT research, with deeper, more specific death awareness manipulations partly based upon elements characteristic of NDEs. To this end,
Cozzolino, Staples, Meyers, and Samboceti (2004) created a *death reflection* induction, which required participants to visualize a detailed death scenario and then reflect upon what the experience was like, how they would react in that situation, how they felt about their life up to the point of their hypothetical death and how their family would react. Individuals who tended to prioritize extrinsic values (money, fame and physical attractiveness) were found to behave more greedily (an extrinsic behavior) following the subtle MS prime, yet their greed decreased following the deeper death reflection task. Those who tended to prioritize more intrinsic values (self-acceptance, affiliation and community feeling) did not exhibit differences in greed between the manipulations. These findings imply that a deep reflection on death can induce a recalibration of one’s values and motivations, leading more extrinsically-oriented individuals to behave similarly to more intrinsically-oriented individuals. Similar effects have also been found when inducing mortality salience with a *limited time perspective*, in which participants contemplated their death from the perspective of being in old age (i.e. with a limited future; Cozzolino, Sheldon, Schachtman, & Meyers, 2009). This was intended to frame mortality as more imminent (akin to specific, individualized forms of death awareness), and was found to decrease greed amongst extrinsically-oriented individuals; whereas a standard MS manipulation increased greed for extrinsically-oriented individuals.

Further research has found that subtle MS increased prosociality only when there was a cultural expectation to do so, whereas death reflection increased prosociality regardless of external pressure (Blackie & Cozzolino, 2011), suggesting that deeper awareness of death may motivate less contingent prosocial intentions. Blackie, Cozzolino, and Sedikides (2016) have also shown that death reflection can increase various indices of *identity integration*, which involves the balanced integration of divergent, though equally valid, aspects of one’s identity into a coherent self-concept (bearing similarities to authenticity; Kernis & Goldman,
This included the finding that those exposed to a death reflection condition equally prioritized growth-oriented and security-oriented needs; however, they nonetheless prioritized growth-oriented needs more than those in a subtle MS condition and a non-existent existential control.

Lykins, Segerstrom, Averill, Evans, and Kemeny (2007; study 3) compared the death reflection task to a less deep MS task and a control task on the relative importance of intrinsic versus extrinsic goals. In this study, however, participants consciously contemplated all tasks over the course of six days, rendering the MS prime considerably deeper than the way it is typically employed in the TMT literature. Those who were high on intrinsic values after the first manipulation on day one were most likely to maintain their intrinsic values at day six in the death reflection condition; while those who were high on extrinsic values after the first manipulation exhibited the greatest intrinsic value shifts in the MS condition. This study is somewhat limited by the lack of a baseline assessment of goal preferences prior to implementing the first manipulation, although these findings align with expectations that consciously contemplating death can lead to more intrinsically valuable goal pursuits.

Prentice, Kasser, and Sheldon (2018) similarly found that extended exposure to either a MS or death reflection task (over six days) elicited shifts toward more intrinsic values for those higher in openness to experience.

While not synonymous with authenticity, the pursuit of extrinsic versus intrinsic types of values is very much relevant to authentic functioning (R. M. Ryan & Deci, 2004), implying a place for the construct of authenticity within research on death awareness and the dual-existential systems model. Authenticity has been directly assessed in relation to death awareness within three correlational studies conducted by Seto, Hicks, Vess, and Geraci (2016). These studies found that the vividness of a memory that reminded participants of their own mortality was associated with greater trait authenticity (consistently on 1 of 3
subscales); in addition to greater importance, meaningfulness and commitment to personal
goals, and greater prioritization of intrinsic (but not extrinsic) aspirations. This lends support
to the dual-existential systems model, in that deeper and more specific contemplations of
mortality were associated with growth-related outcomes; and draws clear links to existential
theory (e.g. Heidegger, 1927/2004) by employing a direct assessment of the entire construct
of authenticity within the context of death awareness.

The depth of death awareness appears to be a critical, though not the sole factor
determining whether individuals respond to death awareness with growth or defensiveness. In
addition to this, certain features of personality or other individual differences may predispose
people toward one or the other pathway. Indeed, considerable work has explored such
moderators of terror management defenses (detailed within Chapter 2), and similar
moderating factors have been suggested within growth responses to death reflection. In fact,
the potential for individual differences factors to moderate growth responses was
demonstrated in the work of Cozzolino et al. (2004), which emphasized the role of prior
value orientation in predicting growth versus defensive responses to death awareness. Vail et
al. (2012) argue that certain individuals may be more prone to recognizing the opportunity for
growth when death is salient, seeing it as a means to enhance well-being; or may have a
greater capacity to process threatening information in flexible, growth-oriented ways. Based
on the dual-existential systems model, growth responses are founded in approach-oriented,
promotion-focused processing of mortality (Cozzolino, 2006), implying that individuals more
prone to processing information in this way may be more likely to exhibit growth in the face
of death awareness (expanded upon in Chapters 3 and 4). In the opposing direction, defensive
responses are argued to be founded upon avoidant, prevention-focused processing of
mortality, implying that individuals more prone to this style of processing may be more likely
to exhibit defensiveness.
Aims and Overview of the Thesis

Death is a core existential dilemma that is bound to impact every living person. It is an undoubtedly grim truth to confront, although its effects on the individual need not be entirely negative or defensive. Extensive theory and evidence also point toward the potential for profound personal growth in the face of death, indicating that there is great value in research aimed at clarifying the nature of this growth and the contextual and personal factors which facilitate growth over defensiveness. Such research may contribute to a better understanding of those struggling with issues of mortality, and how to facilitate more optimal psychological functioning in these contexts. A fundamental proposition of existential thought is that growth responses express a shift toward greater authenticity, and while mounting research has found growth outcomes that are suggestive of more authentic ways of living, there is a substantial paucity of empirical work directly examining authenticity in the context of death awareness. The four studies of this thesis were therefore conducted with the following aims.

Aim 1. The first aim was to investigate whether trait authenticity decreases defensive responding to thoughts of death. Given that authenticity involves flexibility in one’s self-concept and an unbiased, non-defensive orientation toward self-relevant information, highly authentic individuals may express less defensive reactions to mortality salience. Therefore, the first study in this thesis (Chapter 2) was designed to test whether authenticity buffers terror management defenses.

Aim 2. The second aim was to examine authentic functioning as a growth outcome of experimentally induced death awareness. To this end, Studies 2 and 3 (Chapter 3) intended to build upon past experimental research focusing on motivational shifts toward extrinsic or
intrinsic goals in response to death awareness, by considering differences in overall autonomous (and thus, authentic) motivation for life goals.

**Aim 3.** The third aim was to investigate the role played by the depth of death awareness in eliciting more authentic responses. Theory and evidence suggest that a key factor implicated in growth-oriented processing of death awareness is the depth and specificity to which mortality is consciously contemplated. To this end, Study 3 (Chapter 3) assessed authentic functioning after a deep death reflection manipulation compared to the typical, subtle mortality salience manipulation employed within TMT.

**Aim 4.** The fourth aim was to examine the individual differences which moderate more authentic responses to death awareness. While features of the exposure to death awareness appear to be important in predicting more authentic responses, there is also a possibility that certain individuals are more likely to respond in this way. Studies 3 (Chapter 3) and 4 (Chapter 4) considered various personality traits, coping styles and attitudes which may provide individuals with a greater capacity or inclination to openly reflect on death in a way that facilitates authentic growth.

**Aim 5.** Lastly, this thesis aimed to examine authentic functioning within the context of individuals naturally reflecting on death in response to genuine mortality cues. Study 4 (Chapter 4) utilized a quasi-experimental design to compare a sample of funeral and cemetery workers (chronically exposed to mortality cues) against a demographically matched control sample on autonomous motivation. This was intended to extend the ecological validity of the findings regarding experimentally induced death awareness in Chapter 3.

Chapter 5 offers a critical discussion and integration of the research conducted as part of this thesis, including its overarching implications, limitations, and viable avenues for further research to build upon.
Chapter Summary

This chapter first established the philosophical foundations for both the construct of authenticity and its association with death awareness, before providing an overview of the psychological conceptualization and measurement of authenticity and its value regarding optimal psychological functioning. The literature on both growth-oriented and defensive responses to death awareness was surveyed, and a distinction was made between growth-oriented and defensive processing largely based upon the dual-existential systems model. While authenticity appears to be implicated in the non-defensive, growth-oriented processing of death awareness, a notable gap in the literature was identified regarding the scarcity of research directly assessing authenticity (or its motivational component) in these contexts. The importance of conducting such research is justified by the potential impact and pervasiveness of issues pertaining to mortality (e.g. within the context of traumatic life events), and the value of authenticity for optimal psychological functioning.
CHAPTER 2: The Role of Authenticity Within Defensive

Responses to Death Awareness
Since the inception of terror management theory (TMT; Greenberg et al., 1986), experimental existential psychology has been dominated by research on avoidant, defensive reactions to existential threats, aimed at regaining existential equanimity by rigidly reaffirming one’s pre-existing worldview or schematic beliefs. While considerable correlational and quasi-experimental research from various traditions speaks to the potential for growth-oriented responding to existential threat (e.g. Tedeschi & Calhoun, 2004), and while experimental research on this pathway is growing (e.g. Cozzolino et al., 2004), subsequent chapters will focus and build on this research. The current chapter firstly addresses issues pertaining to defensive responses to death awareness, namely the individual differences which exacerbate or buffer the use of these defenses.

As outlined in Chapter 1, the depth of death awareness may moderate whether individuals respond defensively or in growth-oriented ways (Cozzolino, 2006); however, it is also likely that individuals possess certain characteristics that incline them toward one pathway over the other. In the proceeding sections, two lines of argument will be made to support the hypothesis that individuals high in trait authenticity may be less inclined toward defensiveness: firstly, low defensiveness is inherent to authenticity on theoretical and empirical grounds; and secondly, those individual differences which have been previously shown to moderate terror management defenses bear consistent relationships with authenticity. For these reasons, authenticity could potentially provide a more unified account of the factors which buffer against defensiveness.
Authenticity and Defensiveness

Authenticity involves a process of self-development that is in need of constant re-evaluation—a perpetual act of synthesis between honestly accepting one’s history and determinants, and acting on one’s capacity to progress and be other than their present self (Kierkegaard, 1849/2004; Sartre, 1943/1958). At its core, this process requires maintaining an open, reflective state of awareness to ensure the full, uninhibited expression of one’s self, by recognizing when there is tension between self-aspects, behaviors and the contextual environment (Holley S Hodgins & Knee, 2002; Medlock, 2012; R. M. Ryan & Deci, 2004; Wood et al., 2008). For instance, an individual’s perception of themselves as conscientious may be in conflict with their work habits and feedback from their co-workers. In order to increase authenticity, such an individual must strive to resolve these tensions by making changes that increase the congruence between these elements, either by adjusting their behaviors or their self-concept. Medlock (2012) states that a “non-defensive [emphasis added] openness to experience that is in tension with established self-representations is part of the process of authentic self-development”, requiring an “awareness of the inherent complexity of experience and the flexibility to adjust self-representations or self-narratives in the light of that experience” (p. 46).

According to this conceptualization, for authenticity to develop, the individual must adopt a non-defensive openness to life experiences, being able to acknowledge when these experiences reveal potential inauthenticity and willing to make any necessary changes. This necessitates “a high tolerance for encountering experience without being threatened or defending against it” (Holley S Hodgins & Knee, 2002, p. 88-89). For this reason, Kernis and Goldman (2006) emphasize the importance of unbiased processing within authenticity—the tendency to interpret self-relevant information as it is, without the denial, distortion or exaggeration that characterizes defensiveness. The authentic individual is open to both the
positive and negative aspects of experience, including both one’s personal strengths and weaknesses.

Empirical research has examined how individual differences in authenticity relate to defensiveness. As a key example, Lakey et al. (2008) assessed both trait authenticity and mindfulness before implementing the Defensive Verbal Behavior Assessment: an interview-based assessment comprised of a series of self-threatening questions, where respondents are asked to recount past experiences that challenge a desirable self-image. Verbal responses are then coded for markers of defensiveness which serve to distance the individual from negative self-relevant information. Higher authenticity was associated with lower defensiveness scores, indicating a greater awareness and acceptance of threatening information, with fewer attempts to evade or distort it to protect one’s self-image. This relationship was mediated by higher levels of mindfulness among authentic individuals, suggesting that the non-reactive, open awareness involved in authenticity drives non-defensive behavior.

Further evidence that authentic modes of being are associated with low defensiveness can be found in research on individuals either high in dispositional autonomy or primed with autonomy. A wide array of defensive outcomes have been found to possess negative relationships with dispositional or primed autonomy, including defensive (avoidant) coping, desire to escape, self-serving biases and self-handicapping (Holley S Hodgins, Yacko, & Gottlieb, 2006; Knee & Zuckerman, 1996, 1998). In line with the above research on trait authenticity, Weinstein and Hodgins (2009) showed that more dispositionally autonomous individuals process negative emotional stimuli less defensively (as evidenced by the use of language expressing greater self-honesty and cognitive processing rather than dissociation); and this open, non-defensive style of processing mediates the positive effect of autonomy on well-being outcomes. Priming autonomy in less autonomous individuals was also found to decrease defensive responding, in turn leading to greater wellbeing. More autonomous
individuals also demonstrate greater integration of both positive and negative personal
c characteristics or important life events, indicative of a more open, unbiased processing of
self-relevant information, which is mediated by decreased markers of verbal defensiveness
(Weinstein, Deci, & Ryan, 2011).

The majority of this line of research assesses defensiveness using different methods to
those employed within TMT (with the exception of self-serving biases which have previously
been employed as a measure of terror management defenses; Mikulincer & Florian, 2002),
though it is clear that there is considerable overlap across operationalizations. Measures of
defensiveness in both lines of research involve rigid responses to self-threatening stimuli,
whereby the individual seeks to avoid addressing the threat itself by either ignoring its
undesirable implications (akin to the proximal defenses within TMT; Pyszczynski, Greenberg,
& Solomon, 1999), or by reinforcing desirable, worldview-concordant information (akin to
the distal defenses within TMT). Therefore, defensiveness ultimately serves the purpose of
keeping self-relevant schemata and pre-existing worldviews intact. To the degree that
authenticity is associated with lower defensiveness generally, it may plausibly decrease
defensive responses to thoughts of death.

Themes Among the Factors Which Moderate Terror Management Defenses

Certain themes exist within those individual differences variables that either increase
vulnerability to MS and exacerbate defensive responses, or those that serve a protective
function and buffer the need for terror management defenses. Coming from a clinical
perspective, Kosloff, Maxfield, and Solomon (2014) argue that these variables can be
grouped into four categories: meaning rigidity, value fragility, relational insecurity and
psychopathology. Each of these categories of individual differences can be shown to bear
clear theoretical and empirical relationships with authenticity, and by examining this research,
a case can be made for authenticity to serve a protective function against mortality-related defensiveness. Furthermore, it will be argued that based on these relationships, authenticity appears to describe a broad construct that integrates aspects of many defensiveness buffers, and therefore has the potential to offer a more holistic and parsimonious description of the protective factors for defensiveness.

**Meaning rigidity.** Individual differences in meaning rigidity refer to the extent to which people structure their values or perceptions of the world in concrete, unambiguous or inflexible ways (Kosloff et al., 2014). Structuring meaning in such a way results in a rigid worldview that lends itself to drawing firm boundaries between what is worldview-consistent and inconsistent, and drawing similarly firm in-group/out-group distinctions. While a clear worldview can provide protection against existential anxiety, a rigid worldview becomes particularly vulnerable to threat, given that it is more easily contradicted or subjected to falsification (Kosloff et al., 2014). Therefore, when this occurs, the inflexibility of such a worldview tends to create particularly zealous defensive reactions in order to keep them intact.

Before reviewing evidence suggesting that meaning rigidity is associated with defensive responding to mortality salience, it should first be clarified that an orientation toward meaning rigidity is theoretically antithetical to authenticity. From early conceptualizations put forth by existential philosophers including Heidegger (1927/2004) and Sartre (1943/1958) to current theoretical perspectives (Holley S Hodgins & Knee, 2002; Kernis & Goldman, 2006; R. M. Ryan & Deci, 2004), authenticity is conceived as an open, evaluative process whereby one continually questions the nature of their being, reassessing and redefining their self-aspects to ensure the consistent operation of their ever developing self-concept. By nature, this process requires open self-awareness and flexibility in
constructing a self-concept—and therefore meaning (C. L. Park, 2010)—in response to life experiences. Thus, while authenticity does involve a clear understanding and acceptance of one’s self-aspects, it does not involve a rigid or defensive clinging to these self-aspects when they are challenged or require revision (Kernis & Goldman, 2006).

**Personal need for structure** (PNS) is one form of meaning rigidity, defined as a dispositional aversion toward ambiguity and preference for simple structure that is achieved by interpreting information based on clear categorizations, and thinking or behaving in highly routinized or ordered ways (Thompson, Naccarato, Parker, & Moskowitz, 2001). Many studies have demonstrated increased defensiveness after exposure to mortality salience only for individuals high on PNS, using a wide range of typical outcome measures capturing a highly structured or simplified worldview (e.g. increased preference for cultural traditions; Juhl & Routledge, 2010; Landau et al., 2004; Routledge, Juhl, & Vess, 2010).

PNS also appears to relate negatively to authenticity. For instance, individuals classified into more autonomously-oriented personality types tend to be lower on PNS than those with less autonomous personality types (Roman, Moskowitz, Stein, & Eisenberg, 1995). In a similar vein, more authentic individuals exhibit higher *functional flexibility* (possessing a complex, fluid self-concept that enables flexible adaptation to different contexts; Kernis, Goldman, Piasecki, & Brunnell, 2003, as cited in Kernis & Goldman, 2006); and it is well-documented that conditions which thwart autonomy lead to decreased cognitive flexibility and more rigid patterns of behavior (see Deci & Ryan, 2000). Thus, authenticity involves the flexibility characteristic of low PNS, and to the extent that low PNS individuals do not display worldview defense on typical measures, the same may be argued of more authentic individuals. Low PNS individuals, however, have been shown to express increased motivations to explore novelty after MS, which is consistent with their disposition and confers an increased sense of meaning in life (Vess, Routledge, Landau, & Arndt, 2009).
implies that those low in PNS are not immune to thoughts of death per se; although they appear to react to mortality salience in more flexible and growth-oriented ways that seek to expand their understanding of the world, rather than defensively clinging to an established worldview.

The related construct of *need for closure* (the motivation to interpret knowledge quickly and with certainty; Kruglanski & Webster, 1996) has been found to similarly moderate defensiveness. A high need for closure was found to increase distress and avoidance when responding to mortality salience, likely due to an increased sensitivity to the uncertainty of death (Dechesne, Janssen, & van Knippenberg, 2000). Individuals low on need for closure on the other hand, expressed greater curiosity and acceptance of death in their responses. Some studies have shown that a low need for closure eliminates defensive responding to MS (e.g. no preference for stereotype-consistent targets; Schimel et al., 1999); and others have found that it *decreases* identification with a threatened in-group (Dechesne et al., 2000). The general expectation of TMT is that when death is salient, individuals maintain existential security by defending their cultural in-group more strongly, whereas low need for closure in this instance appears to lead to the re-evaluation (or accommodation) of one’s cultural worldview instead.

As with low PNS, it appears low need for closure may result in more flexible rather than rigid or defensive responses to MS, and also appears to be associated with greater authenticity. For instance, high need for closure relates to less authentic (normative) identity processing styles (preferring to rigidly adopt the beliefs and values of others rather than those which are personally valid; Berzonsky & Adams, 1999; Bouizegarene & Philippe, 2015). Additionally, authentic functioning has long been understood to involve a high tolerance for ambiguity, owing its inherent awareness that one’s self and constructed meaning frameworks are not fixed (Aho, 2014; Kernis & Goldman, 2006).
Kosloff et al. (2014) argue that worldviews comprised of more extrinsic values are relatively rigid, given they are often contingent on fixed, external sources of meaning (e.g. money, fame, and beauty). Striving to reach objective external standards forms a somewhat precarious basis of personal meaning, as they rely on consistent validation from other people or through external rewards, which makes them easily threatened and vulnerable to contradiction. This is opposed to more intrinsic values that are reliant upon deeply ingrained sources of meaning which are self-concordant, and therefore likely to constitute more secure sources of meaning (R. M. Ryan & Deci, 2000b). Cozzolino et al. (2004) found that individuals with a greater extrinsic value orientation behaved more greedily after MS, whereas those with a more intrinsic value orientation did not. Additionally, it has been found that only individuals who derive self-esteem from extrinsic sources (Arndt et al., 2009), and those low on intrinsic religiosity (who do not intrinsically value their religion; Jonas & Fischer, 2006) respond defensively to MS. While Chapter 1 clarified that the pursuit of extrinsic values or goals is not necessarily inauthentic, authentic individuals do express an overall striving for relatively more intrinsic than externally contingent values (R. M. Ryan & Deci, 2004), and autonomous motivation has demonstrated small-moderate associations with pursuing less extrinsic types of goals (Sheldon & Kasser, 1998; Sheldon et al., 2004). Thus, if less extrinsic and more intrinsic values can buffer the need for terror management defenses, trait authenticity may serve a similar function.

Lastly, both trait mindfulness and curiosity constitute forms of psychological flexibility inverse to meaning rigidity. Trait mindfulness has been found in several studies to reduce both worldview defense and self-esteem striving after MS (Niemiec et al., 2010). One explanation of these findings is that high mindfulness relates to a greater willingness to contemplate death (demonstrated by increased time spent on the MS induction questions) and less suppression of death thoughts, which reduces the need for both proximal and distal
defense mechanisms (Niemiec et al., 2010). Kashdan, Afram, Brown, Birnbeck, and Drvoshanov (2011) expanded on this research, demonstrating that mindful attention reduced negative evaluations of worldview-violating others when combined with high levels of trait curiosity (openness to uncertainty and willingness to expand one’s worldview). Both characteristics appear valuable in determining whether an individual resorts to defensive strategies under conditions of existential threat.

By nature, authenticity is theorized to be a mindful process which begins with an awareness of one’s values and internal states, and involves a curious orientation toward expanding or adjusting one’s worldview or value-system as required (e.g. when they are inconsistent with novel experiences that change one’s understanding of the world; Kernis & Goldman, 2006). In this way, both mindfulness and curiosity can be argued to form an important part of striving for authenticity. In combination with the above findings, there appears to be considerable support for the argument that decreased meaning rigidity is inherent to authenticity, suggesting that authenticity may be able to capture substantial variance in those factors which buffer against MS-induced defensiveness.

**Value fragility.** A second category of MS moderators proposed by Kosloff et al. (2014) consists of indicators of a low or unstable sense of self-worth, collectively referred to as value fragility. A core hypothesis of TMT is that, since self-esteem is conceptualized as the feeling of living up to the standards of one’s cultural worldview, greater self-esteem serves an anxiety-buffering function (Greenberg et al., 1992). Much research has supported this by demonstrating that experimentally boosting self-esteem levels (e.g. by providing fabricated positive personality feedback; Arndt & Greenberg, 1999; Greenberg et al., 1992) buffers defensive reactions to MS. Research examining individual differences in self-reported self-esteem, however, have returned inconsistent effects, with a meta-analysis by Burke et al.
(2010) finding overall greater defensiveness for those high in self-reported (explicit) self-esteem. This is likely attributed to the self-report nature of these measurements, as explicit self-esteem may in part confound narcissism and insecurity compared to more implicit measures of self-esteem (Kernis, Lakey, & Heppner, 2008; Swann, Chang-Schneider, & Larsen McClarty, 2007). In fact, having either a low implicit self-esteem or a fragile self-esteem (the combination of low implicit self-esteem and high explicit self-esteem) exacerbate terror management defenses (Schmeichel et al., 2009). Fragile self-esteem involves having a self-concept which is easily destabilized and therefore quite vulnerable to threat, since the incongruity between conscious and unconscious feelings of self-worth motivates defensive responses to maintain a fragile self-image (Kernis et al., 2008).

Authenticity has been associated with a variety of measures indicating a stronger sense of self and more secure feelings of self-worth, as demonstrated by the combination of a strong positive relationship with general self-esteem, greater self-esteem stability, and less contingent self-esteem (which is reliant upon external validation rather than the satisfaction of basic psychological needs; W. E. Davis et al., 2015; Goldman & Kernis, 2002; Kernis & Goldman, 2006; Kernis, Paradise, Whitaker, Wheatman, & Goldman, 2000). For these reasons, authenticity is likely to characterize individuals with a secure self-esteem buffer in place which would minimize the use of terror management defenses.

Neuroticism is also considered an indication of value fragility, being defined as emotional instability and sharing a large conceptual and empirical overlap with the construct of (low) self-esteem (Judge, Erez, Bono, & Thoresen, 2002). Several studies have found that neuroticism moderates defensive terror management responses, including the desire for control (Arndt & Solomon, 2003) and an aversion to humanity’s animal nature (Goldenberg, Pyszczynski, McCoy, Greenberg, & Solomon, 1999); while research also demonstrates clear negative correlations between neuroticism and authenticity (Grégoire et al., 2014; Wickham,
Williamson, Beard, Kobayashi, & Hirst, 2016; Wood et al., 2008). In a similar vein, an inverse measure of value fragility, *hardiness*, bears a clear theoretical association with authenticity due to its focus on commitment to life goals, feeling in control of solving life’s problems and perceiving challenges as opportunities for growth (Florian, Mikulincer, & Hirschberger, 2001). Florian et al. (2001) found that those high on hardiness do not become defensive after MS. Collectively, the findings regarding value fragility support the hypothesis that the construct of authenticity incorporates many aspects of the individual differences that moderate the use of terror management defenses.

**Relational insecurity.** The third category of moderators concerns individual differences in attachment style (patterns of cognitions and behaviors pertaining to relationships with close others; Mikulincer & Florian, 2000). The development of close relational bonds provides an individual with an important source of personal value or self-esteem, in addition to a sense of symbolic immortality—through the decreased fear of losing one’s identity (i.e. being remembered) after death, and through the expansion of one’s sense of self to include close others (Mikulincer, Florian, & Hirschberger, 2003). Secure attachments (characterized by dependability in times of need and being comfortable with closeness) are therefore seen as an effective way to maintain existential security. Experimentally inducing thoughts of one’s commitment to their romantic relationship has been found to reduce worldview defense, while inducing thoughts about conflict in one’s romantic relationship (and therefore disruptions to attachments) has been found to increase the accessibility of death thoughts (Florian, Mikulincer, & Hirschberger, 2002). Mikulincer and Florian (2000) also directly assessed attachment style, showing that a more secure attachment style can mitigate worldview defense.
According to Kernis and Goldman (2006), the authentic, uninhibited expression of one’s self-aspects in daily life applies to one’s relationships, in which authentic individuals strive for sincerity and openness. Further substantiating the relevance of authenticity within attachment bonds, SDT proposes that autonomy and relatedness form two of three basic psychological needs which are all necessary for optimal functioning (R. M. Ryan & Deci, 2000b) and often feed into each other (Deci & Ryan, 2000). For instance, the desire for intimate relationships is considered to be an intrinsic and therefore autonomous motivation (e.g. R. M. Ryan & Deci, 2000b), and greater levels of autonomy lead to increased honesty, intimacy, and satisfaction in close relationships (Holley S. Hodgins et al., 1996). Trait authenticity has indeed been found to correlate with a more secure attachment style (M. J. Bond et al., 2018; Kernis & Goldman, 2005), in addition to a wide variety of healthy relationship outcomes (e.g. lower fear of intimacy, increased trust and self-disclosure; Kernis & Goldman, 2006). Therefore, the degree to which authenticity involves relational security provides further support for its hypothesized protective function against the effects of MS.

**Psychopathology.** The final category of moderators proposed by Kosloff et al. (2014) comprises various indices of psychopathology. While MS leads to an exacerbation of psychopathological behaviors for a range of anxiety disorders and the dysregulation of death thought accessibility for posttraumatic stress disorder (Kosloff et al., 2014), of particular relevance to the present study is research suggesting enhanced sensitivity to MS among mildly depressed individuals. Specifically, several studies have found subclinical depression to be linked with increased worldview defense following MS (Simon, Arndt, Greenberg, Pyszczynski, & Solomon, 1998; Simon, Greenberg, Jones, Solomon, & Pyszczynski, 1996). This evidence is relevant due to extensive research linking authenticity with various forms well-being. For instance, authenticity is closely associated with both greater hedonic
wellbeing (e.g. life satisfaction, higher positive affect, less negative affect) and eudaimonic wellbeing (e.g. feelings of purpose in life, self-acceptance, gratitude and vitality; Deci & Ryan, 2000; Grégoire et al., 2014; Wood et al., 2008). Subclinical depression, on the other hand, is defined by increased negative affective states, an inherent lack of positive affect or anhedonia, self-depreciation, hopelessness, and a marked loss of interest in or motivation for life (Henry & Crawford, 2005; Lovibond & Lovibond, 1995). While depression is typically considered an indication of low hedonic wellbeing, it is also strongly correlated with low eudaimonic wellbeing (e.g. Disabato et al., 2016), and people high in authenticity have been found to report markedly lower levels of depression (R. M. Ryan, LaGuardia, & Rawsthorne, 2005). In sum, the strong conceptual and empirical links between authenticity and greater mental health provide further support for decreased reactivity to MS in individuals higher in authenticity.

**Summary.** Collectively, the evidence from these four categories of moderators suggest that the factors which decrease or buffer defensive responses to death awareness consistently form part of authenticity’s nomological network. Authenticity appears to partly encompass or relate to a large set of characteristics that are likely to either provide inner resources that promote healthy, non-defensive processing of death awareness (e.g. mindfulness), or which contribute to a stronger, more resistant worldview that buffers the negative impact of thinking about death (e.g. secure self-esteem). As such, authenticity may be conceptualized as an overarching construct that provides a more parsimonious explanation of the extant research.
The Potential Role of Awe-Proneness

The construct of awe-proneness may have value for understanding how authenticity potentially buffers terror management defenses. There is reason to believe that like authenticity, a dispositional proneness to experiencing awe may relate to lower defensiveness in response to death awareness. This is due to the nature of the awe experience involving certain processes hypothesized to lower defensiveness for authenticity—particularly those relating to low meaning rigidity. Therefore, examining whether awe-proneness moderates terror management defenses similarly to authenticity could provide insight into the underlying processes involved.

Keltner and Haidt (2003) conceptualize awe as consisting of two appraisals of a stimulus—vastness and the need for accommodation. In the context of awe experiences, vastness refers to properties of a stimulus or concept that exceed one's ordinary frame of reference, as when overlooking a grand vista from the top of a mountain, where the sublime scale of the Earth challenges how one ordinarily views their place and influence within the world. This vastness overwhelms one's established mental structures (or meaning frameworks), which necessitates the updating of one's mental structures to accommodate it. While vastness is prototypically thought of in physical terms, as with a landscape, it can also manifest in other ways such as conceptual vastness (e.g. an exceptionally complex scientific theory) or social vastness (e.g. extraordinary skill or social influence). Furthermore, the experience of awe is not necessarily positive, as the same appraisals can and do arise in response to negatively-valenced or threatening stimuli, such as natural disasters and moral atrocities (see Gordon et al., 2017).

Awe therefore theoretically acts as a meaning threat (as in the meaning maintenance model; Heine et al., 2006), and, as such, may make individuals temporarily vulnerable to existential anxiety as the anxiety buffer of their worldview has been threatened. Indeed,
Rivera, Vess, Hicks, and Routledge (2019) found that the feelings of smallness elicited by awe inductions decrease one’s sense of meaning in life. Given that the awe-inspiring stimulus requires accommodation of one’s meaning frameworks, Keltner and Haidt (2003) argue that those who are more successful at integrating the experience into their worldview will be more likely to experience the stimulus as enlightening rather than terrifying.

It could thus be argued that those who are more prone to experiencing awe are more likely to be habituated to (and perhaps inclined toward) processing complex, ambiguous or worldview-threatening stimuli, relating to a greater openness and flexibility in adjusting mental structures. This frames awe-proneness as an index of low meaning rigidity, which is supported by a moderate negative correlation between awe-proneness and need for closure (Shiota, Keltner, & Mossman, 2007), a strong positive correlation with openness to experience (Shiota, Keltner, & John, 2006), and a robust positive association with curiosity (Anderson, Dixson, Monroy, & Keltner, 2020). In this way, the processes involved in experiencing awe are comparable to the accommodative tendencies within authenticity. Examining the role of awe-proneness within terror management defenses could help to clarify whether these accommodative tendencies are indeed important for reducing defensive responses to existential threat.

**Study 1**

**Aims and Hypotheses**

A preliminary aim of Study 1 was to clarify the nomological network for both trait authenticity and dispositional awe-proneness. To ensure that measures of both constructs were operating in line with theoretical expectations and past findings, they were implemented alongside measures of meaning rigidity (personal need for structure and mindfulness), value fragility (neuroticism), and relational insecurity (attachment style). While authenticity was
expected to bear correlations with all of these measures, awe-proneness was only expected to correlate with measures of meaning rigidity and with authenticity. The relationships between awe-proneness and value fragility and relational insecurity were assessed on exploratory grounds. A measure of socially desirable responding was also implemented in order to clarify whether the relationships between constructs may be attributable to variation in response distortion.

The core aim of the study was to examine the moderating role of authenticity in responding to a typical measure of worldview defense (intergroup bias). The moderating role of awe-proneness was also examined, as a means of testing whether its underlying accommodative tendencies may be implicated in buffering worldview defense. It was hypothesized that higher levels of each construct would decrease defensive inflations of intergroup bias after MS compared to a control topic. The study also aimed to examine the interactive effects of the individual components of trait authenticity, in order to explore whether certain components were particularly influential in driving the proposed authenticity buffer effect.

Evidence of an authenticity buffer effect, in combination with evidence of authenticity’s relations with previously investigated moderators of defensiveness, would lend initial, foundational support for the argument that authenticity may provide a more parsimonious framework for understanding the factors which protect against mortality-related defensiveness.

Method

Participants

Sample size was estimated based on those used in previous studies examining similar moderation effects in the literature (e.g. Kashdan et al., 2011; Landau et al., 2004; Mikulincer
& Florian, 2000; Niemiec et al., 2010; Schimel et al., 1999; Schmeichel et al., 2009; Simon et al., 1998). One hundred and seventy-four first year undergraduate psychology students from the University of Sydney participated in the study in exchange for partial course credit. One participant was excluded from analyses due to misunderstanding the control task, resulting in a final sample of 173 participants (116 female). Participants’ age ranged from 18 to 43 years ($M = 20.53$, $SD = 4.09$) and the mode ethnicity was Caucasian/European (52%) followed by Asian (39.3%) and Hispanic (1.7%), with 8.7% classifying themselves as ‘other’. Fifty-six participants (32.4%) classified themselves as religious, 38 participants (22%) classified themselves as spiritual but not religious, leaving 80 participants (46%) classifying themselves as neither.

**Materials and Procedure**

The study was advertised to students with the title “self-identity, personal values and approach to life.” Students participated in the study in groups of up to eight, answering all questionnaires in a computerized format using Qualtrics online survey software. A brief demographic questionnaire was given before the following measures in the order presented.

**Authenticity.** The Authenticity Scale (Wood et al., 2008) assesses both global trait authenticity and three subscales: Authentic Living (behaving in line with one’s values and beliefs), Accepting External Influence (being susceptible to the influence of others and conforming to expectations), and Self-Alienation (lacking awareness of oneself and inner states). The scale contains 12 items (four items per subscale) assessed on a scale from 1 (*does not describe me at all*) to 7 (*describes me very well*). The scale has previously demonstrated good internal consistency (subscale Cronbach’s $\alpha = .69–.86$), temporal stability (over 4 weeks, $r = .78–.81$), and convergent and discriminant validity (Wood et al., 2008).
Awe-proneness. The Dispositional Positive Emotions Scale (DPES)—Awe subscale (Shiota et al., 2006) assesses proneness to experiencing awe with six items (e.g. “I feel wonder almost every day”) measured on a scale from 1 (strongly disagree) to 7 (strongly agree). It has been found to possess acceptable internal consistency ($\alpha = .78$) and convergent/discriminant validity with the Big-5 personality dimensions (Shiota et al., 2006).

Personal need for structure. The Personal Need for Structure (PNS) scale (Neuberg & Newsom, 1993) measures individual differences in the preference for simple, unambiguous mental representations of the world. The measure contains 11 items assessed on a scale from 1 (strongly disagree) to 6 (strongly agree), and has been found to possess good internal consistency ($\alpha = .76 - .86$) and criterion validity (Neuberg & Newsom, 1993).

Mindfulness. The Cognitive Affective Mindfulness Scale—Revised (Feldman, Hayes, Kumar, Greeson, & Laurenceau, 2007) assesses overall trait mindfulness as the tendency to regulate attention in order to remain non-judgmentally aware of one’s internal experience in the present moment. Responses to 12 items are made on a scale from 1 (rarely/not at all) to 4 (always), and the scale has previously demonstrated acceptable internal consistency ($\alpha = .74 - .77$), convergent and discriminant validity (Feldman et al., 2007).

Neuroticism. The International Personality Item Pool (IPIP) NEO—Neuroticism subscale (Goldberg et al., 2006) is a 10-item measure of the NEO neuroticism domain, reflecting general negative and unstable emotionality ($\alpha = .82$; Goldberg et al., 2006). Responses are made from 1 (very inaccurate) to 5 (very accurate).

Attachment style. The Experiences in Close Relationships scale (Brennan, Clark, & Shaver, 1998) is a 36-item measure of adult romantic attachment, including two 18-item subscales measuring avoidant (e.g. "I get uncomfortable when a romantic partner gets very close") and anxious (e.g. "I worry a lot about my relationships") attachment styles. The inverse of both subscales represents secure attachment tendencies on the respective
attachment dimension. Responses are made using a 7-point scale (1 = disagree strongly, to 7 = agree strongly). Both subscales possess good criterion validity and excellent internal consistency (\(\alpha = .91–.94\); Brennan et al., 1998). Given this measure is only applicable to individuals who have been in a romantic relationship, it was only presented to participants who answered affirmatively to the question “have you ever been in (or are you currently in) a romantic relationship?” \(n = 118\).

**Social desirability.** The Shortened Marlowe-Crowne Social Desirability Scale (Ballard, 1992) is an 11-item assessment of socially desirable responding, in which participants are asked to categorize common socially desirable or undesirable experiences as true or false of them personally. The 11-item version has been shown to possess an acceptable level of reliability (\(\alpha = .69\)) that is comparable to the original long-form and other short-forms (Ballard, 1992).

**Mortality salience.** The commonly used Mortality Attitudes Personality Survey (Rosenblatt et al., 1989) was implemented to manipulate mortality salience (MS). The Qualtrics online survey software allocated approximately 50% of students to a MS condition and the remainder to a control condition. The MS condition asked the following two open-ended questions: “Please briefly describe the emotions that the thought of your own death arouses in you” and “Jot down, as specifically as you can, what you think will happen to you as you physically die and once you are physically dead.” Responses are not coded. The control task consisted of the same open-ended questions, though referred to “undergoing a painful dental procedure” rather than death as a common means to control for the negative valence of the MS prime (e.g. Arndt & Greenberg, 1999).

**Distraction task.** After the experimental manipulation, participants were presented with a distraction task labeled “Opinion questionnaire 1: Literature”. This consisted of a commonly used neutral 445-word short story excerpt ("The Growing Stone"; Greenberg et al.,
Worldview defense. A common measure of worldview defense is to assess intergroup bias, indicated by the relative preference for individuals who conform to the cultural worldview of one’s in-group, compared to those that threaten it. As in several previous studies (e.g., Dechesne et al., 2000; Juhl & Routledge, 2010; Van den Bos, Poortvliet, Maas, Miedema, & Van den Ham, 2005), the relevant in-group identity forming the basis of this measure was the students’ university affiliation (in this case, the University of Sydney). This was considered the in-group identity most applicable to all participants in the current study, which would make students of a rival university (in this case, the University of New South Wales; UNSW) who are critical of the University of Sydney a relevant out-group. This task was labeled “Opinion questionnaire 2: University experience” and informed participants that they would read excerpts from an article in Tharunka (the UNSW student newspaper) regarding the variation in UNSW students’ experiences at other universities. This was framed as relevant to the study’s aims by stating that “it is likely that one’s experience says more about the individual than the university”. Two fabricated excerpts were presented in a counterbalanced order, one favorable of the University of Sydney and the other unfavorable. Both excerpts were adapted from those used by Van den Bos et al. (2005), by colloquializing some of the speech and changing the name of the universities in the excerpts and task instructions. The positive article read:

Last year, I took a course at The University of Sydney. I had been looking for an opportunity to take some classes elsewhere and there happened to be a course at Sydney uni that I could get credited toward my major. So, after I was permitted to sign up for the course, I bought the textbook, and went to Sydney uni twice a week for
three months. Lectures were well taught and there was ample room to ask questions. Also, I actually had a lot of fun in the tutorials. I was dreading one assignment that we had to do in small groups (due to past group work experiences), but the other students were all really great to work with. Both students and teachers were warm and approachable, so it was pretty easy to adapt. The teaching was not all that different from UNSW, so I passed the final exam without much difficulty. If you are interested, I would definitely recommend taking a course somewhere outside of UNSW someday.

The negative article read:

I started my degree two years ago at Sydney University, and it was a complete disaster! All my lecturers were really dull and the students in the lectures were always talking or doing other things on their phones or laptops which was really distracting. They were all more interested in Facebook than the lectures. Tutorials were the low point of my time there. I got the impression that everyone over there were just serving their time. The standards of the Usyd students are surprisingly really low: no one prepares anything and no one asks interesting questions. Worst of all was the fact that I had a group assignment with a couple of those students, and let me tell you, it was hard to work with those kinds of people. If they showed up at all, they didn't have anything valuable to say. Fortunately, things are much better here at UNSW. The students over here are motivated and really interested in discussions. The only positive thing of my Usyd experience was that I passed all my units, so I do not have to see the students or lecturers again.

Following each excerpt were five items commonly used to assess intergroup bias in the literature (e.g. Greenberg et al., 1994), regarding the likability, intelligence and knowledge of the author, in addition to the agreement with and perceived accuracy of their
opinion. Responses were made on a scale from 0 (*not at all*) to 10 (*very much*). Scores for each excerpt were summed before subtracting the negative excerpt scores from the positive excerpt scores to yield an overall measure of intergroup bias, where higher scores reflect greater defense of one's cultural worldview (preference for the pro-university author over the anti-university author).

**Results**

**Descriptives and Correlations**

To firstly confirm the nomological network of trait authenticity and dispositional awe-proneness, bivariate correlations were run on all measured individual differences (see Table 1 for descriptive statistics, reliabilities and correlations). For all internal consistency reliability estimates, Cronbach’s $\alpha \geq .69$.

Correlations with trait authenticity were all in the expected directions. Total authenticity exhibited a moderate positive relationship with awe-proneness, a moderate negative relationship with PNS, a strong positive relationship with mindfulness, and strong negative relationships with neuroticism and attachment anxiety. These findings suggest negative associations between authenticity and measures of meaning rigidity, value fragility and relational insecurity (as defined by Kosloff et al., 2014), with the exception of attachment avoidance which was only significantly positively correlated with the Self-Alienation subscale of authenticity and no other measure. Awe-proneness exhibited a moderate positive correlation with mindfulness, though its negative correlation with PNS did not reach significance. Awe-proneness was therefore inconsistently related to indices of lower meaning rigidity. Awe-proneness also demonstrated a significant negative correlation with neuroticism (and thus value fragility), though it demonstrated no significant correlation with attachment style (and thus relational insecurity).
Authenticity and each of its components were also significantly correlated with social desirability; total $r(171) = .44$; authentic living $r(171) = .45$; accepting external influence $r(171) = -.28$; self-alienation $r(171) = -.31$; all $p < .001$. Awe-proneness was not significantly correlated with social desirability; $r(171) = .13$, $p = .082$. The correlations in Table 1 are therefore also reported after partialing out social desirability variance, though the overall pattern of correlations was largely unchanged after doing so.
Table 1.

Descriptive Statistics, Reliabilities, Zero-Order Correlation Coefficients and Partial Correlation Coefficients (Controlling for Social Desirability) for All Measures

<table>
<thead>
<tr>
<th>Variables</th>
<th>M (SD)</th>
<th>Range</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. WVD-IB</td>
<td>10.40 (.11)9</td>
<td>-28–45</td>
<td>(.71)</td>
<td>-.05</td>
<td>-.12</td>
<td>.10</td>
<td>-.08</td>
<td>.06</td>
<td>.13</td>
<td>.12</td>
<td>-.13</td>
<td>-.11</td>
<td>.08</td>
</tr>
<tr>
<td>2. Authenticity</td>
<td>4.77 (.93)</td>
<td>2.75–6.75</td>
<td>-.03</td>
<td>(.86)</td>
<td>-.59**</td>
<td>-.76**</td>
<td>.79**</td>
<td>.26**</td>
<td>-.20*</td>
<td>.45**</td>
<td>-.47**</td>
<td>-.09</td>
<td>-.44**</td>
</tr>
<tr>
<td>3. Auth-AL</td>
<td>5.53 (.94)</td>
<td>2.25–7.00</td>
<td>-.10</td>
<td>.67**</td>
<td>(.78)</td>
<td>-.27**</td>
<td>-.24**</td>
<td>.15'</td>
<td>.01</td>
<td>.17'</td>
<td>-.07</td>
<td>-.08</td>
<td>-.17</td>
</tr>
<tr>
<td>4. Auth-AEI</td>
<td>3.83 (1.27)</td>
<td>1.00–7.00</td>
<td>.09</td>
<td>-.78**</td>
<td>-.35**</td>
<td>(.86)</td>
<td>.34**</td>
<td>-.19*</td>
<td>.35**</td>
<td>-.26**</td>
<td>.28**</td>
<td>-.06</td>
<td>.38**</td>
</tr>
<tr>
<td>5. Auth-SA</td>
<td>3.41 (1.44)</td>
<td>1.00–7.00</td>
<td>-.09</td>
<td>-.81**</td>
<td>-.34**</td>
<td>.40**</td>
<td>(.86)</td>
<td>-.21**</td>
<td>.05</td>
<td>-.48**</td>
<td>.58**</td>
<td>.19*</td>
<td>.40**</td>
</tr>
<tr>
<td>6. Awe-Proneness</td>
<td>4.77 (1.00)</td>
<td>1.67–7.00</td>
<td>.06</td>
<td>.29**</td>
<td>-.19'</td>
<td>-.22**</td>
<td>-.24**</td>
<td>(.77)</td>
<td>-.11</td>
<td>.26**</td>
<td>-.23**</td>
<td>-.02</td>
<td>-.16</td>
</tr>
<tr>
<td>7. PNS</td>
<td>3.75 (.89)</td>
<td>1.00–5.82</td>
<td>.12</td>
<td>-.28**</td>
<td>-.11</td>
<td>.39**</td>
<td>.12</td>
<td>-.14</td>
<td>(.88)</td>
<td>-.13</td>
<td>.14</td>
<td>-.10</td>
<td>.32**</td>
</tr>
<tr>
<td>8. Mindfulness</td>
<td>2.58 (.45)</td>
<td>1.50–3.58</td>
<td>.12</td>
<td>.49**</td>
<td>-.25**</td>
<td>-.31**</td>
<td>-.52**</td>
<td>.28**</td>
<td>-.18*</td>
<td>(.79)</td>
<td>-.57**</td>
<td>&lt;.01</td>
<td>-.39**</td>
</tr>
<tr>
<td>9. Neuroticism</td>
<td>2.85 (.76)</td>
<td>1.30–4.70</td>
<td>-.14</td>
<td>-.54**</td>
<td>-.20**</td>
<td>.34**</td>
<td>.62**</td>
<td>-.26**</td>
<td>.20**</td>
<td>-.60**</td>
<td>(.86)</td>
<td>&lt;.01</td>
<td>.55**</td>
</tr>
<tr>
<td>10. Attachment- Av</td>
<td>2.73 (.99)</td>
<td>1.00–4.94</td>
<td>-.11</td>
<td>-.10</td>
<td>-.09</td>
<td>-.04</td>
<td>.19*</td>
<td>-.02</td>
<td>-.08</td>
<td>-.01</td>
<td>.02</td>
<td>(.93)</td>
<td>.05</td>
</tr>
<tr>
<td>11. Attachment- Anx</td>
<td>3.81 (1.09)</td>
<td>1.00–6.89</td>
<td>.05</td>
<td>-.52**</td>
<td>-.29**</td>
<td>.43**</td>
<td>.47**</td>
<td>-.17</td>
<td>.37**</td>
<td>-.44**</td>
<td>.60**</td>
<td>.06</td>
<td>(.90)</td>
</tr>
</tbody>
</table>

Note. *p<.05, **p<.01. Cronbach’s alphas are displayed along the main diagonal. Values above the diagonal partial out social desirability. WVD-IB = Worldview defense—Intergroup bias; Auth-AL = Authenticity—Authentic Living subscale; Auth-AEI = Authenticity—Accepting External Influence subscale; Auth-SA = Authenticity—Self-Alienation subscale; PNS = Personal need for structure; Av = Avoidant; Anx = Anxious.

Attachment style correlations are only applicable to those individuals who have been in a romantic relationship (n = 118).
Primary Analyses

Hierarchical linear regressions were used to test the main effect of MS and the moderating effects of authenticity and awe-proneness on intergroup bias scores (see Tables 2 and 3). Two separate regressions were run, which entered group and either trait authenticity or awe-proneness in the first step, followed by the respective group interaction term in the second step, and social desirability in the third. There was no significant main effect of MS condition and no significant interaction effects in any step of the two models.

Table 2.
Hierarchical Linear Regression of the Interactive Effect of Mortality Salience and Total Trait Authenticity on Worldview Defense

<table>
<thead>
<tr>
<th></th>
<th>Step 1</th>
<th></th>
<th>Step 2</th>
<th></th>
<th>Step 3</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b (SE)</td>
<td>β</td>
<td>b (SE)</td>
<td>β</td>
<td>b (SE)</td>
<td>β</td>
</tr>
<tr>
<td>Group</td>
<td>-0.69 (1.71)</td>
<td>-.03</td>
<td>-0.69 (1.72)</td>
<td>-.03</td>
<td>-0.69 (1.72)</td>
<td>-.03</td>
</tr>
<tr>
<td>Authenticity</td>
<td>-0.37 (0.92)</td>
<td>-.03</td>
<td>-0.36 (0.92)</td>
<td>-.03</td>
<td>-0.62 (1.03)</td>
<td>-.05</td>
</tr>
<tr>
<td>Group x Auth</td>
<td>-0.81 (1.85)</td>
<td>-.03</td>
<td>-0.85 (1.85)</td>
<td>-.04</td>
<td>0.24 (0.42)</td>
<td>.05</td>
</tr>
<tr>
<td>Social Desirability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>R² = .002</td>
<td>ΔR² = .001</td>
<td>R² = .003</td>
<td>ΔR² = .002</td>
<td>R² = .005</td>
<td></td>
</tr>
</tbody>
</table>

Note. *p < .05, **p < .01. Auth = total authenticity scores. Group has been contrast-coded (control = -.5; mortality salience = .5), so that main effect regression coefficients are averaged over group. All continuous predictors were mean-centered.
Table 3.

Hierarchical Linear Regression of the Interactive Effect of Mortality Salience and Awe Proneness on Worldview Defense

<table>
<thead>
<tr>
<th></th>
<th>Step 1</th>
<th></th>
<th>Step 2</th>
<th></th>
<th>Step 3</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b (SE)</td>
<td>β</td>
<td>b (SE)</td>
<td>β</td>
<td>b (SE)</td>
<td>β</td>
</tr>
<tr>
<td>Group</td>
<td>-.68 (1.71)</td>
<td>.03</td>
<td>-.68 (1.71)</td>
<td>.03</td>
<td>-.68 (1.71)</td>
<td>.03</td>
</tr>
<tr>
<td>Awe</td>
<td>.70 (0.86)</td>
<td>.06</td>
<td>.65 (0.86)</td>
<td>.06</td>
<td>.63 (0.87)</td>
<td>.06</td>
</tr>
<tr>
<td>Group x Awe</td>
<td>-1.56 (1.71)</td>
<td>.07</td>
<td>-1.54 (1.72)</td>
<td>.07</td>
<td>-1.60 (1.71)</td>
<td>.07</td>
</tr>
<tr>
<td>Social Desirability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

R^2 = .005  \quad \Delta R^2 = .010

Note. *p < .05, **p < .01. Group has been contrast-coded (control = -.5; mortality salience = .5), so that main effect regression coefficients are averaged over group. All continuous predictors were mean-centered.

A third hierarchical regression was run to explore any differential effects of the three authenticity subscales in moderating the effects of MS (see Table 4). The model was comparable to that in Table 2, with the sole change being the substitution of the total trait authenticity predictor with the three authenticity subscales and their interaction terms. There was no significant main effect of condition in any step of the model, although there was a significant interaction effect for the authentic living subscale before accounting for social desirability, which uniquely accounted for 2.3% of the variance in intergroup bias scores. This effect was in the expected direction (where greater authentic living was associated with lower intergroup bias after MS), however was no longer significant when controlling for social desirability, and thus, the nature of this interaction was not explored further.
Table 4.

Hierarchical Linear Regression of the Interactive Effect of Mortality Salience and Trait Authenticity Subscales on Worldview Defense

<table>
<thead>
<tr>
<th></th>
<th>Step 1</th>
<th></th>
<th>Step 2</th>
<th></th>
<th>Step 3</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b (SE)</td>
<td>β</td>
<td>b (SE)</td>
<td>β</td>
<td>b (SE)</td>
<td>β</td>
</tr>
<tr>
<td>Group</td>
<td>-1.32 (1.71)</td>
<td>-.06</td>
<td>-1.29 (1.69)</td>
<td>-.06</td>
<td>-1.31 (1.69)</td>
<td>-.06</td>
</tr>
<tr>
<td>Auth-AL</td>
<td>-1.40 (0.99)</td>
<td>-.12</td>
<td>-1.00 (1.00)</td>
<td>-.08</td>
<td>-1.33 (1.07)</td>
<td>-.11</td>
</tr>
<tr>
<td>Auth-AEI</td>
<td>1.10 (0.75)</td>
<td>.13</td>
<td>1.16 (0.76)</td>
<td>.13</td>
<td>1.21 (0.76)</td>
<td>.14</td>
</tr>
<tr>
<td>Auth-SA</td>
<td>-1.41 (0.67)*</td>
<td>-.18*</td>
<td>-1.42 (0.67)*</td>
<td>-.18*</td>
<td>-1.32 (0.68)</td>
<td>-.17</td>
</tr>
<tr>
<td>Group x AL</td>
<td>-4.02 (2.00)*</td>
<td>-.17*</td>
<td>-3.91 (2.00)</td>
<td>-.16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group x AEI</td>
<td>-2.24 (1.52)</td>
<td>-.13</td>
<td>-2.32 (1.52)</td>
<td>-.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group x SA</td>
<td>0.65 (1.33)</td>
<td>.04</td>
<td>0.80 (1.34)</td>
<td>.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>0.38 (0.42)</td>
<td>.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desirability</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

R² = .040
R² = .071
R² = .076
ΔR² = .031
ΔR² = .005

Note. *p < .05, **p < .01. Auth-AL = Authentic Living subscale; Auth-AEI = Accepting External Influences subscale; Auth-SA = Self-Alienation subscale. Group has been contrast-coded (control = -.5; mortality salience = .5), so that main effect regression coefficients are averaged over group. All continuous predictors were mean-centered.

Discussion

Nomological Network

In order to strengthen the argument that authenticity and awe-proneness are likely to decrease defensiveness in the context of mortality salience, the present study firstly set out to establish a set of correlations between these constructs and a selection of measures which have previously been found to moderate terror management defenses. Regarding authenticity, clear support was gained for expected negative relationships with meaning rigidity (lower PNS and higher mindfulness), value fragility (lower neuroticism) and relational insecurity (lower attachment anxiety). This strengthens the conceptualization of authenticity as a flexible, emotionally stable and non-defensive personality trait.

Dispositional awe-proneness, however, demonstrated mixed relations with meaning rigidity, given that it correlated with mindfulness but not PNS. Thus, while there was some evidence that awe-proneness behaved as expected, its relationship to lower defensiveness
may be somewhat more tenuous than for trait authenticity (particularly since authenticity also correlated with value fragility and relational insecurity, whereas awe-proneness only correlated with value fragility).

**Authenticity and Defensive Responses to Mortality Salience**

When considering trait authenticity as a whole, no evidence of the hypothesized interaction with MS condition was obtained. When considering the authenticity subscales, there was a significant effect of authentic living in the expected direction, although only prior to controlling for social desirability. Given that the significance of this interaction effect fell just on either side of the conventional alpha cut-off point in steps two \( p = .046 \) and three \( p = .052 \) of the regression model, it is possible that the experiment was under-powered to detect an effect of this size\(^1\). In turn, it is possible that a more highly powered experiment may have detected a significant moderation effect for authentic living even after controlling for social desirability.

Notwithstanding this possibility, there is no clear theoretical reason to suggest why only the authentic living component should reduce defensiveness and not the other two components. Living authentically theoretically involves flexibility in reassessing values and accommodating new information into one’s worldview, which was argued to relate to lower defensiveness after MS. However, accepting external influence regards conforming to the opinions and expectations of other people, which indicates a reliance on concrete external contingencies to guide one’s values rather than what’s personally meaningful. As Kosloff et

\(^1\) A post-hoc power analysis was conducted on the squared partial correlation of the authentic living interaction term in the third step at \( \alpha = .05 \), which estimated an achieved power \((1 - \beta)\) of .51. However, caution should be taken when interpreting post-hoc power analyses, given that they can be shown to represent a direct conversion of the \( p \)-value regardless of effect size or sample size (Lakens, 2014).
al. (2014) explain, this constitutes a form of meaning rigidity and is therefore theoretically implicated in defensive responding. Additionally, self-alienation involves meaning rigidity to the degree that it refers to a lack of mindful self-awareness, which is necessary for adopting a non-defensive and unbiased stance toward one’s inner experience. Wood et al. (2008) also suggest that self-alienation leads to psychopathology—another factor implicated in terror management defenses (Kosloff et al., 2014).

Furthermore, compared to authentic living, accepting external influence and self-alienation tended to exhibit stronger correlations with other variables previously associated with terror management defenses. In fact, accepting external influence was the only subscale associated with PNS and self-alienation was the only subscale associated with attachment avoidance. Self-alienation also had a particularly strong positive correlation with neuroticism, suggesting it can be conceived of as a reasonably good indication of value fragility.

Collectively, these correlational findings would lead one to expect these subscales to relate to lower defensiveness after MS, which was not the case. Ultimately, there was insufficient evidence of the hypothesized moderation of defensiveness by trait authenticity.

**Awe-Proneness and Defensive Responses to Mortality Salience**

There was no evidence that awe-proneness moderated defensive responses to MS. Despite above arguments that individuals who experience awe more frequently are more likely to be open and accustomed to accommodating worldview-threatening stimuli, it may be that this tendency does not generalize to the threat of mortality. An alternate explanation for these results is that the DPES measure of awe-proneness may be problematic. Firstly, there are potential issues regarding the specificity of the item content. While three of six items refer specifically to awe, worldview-challenging experiences and the related emotion of wonder, the remaining three questions refer to a tendency to appreciate beauty and look for
patterns in the world (Shiota et al., 2006). These broader tendencies may relate to increased attention to potentially awe-inspiring stimuli, though do not necessarily imply the experience of awe itself. Secondly, the emotion of awe is complex with variation in peripheral features which can alter its valence or tone (e.g. whether the eliciting stimulus is perceived as threatening or beautiful; Keltner & Haidt, 2003), potentially making it a difficult construct for participants to self-report on without a clear theoretical definition or explanation. Asking an individual about how often they feel awe assumes that they effectively understand what awe is and can accurately recognize it in their own experiences. This may be a difficult task for many people, though perhaps especially for undergraduate students with limited life experience, and who are embedded within a youth culture with a penchant for exaggerating the profundity of everyday events, partly through the popularized use of terms such as ‘awesome’ and ‘epic’.

In combination with the mixed relationships with meaning rigidity, the above limitations of the DPES Awe scale offer a potential explanation for the null results. It should be acknowledged, however, that this scale has demonstrated sound convergent evidence of validity in the past (Shiota et al., 2006; Shiota et al., 2007). This includes a correlation of -.39 with need for closure—a construct very similar to PNS, indicating an unwillingness to revise one’s schemas and a preference for unambiguous stimuli which conform to expectations (Shiota et al., 2007). These accommodative tendencies are what theoretically tie the experience of awe to authenticity and decreased defensiveness. Therefore, future research may benefit from the use of scales which more directly capture variation in these tendencies, such as the Curiosity and Exploration Inventory-II (Kashdan et al., 2009) which assesses the proclivity toward uncertain or uncomfortable experiences which challenge and stretch one’s worldview. To this end, subsequent chapters made use of this scale of curiosity, although in the context of growth-oriented rather than defensive responses to death awareness.
Caveats and Limitations

Another explanation for the largely non-significant findings is that the present study was unable to replicate terror management defenses in general. Firstly, there was no main effect of MS on defensiveness; however, it should be acknowledged that this is not uncommon for studies assessing moderators of defensiveness (Juhl & Routledge, 2010; Niemiec et al., 2010; Routledge et al., 2010). Such studies typically control for the moderator variables when testing main effects (which may influence their significance), and measure the moderator variables prior to the manipulation (which can sometimes eliminate main effects by giving participants an opportunity to affirm existential buffers; e.g. Jonas & Fischer, 2006). Secondly, exploratory post-hoc tests of previously reported interactions with PNS, mindfulness, neuroticism and attachment style were non-significant. This seems unlikely to be due to the MS manipulation or delay task employed, as both are very widely used in the TMT literature; however, the current dependent measure was not identical to those used in prior studies. Nonetheless, one study has found a moderating effect of PNS using a similar anti-university essay (Study 1, Juhl & Routledge, 2010), and others have found moderating effects of PNS and mindfulness using different anti-worldview essays (e.g. Niemiec et al., 2010; Routledge et al., 2010).

The lack of replication may in part be attributable to the adaptation of the dependent measure to a previously untested context. An evaluation of pro- versus anti-worldview essay authors was chosen given that this is the most common dependent measure in the TMT literature and demonstrates significantly larger effects than several other common dependent measures (Burke et al., 2010). In selecting the subject of the essays, an in-group which

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2 See Appendix A for all supplementary statistical tests
invariably applied to all participants was the university they would be recruited from, although this required some adjustments to be made to a prior measure. While the adjustments were considered relatively minor, no pre-testing of this measure was conducted. Given both the relative novelty of the measure and the lack of pre-testing, it is not entirely clear how strongly University of Sydney students generally identify with their university, although the mean intergroup bias score was close to one standard deviation above the mid-point of the scale, suggesting an overall positive attitude toward the university. Moreover, this measure involves a degree of deceit in that participants are told these essays were written by genuine students from a rival university. This study did not include any probing of suspicion amongst the participants, so the effectiveness of the deception cannot be determined and may have had a detrimental impact on the tested MS effects.

The cultural context of the current study may have also contributed to the largely null results. Meta-analytic findings indicate that MS effect sizes are significantly smaller for studies conducted outside of the United States, where the majority of TMT research has been conducted (Burke et al., 2010). While MS effects have previously been reported in Australian samples (e.g. demonstrating increased individualism; Kashima, Halloran, Yuki, & Kashima, 2004), Kashima, Beatson, Kaufmann, Branchflower, and Marques (2014) also found evidence of increased cultural cringe in two Australian samples, whereby MS decreased positive evaluations of pro-Australia essay writers and did not affect evaluations of anti-Australia essay writers. The authors argued that Australians rely on a script of humbleness and self-deprecation in response to praise of their country and its people. While the essays employed in the current study referred to the students’ university rather than home country, it is unclear whether the influence of such a cultural script may have generalized to other in-group evaluations. This may have dampened effects in the current study given that the ethnic
diversity of the sample may represent a mix of individuals subscribing and not subscribing to a cultural cringe.

Finally, the trait authenticity measure employed may not have been optimal. Despite previous findings of a non-significant association between the Authenticity Scale and social desirability (Wood et al., 2008), the significant positive correlation in the present study may imply that this scale is prone to self-presentation biases, in which case the validity of scores would be brought into question. Seemingly authentic people may simply be responding to the scale items (either consciously or unconsciously) according to what is most flattering to their self-image, although this is not the only possible or likely interpretation. This correlation may also signify that more authentic people actually tend to behave in more desirable ways, or that social desirability scores may be capturing variability in other substantive personality traits which relate to authenticity (MacCann, Ziegler, & Roberts, 2011). The meaning of this association is therefore ambiguous; however, there are also potential limitations regarding the content of the Authenticity Scale.

The Authenticity Scale (Wood et al., 2008) was chosen as a validated and widely used instrument which is less than a quarter of the length of the alternative Kernis-Goldman Authenticity Inventory (KGAI; Kernis & Goldman, 2006)\(^3\). While the Authenticity Scale has firm roots in humanistic, person-centered psychological theory (Wood et al., 2008), the content of its three subscales is arguably not as comprehensive as the content captured by the four subscales of the KGAI. Both the Authentic Living and Accepting External Influence subscales of the Authenticity Scale refer to behaving in accordance with personal values rather than behaving out of coercion or for external reasons, both reflecting the Behavior subscale of the KGAI. The Self-Alienation subscale of the Authenticity Scale refers to a lack

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\(^3\) Study 1 was conducted prior to the publication of a shortened form of the KGAI (M. J. Bond et al., 2018).
of self-awareness and therefore equates to the Awareness subscale of the KGAI. However, the Authenticity Scale does not capture variation in the Relational Orientation (sincerity and openness in one’s personal relationships) or Unbiased Processing (acknowledging both positive and negative aspects of oneself or experience without distortion or defensiveness) subscales of the KGAI. Given the particular relevance of unbiased processing in defensive behavior, it is possible that implementing the KGAI in the current study may have revealed more of a role for authenticity within terror management defenses, or at least allowed for an examination of more varied components of authenticity.

**Future Directions**

In order to draw more firm conclusions about the hypothesized functions of authenticity and awe-proneness to decrease terror management defenses, future research could consider the following directions. Firstly, future studies could investigate these questions using different measures of worldview defense, including those that have been previously implemented within Australian samples (Kashima et al., 2014; Kashima et al., 2004). Secondly, future research could consider investigating these questions in different populations. Notably, the results of the present study may have been influenced by the age and nationality of the participants, and future research could investigate this question in older adults and across varied cultural backgrounds. Thirdly, due to the aforementioned concerns, future research could investigate these questions using alternate measures of authenticity and the accommodative tendencies presumed to underlie awe-proneness. For instance, the KGAI may have certain advantages over the Authenticity Scale. Additionally, subsequent chapters utilize a measure of autonomous motivation for specific personal projects as an index of more authentic functioning. Such measures have the benefit of being more applied to an individual’s expression of authenticity in their specific, daily goal pursuits, rather than their perceptions of how authentically they behave in general. Fourthly, to evade some of the
issues with assessing dispositional authenticity or awe using self-reports, future research may instead consider implementing manipulations designed to prime or induce the experience of authenticity or awe (akin to G. N. Rivera et al., 2019; Weinstein & Hodgins, 2009). This may provide a more impactful approach to investigating the influence of these constructs in the moderation of terror management responses. Fifthly, future research should consider investigating these questions with a larger sample size. The present study calculated sample size based on similar studies in the literature. However, developments in the field suggest that this method of power analysis is insufficient, as it is likely to underestimate the required sample size and reduce power (Lakens & Evers, 2014).

Study 1 partly aimed to investigate whether authenticity buffers terror management defenses in order to establish the initial groundwork for the argument that it may account for the effects of various other defensiveness buffers reported in the literature. Without sufficient support for an authenticity buffer, further research into whether authenticity accounts for the buffering effects of other personality variables is impeded. While several avenues for further research to establish the necessary groundwork to pursue this line of inquiry have been outlined above, the aims of this thesis were broader than solely investigating the role of authenticity within defensive responses to subtle forms of death awareness.

Based upon Cozzolino’s (2006) dual-existential systems model outlined in Chapter 1, there appear to be grounds for investigating the role of authenticity in responding to deeper forms of death awareness than the form of MS investigated in Study 1. When death is primed in a personal and specific manner (rather than the subtle, abstract manner of inducing MS within TMT), it is proposed to activate specific information processing systems which lead individuals to base their behavior on personal values (rather than group categorizations). As fleshed out in proceeding chapters, this implicates authenticity as both a potential moderator and a growth outcome of deeper forms of death awareness. Therefore, while there is still a
place for future research to investigate the influence of authenticity within defensive responses to death awareness, there appears to be a somewhat more direct association between authenticity and the processes involved within the growth-oriented pathway, which warrants investigation.

**Conclusion**

In examining the role of authenticity within responses to death awareness, it is possible to consider two distinct pathways that have emerged within the literature—defensive or growth-oriented responses to existential threat. The present chapter firstly examined whether trait authenticity mitigates defensive responses to death awareness, although Study 1 found minimal evidence to support the moderation of worldview defense by trait authenticity. Several potential limitations of the study were discussed which may have impacted the ability to effectively test this hypothesis, or to replicate terror management defenses in general (an issue which is further explored within the general discussion of Chapter 5). The moderating role of authenticity in responding to death awareness is further investigated in Chapter 3; however, the focus shifts toward examining this role within growth-oriented responses to death awareness—and importantly, also examines authentic functioning as a growth-oriented outcome of contemplating death.
CHAPTER 3: For Whom is Death Awareness Constructive?

Individual Differences Moderate Whether Death Reflection Leads to More Authentic Functioning

This Chapter is currently under review in *Personality and Individual Differences*.

Reference:

Abstract

Deeply personal reflections on mortality can challenge an individual’s core schematic beliefs and value-system, creating opportunities to reassess one’s life goals and develop more authentic ways of living. The present studies tested the effects of death reflection on autonomous (and thus, more authentic) motivation and the role of relevant individual differences in moderating this effect. Study 2 found that for individuals lower in trait autonomy, reflecting on death increased state autonomous motivation. Study 3 compared an abstract, subtle mortality salience induction with the specific, deep death reflection induction used in Study 2. Both death awareness conditions were associated with higher autonomous motivation for individuals high in psychological flexibility. However, higher trait curiosity was associated with enhanced autonomous motivation only after deeper death reflection. These findings have implications for the dual existential systems model (Cozzolino, 2006), and help to clarify the personal characteristics that facilitate constructive, growth-oriented processing of death awareness.

Keywords: Authenticity; autonomous motivation; death reflection; mortality salience; psychological flexibility; curiosity; growth.

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4 The study numbers have been altered from the submitted manuscript in order to represent the chronological order of studies within the thesis.
Many existential philosophers (e.g. Heidegger, 1927/2004; Kierkegaard, 1844/2000; Sartre, 1943/1958) wrote of the transformative potential of a particular form of anxiety inherent to the human experience—that which arises from the destabilizing awareness of the inherent uncertainty and groundlessness of existence, perhaps most clearly exemplified by death anxiety. This line of thinking was brought into clinical psychology largely through Rollo May (1950) and Irvin Yalom (1980), who argued that death awareness has the ability to break down core assumptions that people hold about their life and world, including the arbitrary cultural conventions and standards of value which are socialized at an early age. While this has the potential to foster fear and debilitation, the above existentialists argue that it also has the capacity to liberate an individual from an unexamined, unindividuated life, providing an opportunity to redefine or create one's own value-system which is more personally valid—and thereby live more authentically. The purpose of the present project was to investigate the effects of death reflection on autonomous (i.e. authentic) motivation, and the moderating role played by individual differences, specifically prior autonomous motivation (Study 2 and 3), psychological flexibility and curiosity (Study 3).

**Authenticity and Autonomous Motivation**

Authenticity involves an unbiased, mindful self-awareness, whereby one is attuned to their beliefs and personal values, open to evaluating them, and strives to behave in accordance with them (Kernis & Goldman, 2006; R. M. Ryan & Deci, 2004). Stemming from this, authenticity additionally comprises the striving for honesty and sincerity in one’s relationships; and is closely associated with *eudaimonic well-being*—the pursuit of personal
growth and genuine self-expression, which generates a sense of meaning or purpose in life (R. M. Ryan & Deci, 2001).

To live authentically, one must necessarily be *autonomously motivated*, pursuing goals that are self-determined or well-integrated within their personal value system, rather than goals that are imposed upon them or that they do not fully endorse (R. M. Ryan & Deci, 2004). Self-determination theory (SDT) outlines a continuum of motivational types (R. M. Ryan & Deci, 2002), with *intrinsic motivation* comprising the most autonomous or authentic, driven by interest, enjoyment and/or the inherent value in the activity itself (characteristically including the pursuit of personal growth, intimacy or community engagement). *Extrinsic motivation* is driven by the outcomes an activity produces rather than the activity itself. While extrinsic motivation has historically been conceptualized in direct opposition to intrinsic motivation and therefore considered non-autonomous (e.g. DeCharms, 1968), SDT alternatively conceptualizes four types of extrinsic motivation, which range from non-autonomous to autonomous depending on their level of internalization.

*Externally regulated* actions are the least autonomous, motivated by obtaining rewards, avoiding punishments, or are otherwise heavily controlled by forces external to the individual (e.g. societal demands). *Introjected* motivations are partially internalized but not yet integrated within the self, as when behaviors are regulated by the avoidance of shame or guilt. Extrinsic motivations become autonomous when regulation is *identified* (consciously endorsing an instrumental behavior as personally valuable or important) or *integrated* (well-aligned within one’s greater value system or sense of self). According to this framework, authentic goal-striving cannot be appropriately captured by simply contrasting intrinsic and extrinsic motivations, but must consider the variation in types of extrinsic motivations.
Positive Outcomes of Confronting Mortality

Support for the notion that death awareness may cultivate more authentic functioning can be found in research on posttraumatic growth (PTG; Tedeschi & Calhoun, 2004) and near death experiences (NDEs; Martin & Kleiber, 2005). Akin to the theorized function of death anxiety proposed by existential psychologists (May, 1950; Yalom, 1980), both traumatic events (very frequently involving confrontations with mortality, e.g. bereavement or terminal illness) and close brushes with death have been theorized to challenge or shatter an individual’s assumptive worldview (Martin & Kleiber, 2005; Tedeschi & Calhoun, 2004). This allows for a re-assessment of one’s values and beliefs, which can lead to personal growth. In fact, the deeper an individual’s NDE and the more they believe or accept that they are dying, the greater the reported growth outcomes (Martin & Kleiber, 2005).

Several thematic similarities exist in the reported growth experienced by trauma and NDE survivors (see Groth-Marnat & Schumaker, 1989; Kinnier et al., 2001; Martin & Kleiber, 2005; Tedeschi & Calhoun, 2004), and many of these tend to reflect more authentic functioning (Joseph & Linley, 2005; Martin et al., 2004). One of the most commonly reported outcomes in the above literature relates to goal re-prioritization, whereby one becomes clearer on what is important in their life, adopts more personally meaningful goals and gains a greater sense of personal fulfillment. Individuals tend to report a clearer sense of self, greater self-reliance, personal strength, and greater intimacy and investment in personal relationships. There is commonly also a reduction in extrinsic motivations (e.g. toward materialism and greed), a greater present-focus, and increased integration and resolution of existential or spiritual matters within one’s life. While these outcomes do not necessarily include any increase in subjective happiness or positive affect and may co-occur with distress, what seems to be consistently enhanced is the clarity of one’s value-system and sense of purpose or deeper enrichment of one’s life. Collectively, these outcomes reflect key aspects
of authenticity described above, thus providing justification for the argument that death awareness has the potential not only to induce personal growth, but specifically to enhance authentic functioning.

This process of constructively adjusting to traumatic events can be accounted for by theories of meaning making (C. L. Park, 2010)—meaning defined as both comprehensibility and significance or purpose (Janoff-Bulman & Frantz, 1997). According to C. L. Park (2010), efforts to make sense of a threatening event and re-establish a sense of purpose are motivated by the extent to which the event is considered at odds with one’s established, global meaning frameworks or schemas. This involves reducing the discrepancy between one’s global meaning and the appraised meaning of the event, predominantly through assimilation (changing the appraised meaning of the event so that it fits within one’s current meaning frameworks) or accommodation (changing one’s global meaning frameworks in order to integrate the meaning of the event). While these processes are not mutually exclusive, it is the latter that is necessary to augment authenticity, as only through accommodation can an individual adjust their self-concept, values or life goals. Individuals that are more prone to accommodating threatening information may therefore be more inclined toward growth when contemplating death.

**TMT and the Dual-Existential Systems Model**

Although confrontations with death can activate growth motivations, a large body of research suggests that reminders of death can often lead to defensive responding. Terror Management Theory (TMT; Solomon et al., 2004) proposes that an individual's cultural worldview buffers existential anxiety, by granting a sense of symbolic immortality (being part of a larger entity which will outlive the individual). Thus, mortality salience (MS; reminders of or threats to one's mortality) increases the need for the security provided by the cultural
worldview, which alleviates the effects of the threat while avoiding processing the threat itself. Extensive evidence has now demonstrated that individuals will often defensively inflate their adherence to cultural worldviews after reminders of death (for a review, see Burke et al., 2010), though particularly when thoughts of death are subliminally primed or removed from conscious awareness by a delay task (Greenberg et al., 1994). These responses tend to be characterized by simplified cognitive processes, which rigidly affirm pre-existing mental structures (e.g. stricter moral judgments, increased prejudice and stereotyping; Solomon et al., 2004), as opposed to the open, accommodating processes involved in growth responses and necessary for authentic functioning. In direct opposition to value shifts reported by trauma and NDE survivors, it has also been found that subtle MS can lead to increased culturally-derived extrinsic motivations (e.g. for materialism; Kasser & Sheldon, 2000).

In order to explain the apparent paradox of both growth-oriented and defensive responses to death observed in the literature, Cozzolino (2006) proposed a dual-existential systems model that delineates two modes of death awareness that activate distinct cognitive processes. Cozzolino (2006) suggests the generic, subtle way in which death is typically primed in TMT (typically through two open-ended questions about the participants' thoughts and emotions regarding their mortality, followed by a delay) leads to abstract information processing. This is argued to guide behavior based on similarly abstract aspects of the self, like group categorizations and cultural worldviews. Cozzolino (2006) contrasts this abstract existential system with what he terms the specific existential system, which is activated by deep, personalized reflection on mortality, such as what occurs in the wake of NDEs. This specific existential system is suggested to activate specific information processing, which guides behavior based on similarly specific, individuating aspects of the self, like personal needs and values.
Empirical support for this model comes from research inducing deeper, more specific awareness of death than the typical, subtle MS prime used within TMT. For this purpose, Cozzolino et al. (2004) created a *death reflection* induction modeled off common features of NDEs and traumatic events, whereby participants imagine themselves experiencing a detailed death scenario, in addition to exploring the implications of their death for their family and how they are living their life. It was found that individuals with a greater *extrinsic value orientation* (a tendency to value money, fame and physical attractiveness) showed increased extrinsic (greed) behavior after the subtle MS induction; however, their extrinsic behavior was significantly lower in the death reflection condition. The level of extrinsic behavior in those with a more *intrinsic value orientation* (a tendency to value self-acceptance, affiliation and community) did not differ across the type of MS induction. These findings demonstrate that both the depth of death awareness and an individual’s prior value system can predict more seemingly authentic responses (given greed is typically regulated by external rewards).

However, while the above findings are suggestive of an effect of death reflection on authentic functioning, the degree of autonomous internalization of this extrinsic behavior (i.e. identified or integrated motivation) was not assessed. In order to directly demonstrate that death awareness can indeed facilitate more authentic functioning, research must go beyond comparing intrinsic and extrinsic goals and consider the full continuum of autonomous motivation. Doing so has the capacity to build on past research and contribute to a richer understanding of the effects of death awareness on human motivation and the nature of mortality-induced growth.

To this end, Seto et al. (2016) explicitly assessed levels of authenticity as an outcome of death awareness. In their studies, participants recalled an experience that reminded them of their mortality and reported on the vividness of this memory. Vividness was associated with higher levels of trait authenticity, greater importance of current personal goals, and increased...
intrinsic aspirations. However, the correlational nature of these findings limits the inferences that can be made. While it is plausible that vivid memories of death may have caused increased authenticity, as the authors themselves note, it is also possible that greater authenticity may cause people to process encounters with death at a deeper level. For this reason, we conducted two experiments to provide a more rigorous test of the hypothesis that death reflection leads to more authentic functioning, in addition to examining the moderating role of certain personality characteristics.

**Study 2**

Study 2 was conducted as an initial experimental test of the hypothesis that death reflection can increase authentic functioning, as expressed through autonomous motivation for life goals. While we were interested in the possibility of a main effect of death reflection, testing the interactive role of trait autonomy was considered paramount, given Cozzolino et al. (2004) did not report main effects for death reflection condition, and found the related concept of value orientation to significantly moderate the effects of death reflection. Only extrinsically-oriented individuals exhibited less extrinsic behavior (i.e. growth), whereas intrinsically-oriented individuals remained low on these behaviors in both the control and death reflection conditions. This implies a similar effect may occur for trait autonomy, whereby individuals shift from less to more autonomous ways of being, unless they already possess highly autonomous motivations (in which case there is less need to re-assess their goal pursuits to increase autonomy, akin to a ceiling effect). At the same time, SDT proposes that the felt capacity to satisfy basic psychological needs (including autonomy) is fundamental for optimal personal development (R. M. Ryan & Deci, 2002). People are most likely to internalize extrinsic motivations and become more autonomously motivated when their autonomy is supported and they “experience a sense of choice, volition, and freedom
from external demands” (R. M. Ryan & Deci, 2002, p. 20). Thus, it is also plausible that individuals who generally feel more autonomous (high in trait autonomy) may experience more growth toward autonomy after reflecting on death. Study 2 aimed to clarify the nature of these relationships.

Method

Participants

Although it was unclear what effect size to anticipate in the present study, an a priori power analysis using G*Power software (Faul, Erdfelder, Lang, & Buchner, 2007) was conducted based on the size of a similar interaction effect in the literature ($\Delta R^2 = .07$; Cozzolino et al., 2004), estimating a required sample size of 107 to achieve 80% power at $\alpha = .05$. Since Cozzolino et al.’s (2004) effect size referred to the combined addition of 2 (dummy-coded) interaction terms in a single regression step, however, this estimate may inflate what we would expect for a single interaction term in the current study, so a larger sample size was recruited as a precaution. A total of 194 undergraduate students at an Australian university participated in exchange for partial course credit. Eleven participants
were excluded from data analyses for not following instructions\(^5\), leaving a total of 183 participants (74.9% female). Participants’ age ranged from 18 to 53 years ($M = 19.02, SD = 2.98$). The mode ethnicity of participants was Asian (47.5%), followed by Caucasian/European (42.6%), Middle-Eastern (7.7%), African (2.2%) and 4.9% classifying themselves as “other”.

**Materials**

**Death Reflection Task** (Cozzolino et al., 2004). This task first required participants to read and visualize themselves experiencing a scenario before answering four open-ended questions. Approximately half of the respondents ($n = 88$) were randomly allocated to an experimental condition and were asked to imagine themselves waking up in a friend's apartment and discovering that the building was on fire. The scenario depicts failed attempts to leave the room through the door or window, becoming weak and unable to breathe, and finally a realization that “you are literally moments away from dying” before “closing your

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\(^5\) Coding methods from thematic analysis outlined in Boyatzis (1998) and Braun and Clarke (2006) were used to categorize participants who were not appropriately or meaningfully engaging in the death reflection task. As there was an expectation for what the indicators of a lack of engagement would look like, the methods used resemble a top-down, deductive approach to thematic coding. Criteria that would signal the presence of the theme were centered around not following the task instructions, were set out a priori, and then revised after reading through the raw information. Participants were coded as not appropriately engaging in the manipulation if their open-ended responses focused heavily on remaining alive and escaping the room, without an acknowledgement that death was unavoidable; or significantly changing the scenario to one where they survived or were much more likely to survive. As an example of a response meeting these criteria, one participant wrote “I think I would smash the window with my fist, using the blanket as protection [...] I would also go and see if my friend needed help and if she was struggling more than me, I would carry her out.” On the other hand, participants were retained if their responses focused on wanting to remain alive, though still acknowledged that the scenario was inescapable, e.g. “I don’t think I would just give up and wait for the end, I feel as though I would keep trying and lose consciousness actively trying to get out of the room.” On this basis, seven participants were removed from analyses. A further 4 participants’ responses were submitted to a second coder due to ambiguity, and all 4 participants were subsequently removed from analyses (inter-rater agreement= 100%), for a total of 11 excluded participants.
eyes and waiting for the end”. The four open-ended questions that follow are not scored, but serve solely to deepen the participant's contemplation of how they would think, feel and act in this scenario, how it influences their perception of the life they have led up to this point and how their family would react if the scenario had occurred. All other participants ($n = 95$) were randomly allocated to a control condition used by Cozzolino et al. (2004; Study 1), where they visualized a scenario in which they wake up in the same apartment and spend the day sightseeing with a family member, before responding to four open-ended questions similar to the experimental condition.

**Personal Projects Questionnaire** (Sheldon & Kasser, 1998). As a dependent measure of autonomous motivation, participants first spent at least five minutes brainstorming a minimum of 10 personal projects or goals that they were currently intending to work toward. Given the intention to assess state-level motivations arising in response to the manipulation, the instructions for the original questionnaire were altered so that participants were asked to select the five projects they “feel most motivated to pursue at this point in time” and “in the immediate future”, rather than those projects that are most relevant to or characteristic of them. Four questions were then asked regarding each of the selected projects, which respectively assessed the degree of external, introjected, identified, and intrinsic motivations they possessed for each project. Scores for each type of motivation are summed across projects, and a weighted composite autonomous motivation score is calculated using the following formula from Sheldon and Kasser (1998): $(2 \times \text{intrinsic} + \text{identified}) - (2 \times \text{external} + \text{introjected})$. Higher scores reflect greater overall state autonomous motivation ($M = 31.67$, $SD = 40.08$, $\alpha = .79$).

**Global Motivation Scale** (GMS; Guay et al., 2003). Individual differences in general autonomous motivational style are considered to be relatively stable, “trait-like” (Guay et al., 2003, p. 992) features of personality, so for simplicity of expression they will be referred to
as trait autonomy. A modified version of the GMS was employed in order to capture trait autonomous motivation in a way that maximized comparability with the post-manipulation state-level motivational index above. Three-item subscales pertaining to external, introjected, identified, integrated, and intrinsic regulation were assessed. Participants used a 7-point scale (1 = not at all agree to 7 = completely agree) to indicate why they do things in general, e.g. “because I like making interesting discoveries” (intrinsic) or “because I want to be viewed more positively by certain people” (external). Items from each subscale were summed, and the identified and integrated subscales were averaged together\(^6\) so that a weighted overall index of trait autonomy could be calculated using the same method as in the Personal Projects Questionnaire (\(M = 3.69, SD = 9.06, \alpha = .87\)).

Procedure

The study was advertised as being concerned with “personal values, emotional experiences and motivation for life goals” in order to ensure that all participants were blind to the specific aims of the research. Participants entered computer labs on campus in groups of up to 10, and after providing informed consent, answered a brief demographic questionnaire and the GMS prior to the manipulation and dependent variable. Participants were asked to read the manipulation scenarios slowly, imagining they are actually experiencing the event, before answering the open-ended questions as though the event had actually occurred.

\(^6\) This was preferred over dropping the integrated items, due to their marked similarity in content to the identified items in the Personal Projects Questionnaire. This decision was further justified based on the functional and empirical similarity between integrated and identified motivations (e.g. R. M. Ryan & Deci, 2000a; Vallerand & Bissonnette, 1992), their strong correlation in the present study (\(r[181] = .54; p < .01\)), and the fact that these two constructs have not always emerged as empirically distinct in factor analyses (Vallerand et al., 1992).
Results

A moderate positive correlation was observed between the measures of state and trait autonomy in the total sample; \( r(181) = .31, p < .001 \).

The main effect of condition and the interaction with trait autonomous motivation were tested using hierarchical linear regression, with state autonomous motivation as the dependent variable (see Table 5). Trait autonomy and group (death reflection vs. control) were entered in the first step, followed by their interaction term in the second. The main effect of group did not reach significance, although there was a significant interaction between group and trait autonomy, uniquely accounting for 2% of the variance in state autonomy scores (\( sr = -.15 \)).

Table 5.

Hierarchical Linear Regression of the Effects of Death Reflection and Trait Autonomy on State Autonomy.

<table>
<thead>
<tr>
<th></th>
<th>Step 1</th>
<th></th>
<th>Step 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b (SE)</td>
<td>( \beta )</td>
<td>95% CI</td>
<td>b (SE)</td>
</tr>
<tr>
<td>TA</td>
<td>1.36 (0.31)**</td>
<td>.31**</td>
<td>[0.74, 1.98]</td>
<td>1.29 (0.31)**</td>
</tr>
<tr>
<td>Group</td>
<td>7.41 (5.65)</td>
<td>.09</td>
<td>[-3.74, 18.55]</td>
<td>7.42 (5.60)</td>
</tr>
<tr>
<td>Group x TA</td>
<td>-1.30 (0.62)*</td>
<td>-.15*</td>
<td>[-2.53, -0.08]</td>
<td></td>
</tr>
</tbody>
</table>

\[ R^2 = .10^{**} \quad \Delta R^2 = .02^{*} \]

Note. *p < .05, **p < .01. TA= mean-centered trait autonomy; CI= confidence interval. Group has been contrast-coded (control= -.5; death reflection= .5), so that the regression coefficient for the main effect of TA is averaged over group.

Tests of simple slopes were conducted to explore the nature of this interaction, examining the effect of group for those high and low on trait autonomous motivation (at ±1 SD from the mean; see Figure 1). For those low on trait autonomy, reflecting on death significantly increased state levels of autonomous motivation for current personal projects; \( \beta \)
= .24, \( t(179) = 2.42, p = .017, \text{CI}_{95\%} = [3.55, 34.89] \). However, for those high on trait autonomy, there was no significant difference in state autonomy after reflecting on death; \( \beta = -0.05, t(179) = -0.53, p = .594, \text{CI}_{95\%} = [-19.75, 11.33] \).

Figure 1. The interactive effect of death reflection and trait autonomy on state autonomy

Discussion

Study 2 tested whether deep, personal reflections on one’s death can increase autonomous motivation (as an index of more authentic functioning). Although a significant main effect of death reflection was not found, a significant interaction emerged between death reflection and trait autonomous motivation, in line with similar findings from Cozzolino et al. (2004). Individuals lower in trait autonomy increased their state autonomous motivation in the death reflection condition. This implies that the positive changes that people commonly experience after confronting their mortality may be considered not only in terms of extrinsic or intrinsic shifts in values or motivations, but more specifically, shifts toward
more authentic functioning. Measures of extrinsic versus intrinsic goal pursuits do not consider the extent to which an individual values extrinsic pursuits, and may therefore be acting authentically (i.e. through identified motivations). Given that authenticity is concerned with the enactment of one’s values, rather than solely pursuing intrinsically valued goals (R. M. Ryan & Deci, 2004), Study 2 builds on previous empirical research by drawing more direct links to the existential argument that death reflection can promote authentic functioning.

For less autonomous individuals reflecting on death, the activation of the specific existential system may reveal the disparity between their goals and their specific personal values, which, in turn, prompts a reorganization of priorities to better meet them. Individuals who were already living in line with their values, however, did not generally increase in autonomous motivation after contemplating death. The activation of the specific existential system may only call attention to those personal values these individuals are already pursuing, rather than necessitating a shift in their priorities.

**Study 3**

After confirming that a shift toward more authentic functioning can indeed occur in response to death reflection in the first study, Study 3 was conducted to both replicate these findings and extend them in three significant ways. Firstly, Study 3 aimed to further examine the conditions under which this authentic shift emerges, by testing whether any form of death awareness can increase autonomous motivation, or whether this growth response is specific to deeper, more personal reflections on mortality. To this end, a third condition was added that presented participants with the typical, more subtle mortality salience (MS) prime employed within TMT research. This enabled a test of Cozzolino’s (2006) dual existential systems model, namely whether the activation of the specific rather than the abstract existential system will result in greater personal growth. Secondly, the positively-valenced
control task was changed to an aversive (dental pain) condition commonly used within the TMT literature, in order to provide evidence that the effects of death reflection were not due to an increase in general negative affect.

Thirdly, a central focus of Study 3 was to further investigate potential personality moderators relevant to both the open, non-defensive processing of threatening information, and the expansion or adaptation of one’s worldview to accommodate novelty or uncertainty. Psychological flexibility, developed within the theoretical framework of Acceptance and Commitment Therapy (F. W. Bond et al., 2011), involves remaining non-defensively aware of one’s thoughts and feelings in the present moment, in order to facilitate the flexible adjustment or persistence in behavior to pursue valued outcomes. This construct, therefore, overlaps considerably with mindfulness—the open and accepting awareness of one’s experiences in the present moment (Hulbert-Williams, Storey, & Wilson, 2015). Mindful self-awareness is considered fundamental to authenticity (Kernis & Goldman, 2006; R. M. Ryan & Deci, 2004), as an unbiased understanding of one’s inner experience and deeply held values is necessary to acknowledge when behaviors are not autonomous, and, therefore, guide oneself toward more authentic outcomes. Psychological flexibility is particularly valuable in the current context, however, as it can be considered as the application of mindfulness to ensure that unwanted internal experiences do not interfere with attempts to pursue one’s values and goals. Thus, flexibility may assist in constructively processing thoughts of death, and was therefore hypothesized to relate to greater increases in autonomous motivation after reflecting on death.

A second construct considered likely to moderate the effects of death awareness on authentic functioning was trait curiosity, comprised of a willingness to embrace rather than avoid the “novel, uncertain and unpredictable nature of everyday life” (p. 988); in addition to a proclivity toward stretching and expanding one’s experience and understanding (Kashdan et
al., 2009). This constitutes an inclination to delve into uncomfortable situations, seeing them as an opportunity to challenge one’s way of thinking and grow as a person. Therefore, it may facilitate growth-oriented responses to death reflection, and, as with psychological flexibility, was hypothesized to be associated with greater increases in autonomous motivation following death reflection.

Method

Participants

Based on the effect size obtained in Study 2 ($\Delta R^2 = .02$), an a priori power analysis conducted with G*Power estimated a required sample size of 476 to achieve 80% power at $\alpha = .05$. A total of 466 undergraduate students at an Australian university participated in the study in exchange for partial course credit, although five participants with incomplete data on the dependent variable were removed, followed by a further 19 who did not follow instructions, resulting in a final sample of 442 participants (74.9% female; achieved power = .77). Participants’ age ranged from 18–42 years ($M = 19.70$, $SD = 3.39$). The mode ethnicity was Caucasian/European (52.7%), followed by Asian (38.9%), Middle Eastern (4.5%), Hispanic (0.9%), African (0.7%), Aboriginal (0.2%) and 5.7% classifying themselves as ‘Other’.

7 As in the prior study, participants’ open-ended responses for the manipulation task were coded using the same method described above in order to identify any individuals who were not appropriately engaging in the task as intended. Ten participants were coded as not appropriately engaging in the task, two of which were in the control condition and had substantially misinterpreted the control questions. A further 11 ambiguous cases were submitted to a second coder (nine of which were removed, inter-rater agreement= 73%). In the case of disagreement between coders, agreement was reached through discussion. A total of 19 participants were excluded from the main analyses. Responses to the MS induction were checked for inappropriate engagement, however given this task is intended to elicit subconscious thoughts of death, exposure to these questions and any serious response was considered sufficient.
Materials

The same death reflection task and measures of state and trait autonomy were used as in Study 2, although the control task was altered as described below.

Acceptance and Action Questionnaire- II (AAQ-II; F. W. Bond et al., 2011). This 10-item measure of psychological flexibility assesses an individual’s ability to be present with their thoughts and emotions so that they do not interfere with pursuing valued outcomes, as opposed to avoiding their inner experience and behaving reactively. Responses are made on a 7-point scale from 1 (never true) to 7 (always true), and items were summed so that higher scores reflect greater flexibility ($\alpha = .88$).

Curiosity and Exploration Inventory- II (CEI-II; Kashdan et al., 2009). The CEI-II is a 10-item assessment of trait curiosity, comprising the tendency to embrace novelty and uncertainty, and actively seeking to stretch or expand one’s capacities and experiences. Responses are made on a 1 (slightly or not at all) to 5 (extremely) scale, and were summed to form a total score ($\alpha = .87$).

Mortality Attitudes Personality Survey (Rosenblatt et al., 1989). As the most common MS induction used within the TMT literature, participants are presented with two open-ended questions concerning their thoughts, emotions and beliefs regarding their own death. In the control condition, the same two open-ended questions were presented to participants, replacing references to death with references to undergoing a painful dental procedure (Arndt & Greenberg, 1999).

Distraction Task—Excerpt from “The Growing Stone” (Greenberg et al., 1994). In line with TMT, a previously used distraction task was implemented following the above MS induction, given the intention to induce subtle, non-conscious thoughts of death. Participants in this condition read a 445-word excerpt from an affectively neutral short story,
followed by two un-scored questions regarding the perceived gender of the author and descriptive qualities of the excerpt.

**Procedure**

Participants completed the study in groups of up to 10. After providing informed consent, they answered a brief demographic questionnaire, followed by all scales of individual differences. Participants were then randomly allocated to one of the three manipulation conditions, deep death reflection (n = 139 after excluding poor responders), subtle MS (n = 153), or control (n = 150). Participants in the MS condition received the distraction task prior to completing the dependent measure.

**Results**

See Table 6 for descriptive statistics and bivariate correlations. For all internal consistency reliability estimates, Cronbach’s $\alpha \geq .76$. As in Study 2, there was a moderate correlation between trait autonomy and state autonomy. Both state and trait autonomy exhibited a similar pattern of correlations with the personality measures, having small-moderate positive relationships with psychological flexibility and curiosity. Flexibility was positively related to curiosity.

Table 6.

*Descriptive Statistics and Zero-Order Correlations for All Study 3 Measures.*

<table>
<thead>
<tr>
<th>Variables</th>
<th>M (SD)</th>
<th>Range</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. State autonomy</td>
<td>36.75 (37.85)</td>
<td>-85–120</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Trait autonomy</td>
<td>4.71 (10.75)</td>
<td>-27.5–39</td>
<td>.33**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Flexibility</td>
<td>43.19 (10.74)</td>
<td>12–69</td>
<td>.18**</td>
<td>.29**</td>
<td></td>
</tr>
<tr>
<td>4. Curiosity</td>
<td>32.52 (7.42)</td>
<td>12–50</td>
<td>.31**</td>
<td>.34**</td>
<td>.28**</td>
</tr>
</tbody>
</table>

Note. *p < .05, **p < .01.
As with Study 2, a hierarchical linear regression was run with state autonomous motivation as the dependent variable (see Table 7). Two contrast-coded group variables were first calculated using the method outlined by Cohen, Cohen, West, and Aiken (2003): the first variable compared both death conditions vs. control (control = -.67, mortality salience = .33, death reflection = .33) and the second variable compared death reflection vs. mortality salience (control = 0, mortality salience = -.5, death reflection = .5). Trait autonomous motivation and the two group variables were entered in the first step, followed by their interaction terms in the second (in order to firstly test the moderation effect found in Study 2, before adding further predictors to the model). Psychological flexibility and curiosity were added in a third step, followed by their interaction terms with both group variables in the fourth.

The main effects of both group variables were non-significant in all steps of the model, and unlike Study 2, there were no significant interactions between either group variable and trait autonomy. There was a significant main effect of curiosity, similar in size to the main effect of trait autonomy. Both psychological flexibility and curiosity were found to moderate the effect of condition on state autonomy. Flexibility significantly moderated the effect of being exposed to any death condition compared to the control task, uniquely accounting for 1.4% of the variance in state autonomy ($sr = .12$). To clarify the nature of this interaction, tests of simple slopes examined the effect of any death condition compared to the control for those high and low on psychological flexibility ($\pm 1$ SD from the mean; see Figure 2). For individuals high on flexibility, exposure to death significantly increased autonomous motivation; $\beta = .15$, $t(430) = 2.31$, $p = .022$, CI$_{95\%} = [1.71, 21.48]$. On the other hand for participants low on flexibility, exposure to death did not significantly influence autonomous motivation; $\beta = -.10$, $t(430) = -1.50$, $p = .135$, CI$_{95\%} = [-17.45, 2.35]$. Psychological flexibility
was not found to moderate the relative effects of the two death conditions. However, trait curiosity was found to moderate the relative effects of the two death conditions (see Figure 3), uniquely accounting for 0.8% of the variance in state autonomy ($sr = .09$). Tests of simple slopes revealed that death reflection (as opposed to mortality salience) lead to significant increases in autonomous motivation only for people high in curiosity; $\beta = .14, t(430) = 2.21, p = .027, CI_{95\%} = [1.46, 24.49]$; though not for people low in curiosity; $\beta = -.06, t(430) = -.89, p = .373, CI_{95\%} = [-17.27, 6.49]$. Curiosity did not moderate the effects of being exposed to any death condition compared to the control.
Table 7.

Hierarchical Linear Regression of the Effects of Death Reflection and Trait Autonomy on State Autonomy.

<table>
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<th>Step 1</th>
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<th>Step 3</th>
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<th>Step 4</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>b (SE)</td>
<td>β</td>
<td>95% CI</td>
<td>b (SE)</td>
<td>β</td>
<td>95% CI</td>
<td>b (SE)</td>
<td>β</td>
<td>95% CI</td>
<td>b (SE)</td>
<td>β</td>
<td>95% CI</td>
<td>b (SE)</td>
<td>β</td>
<td>95% CI</td>
</tr>
<tr>
<td>TA</td>
<td>1.16 (0.16)**</td>
<td>.33**</td>
<td>[0.85,1.48]</td>
<td>1.17 (0.16)**</td>
<td>.33**</td>
<td>[0.86,1.49]</td>
<td>0.87 (0.17)**</td>
<td>.25**</td>
<td>[0.53,1.20]</td>
<td>0.85 (0.17)**</td>
<td>.24**</td>
<td>[0.51,1.18]</td>
<td></td>
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</tr>
<tr>
<td>Group- DvC</td>
<td>2.94 (3.60)</td>
<td>.04</td>
<td>[-4.13,10.02]</td>
<td>2.93 (3.61)</td>
<td>.04</td>
<td>[-4.16,10.03]</td>
<td>2.12 (3.53)</td>
<td>.03</td>
<td>[-4.81,9.05]</td>
<td>2.02 (3.49)</td>
<td>.03</td>
<td>[-4.85,8.89]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group- DRvMS</td>
<td>5.02 (4.20)</td>
<td>.05</td>
<td>[-3.24,13.28]</td>
<td>5.12 (4.22)</td>
<td>.06</td>
<td>[-3.16,13.41]</td>
<td>4.17 (4.12)</td>
<td>.05</td>
<td>[-3.92,12.27]</td>
<td>3.79 (4.08)</td>
<td>.04</td>
<td>[-4.23,11.81]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TA x DvC</td>
<td>0.18 (0.33)</td>
<td>.03</td>
<td>[-0.46,0.82]</td>
<td>0.18 (0.32)</td>
<td>.03</td>
<td>[-0.45,0.81]</td>
<td>-0.06 (0.40)</td>
<td>-.01</td>
<td>[-0.85,0.73]</td>
<td>-0.25 (0.43)</td>
<td>-.03</td>
<td>[-1.10,0.61]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TA x DRvMS</td>
<td>-0.04 (0.41)</td>
<td>&gt;-.01</td>
<td>[-0.84,0.77]</td>
<td>-0.06 (0.40)</td>
<td>-.01</td>
<td>[-0.85,0.73]</td>
<td>0.16 (0.17)</td>
<td>.05</td>
<td>[-0.16,0.49]</td>
<td>0.22 (0.17)</td>
<td>.06</td>
<td>[-0.11,0.55]</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>AAQ</td>
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<td></td>
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<tr>
<td>CEI</td>
<td>1.10 (0.25)**</td>
<td>.22**</td>
<td>[0.62,1.58]</td>
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<tr>
<td>AAQ x DvC</td>
<td>0.90 (0.34)**</td>
<td>.13**</td>
<td>[0.23,1.56]</td>
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<tr>
<td>AAQ x DRvMS</td>
<td>-0.44 (0.43)</td>
<td>.05</td>
<td>[-1.29,0.40]</td>
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</tr>
<tr>
<td>CEI x DvC</td>
<td>0.11 (0.52)</td>
<td>.01</td>
<td>[-0.91,1.14]</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>CEI x DRvMS</td>
<td>1.24 (0.59)*</td>
<td>.10*</td>
<td>[0.09,2.39]</td>
<td></td>
<td></td>
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</tbody>
</table>

R² = .11**  R² = .11**  R² = .16**  R² = .18**
ΔR² = < .01  ΔR² = .05**  ΔR² = .03*

Note. *p < .05, **p < .01. TA= trait autonomy; DvC= any death condition vs. control; DRvMS= death reflection vs. mortality salience; AAQ= Acceptance and Action Questionnaire-II; CEI= Curiosity and Exploration Inventory-II; CI= confidence interval. All continuous predictors were mean centered.
Figure 2. The interactive effect of any death condition (versus control) and psychological flexibility on state autonomy.
Study 3 was conducted to clarify the effects of the depth of death awareness on authentic functioning, and the role of three theoretically relevant moderating variables. Partial support was found for the hypotheses in Study 3, as two of three moderators were found to increase the likelihood of becoming more autonomously motivated after contemplating death. Firstly, the results of Study 3 suggest that greater psychological flexibility may facilitate increased autonomous motivation following any degree of exposure to mortality (either subtle or deep), in comparison to the control. This is likely due to the mindful awareness that forms a substantial component of the psychological flexibility construct, which may cause individuals to process subtle mortality cues more consciously, and therefore similarly to deeper death reflection. Indeed, mindfulness has been found to increase writing time during a subtle MS manipulation and decrease subsequent suppression of death thoughts (Niemiec et
al., 2010), suggesting a greater openness to consciously processing mortality. Therefore, having a more open, mindful stance toward one’s thoughts and feelings about death, and being able to maintain flexibility in how these uncomfortable internal experiences guide one’s behavior, may facilitate deeper, growth-oriented processing of mortality in general.

The effect of trait curiosity, on the other hand, was specific to deeper, reflective reminders of death. Highly curious individuals are interested in exploring the unknown, enjoy challenging their understanding of the world and actively seek out these experiences as opportunities for personal development—qualities that would render a conscious exploration of the meaning of their mortality a valuable opportunity for growth. Such an opportunity was provided by the death reflection manipulation, which engaged participants in a deep exploration of the uncomfortable implications of their mortality, directly followed by the assessment of their personal goals. Without high levels of flexibility, the subtle MS manipulation did not seem to offer quite the same opportunity, given the more abstract nature of the open-ended question, and greater dissociation between death thoughts and the assessment of personal goals. Therefore, curiosity only appears to facilitate authentic self-development after exposure to deep, reflective thoughts of death, as these are the types of experiences likely to encourage curious self-exploration and self-expansion.

Study 3 did not replicate the interaction between trait levels of autonomous motivation and death awareness found in Study 2. The effect sizes for both of the trait autonomy interaction terms were substantially and consistently smaller than in Study 2 and did not reach significance in any step of the model. While the planned contrasts in Study 3 were not an exact replication of the statistical approach of Study 2, which only compared death reflection against a control, conducting a similar regression analysis using only these
two groups did not return a significant interaction effect. Exploratory t-tests were run to investigate whether the lack of replication may have been a product of incidentally higher trait autonomy in the Study 3 sample, although no significant differences were found in mean levels of trait autonomy between the Study 2 and 3 samples. Also, while the control task was altered in Study 3, this does not seem able to explain the null finding for two reasons. Firstly, when compared, there were no significant differences between the two control groups on state autonomy. Thus, the null effects in Study 3 are unlikely to be due to the aversive control condition activating higher levels of autonomous motivation, and creating a ceiling effect for all conditions. Secondly, even if the dental pain control was threatening enough to cause an authentic shift and thereby mask the effect of death awareness, a significant interaction was nonetheless found for flexibility (comparing the death conditions to the control).

**General Discussion**

The present studies were conducted to provide an experimental test of the hypothesis that death reflection can lead to more authentic functioning, with a focus on investigating the extent to which this effect is moderated by relevant individual differences. Overall, the two studies present some evidence for the existential assertion that death awareness can serve as a “wakeup call” (Martin et al., 2004, p. 437) to a more authentic way of being. Although neither study found a main effect of death condition on state autonomous motivation, both studies did provide evidence of growth-oriented outcomes of death reflection for certain individuals. Reflecting on death does not seem to instigate growth motivations in all people, just as the PTG and meaning-making literature acknowledges that not all individuals exhibit growth in the face of trauma or schema-threat (C. L. Park, 2010; Tedeschi & Calhoun, 2004).

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8 See Appendix B for all additional analyses.
Thus, the present studies emphasize the crucial importance of understanding the individual differences that determine whether death awareness is conducive to living more authentically.

Study 2 found that consciously and deeply reflecting on death lead people lower in trait autonomy to adjust their motivations to better align with their personal values. However, this finding was not replicated in Study 3, suggesting further research is needed to clarify the robustness of this effect. These mixed findings may be partly attributable to a combination of qualities that more authentic individuals theoretically possess. In line with the findings of Study 2, Joseph and Linley (2005) describe how more fully functioning (or authentic) individuals are expected to be less threatened by trauma-related information, as their worldview is theoretically more balanced, mature and, therefore, already more congruent with such information. For instance, an individual who has already experienced growth from a previous trauma and made authentic changes in their life, is expected to possess a worldview that incorporates the trauma and is therefore likely to be less discrepant with further trauma-related information. On the other hand, Joseph and Linley (2005) also describe how individuals who have developed generalized orientations toward acting authentically will be more resilient post-trauma, given they more readily accommodate their schematic beliefs and use their values to guide their behavior. Therefore, it seems that more authentically functioning individuals may generally have less need for accommodation and growth, while also being better at accommodating threatening information and more likely to exhibit growth when necessary. This combination of factors may have resulted in the mixed findings regarding the interactive effect of prior autonomous motivation. While it is possible that future research will continue to find mixed results based on these factors, within-person designs could offer more definitive tests of this question. By tracking changes on the same measure of autonomous motivation before and after implementing an extended death
reflection manipulation, it would be possible to determine whether individuals experiencing (versus not experiencing) growth were initially higher or lower on autonomous motivation.

Nonetheless, Study 3 found moderating effects for two personality variables. Curiosity moderated the effects of the specific death reflection condition in comparison to the more abstract MS prime. This provides empirical support for Cozzolino’s (2006) dual existential systems model, in that there were differential effects of death awareness for highly curious individuals, depending on the depth of the mortality cues. Growth outcomes are only anticipated when the contemplation of death is sufficiently profound as to instigate a reassessment of meaning structures, and curious people appear to more readily engage in this process when mortality cues are sufficiently deep. Psychological flexibility was found to moderate the collective effects of both the MS and death reflection conditions on autonomous motivation, such that highly flexible individuals became more autonomous in response to death awareness generally. As such, these findings present preliminary evidence that psychological flexibility may predispose the activation of the specific existential system in light of any reminder of death, whether that would be deep, personalized reflections on one’s mortality, or abstract, subtle reminders of death. Therefore, the ostensive specificity of the death prime may not be the only factor involved in the activation of the specific existential system. Rather, individual differences in flexibility may also guide which existential system is activated following reminders of death. Further investigation into the role of individual differences within the dual-existential systems model therefore seems warranted, in addition to the psychological mechanisms which may underpin these moderating factors.

*Organismic valuing theory* (see Joseph & Linley, 2005) provides a framework through which to better understand the underlying processes at play in these interactions. This perspective emphasizes the importance of accommodation processes, where, in order to experience growth, an individual does not simply move past a traumatic event and assimilate
it within their pre-existing worldview or sense of self, but is required to make adjustments to their worldview or sense of self in light of the event. In doing so, an individual must move beyond avoidance of the trauma and become actively engaged in a process of meaning-making, whereby they re-evaluate their schematic beliefs about how things are relationally connected in their world (C. L. Park, 2010), and what is of value or significance in their life (Janoff-Bulman & Frantz, 1997). The results of Study 3 suggest that mindful flexibility and an active curiosity may describe those individuals who are less inclined to avoid existential challenges and are more able to accommodate their meaning structures, better equipping them to constructively manage the threat of mortality. This suggestion is consistent with the mindfulness to meaning theory (Garland, Farb, Goldin, & Fredrickson, 2015), which suggests that mindfulness increases flexibility through the reappraisal of negative experiences as meaningful and potentially growth-promoting—leading to greater purpose and engagement in life.

**Limitations and Future Directions**

Firstly, we note that reported effect sizes tended to be small, likely due to the experimental nature of these studies. Participants were not actually faced with their own death in an immediate manner, and as such, the effects should be considerably smaller than in vivo confrontations with death. The experimental nature of the present studies enables causal inferences, although this comes at the cost of ecological validity. Secondly, the age and potential lack of life experience of the current sample may have also reduced the effects of death awareness. It is likely easier for younger people to make use of the proximal defenses described by TMT (Solomon et al., 2004), which involve avoiding the contemplation of mortality by reassuring oneself that death is a far-removed problem in a distant hypothetical future.
Based on these limitations, future research would benefit from studying explicit authentic shift responses to death awareness not only by using more varied samples, but by using quasi-experimental designs with samples that have undergone genuine confrontations with mortality. Very little research has directly assessed the construct of authenticity or autonomous motivation in such circumstances, and doing so could help determine the extent to which authentic functioning describes or accounts for many diverse growth outcomes. Furthermore, using motivational indices could help corroborate retrospective, self-report measures of posttraumatic growth, which have been criticized as potentially illusory in nature (e.g. Zoellner & Maercker, 2006). Of course, the present findings also suggest a path for future research to explore other individual differences which enhance authentic self-development in response to death awareness. These may include openness-related constructs like attitudes toward ambiguity (Lauriola, Foschi, Mosca, & Weller, 2016), or emotion regulation and approach-oriented coping strategies (given their role in facilitating goal pursuits and promoting both flexibility and coherence in personality processes; see Koole, 2009).

The findings of Study 3 also have practical implications regarding a pathway to improve the lives of people struggling with traumatic or otherwise existential crises. One main aim of Acceptance and Commitment Therapy (ACT) is to increase psychological flexibility, and previous research has found increased flexibility to significantly predict the efficacy of ACT in the treatment of distress associated with terminal illness (Hulbert-Williams et al., 2015). The present findings dovetail with this research and provide complementary experimental evidence for the importance of flexibility in dealing with existential concerns. Although we assessed flexibility at the trait level, our findings are consistent with the notion that training flexibility may be a key pathway for improving eudaimonic well-being in people suffering from existential distress. Similarly, future research
may also consider methods of fostering more curious orientations toward existential threat as a potential means of enhancing growth-oriented responding to death awareness.

Conclusions

Existential psychologists have argued that by contemplating non-being we come to truly understand the nature of being—that by contrasting our life against our eventual death we are able to fully appreciate life’s value, and our ultimate responsibility for how we live it (Martin et al., 2004; May, 1950). If life is valuable and will someday end, then it is only the individual living that life who can ensure they get the most possible value out of it. Individuals can meet this challenge by striving for authenticity, as by becoming aware of and pursuing what is personally meaningful or valuable, they engage in a process of self-development and personal fulfilment. However, there is no guarantee that any one individual will accept the call to authentic living when faced with death, as it may seem easier to avoid change and the anxiety of abandoning what they know. Indeed, the present studies did not find that death reflection led to greater autonomous motivation in general. Nevertheless, these studies identified several psychological constructs which may encourage positive change in the face of death. As such, this research has implications for the treatment of existential distress; notably, that fostering curiosity and psychological flexibility may enable growth-oriented responding in the face of one’s death. Thus, this research sets the stage for future experimental investigation into factors driving growth-oriented responding to death—an area thoroughly neglected in comparison to defense-oriented responses. The problem of death has been suggested by many existential psychologists to be a fundamental part of the human condition (Yalom, 1980), and the way people deal with death has been suggested to inform the development and maintenance of a number of psychological disorders (Iverach, Menzies, & Menzies, 2014). By seeking to understand factors that may enable people to deal with
confrontations with death constructively, we can begin to understand how to develop this
capacity in others, and thereby enrich their lives.
CHAPTER 4: Living Authentically in the Face of Death: Predictors of Autonomous Motivation Among Individuals Exposed to Chronic Mortality Cues Compared to a Matched Control Sample

This Chapter is currently under review in Self and Identity.

Reference:

Abstract

Despite research demonstrating positive outcomes of conscious death reflection, very little research directly examines a core proposition of existential psychologists—that death reflection provides an opportunity for more authentic living. The current study compared individuals chronically exposed to genuine mortality cues (funeral/cemetery workers, \( n = 107 \)) to a matched control sample (\( n = 121 \)), on both autonomous motivation and six constructs implicated in growth-oriented processing of death reflection: psychological flexibility, curiosity, neutral death acceptance, death anxiety, approach-oriented coping and avoidant coping. Funeral/cemetery workers were significantly higher on autonomous motivation, significantly different on all six facilitating constructs, and death-related work was found to have a more positive association with autonomous motivation for those higher on flexibility and lower on death anxiety.

Keywords: death reflection, mortality cues, authenticity, autonomous motivation, individual differences
Existential philosophers (e.g. Heidegger, 1927/2004; Kierkegaard, 1844/2000) and psychologists (e.g. May, 1950; Yalom, 1980) have long acknowledged the potential for death awareness to induce both profound anxiety and, in overcoming this anxiety, the pursuit of a more authentic and fulfilling life through reprioritizing one’s values and goals. While both experimental and non-experimental research traditions have acknowledged that contemplating mortality can have positive or growth outcomes (Vail et al., 2012), there has been very limited direct empirical study of authentic goal-striving in this context. This study therefore brings the focus back to the existential argument that confronting mortality can specifically facilitate growth toward more authentic living, as expressed through autonomous motivation for life goals. To this end, we compared levels of autonomous motivation between a group of people experiencing frequent, naturally occurring mortality cues (funeral and cemetery workers) and a demographically matched control sample. We additionally intended to clarify the nature of any group differences in autonomous motivation, by firstly investigating whether these groups also differed on a set of personal characteristics theorized to facilitate more or less growth-oriented processing of death awareness (we refer to these characteristics as ‘facilitators’). Secondly, we examined whether chronic exposure to death was associated with greater autonomous motivation for those with more adaptive levels of these facilitators.

**Authenticity and Autonomous Motivation**

Authenticity can be summarized as maintaining a mindful and unbiased awareness of one’s internal states and self-aspects (e.g. emotions, beliefs and values), and striving to behave in a congruent manner (including in relationships with others; Kernis & Goldman,
Authentic behaviors are therefore fully endorsed by the individual, based upon their value-system and wider self-concept. Since individuals are in a constant state of self-development, their self-concept and the way they are striving to enact it require continual reassessment and adjustment—thus, authenticity necessitates open self-awareness and non-defensive flexibility (Kernis & Goldman, 2006).

Authenticity is expressed through autonomous (self-determined) goal pursuits (R. M. Ryan & Deci, 2004). Self-determination theory (SDT; R. M. Ryan & Deci, 2002) delineates a continuum of autonomous motivation, with the most autonomous being intrinsic motivation for activities that are inherently valued, interesting or enjoyable (e.g. intimacy, self-knowledge or community engagement). Extrinsic motivation involves pursuing activities for the outcomes they generate, and may or may not be autonomous depending on their degree of internalization or self-endorsement. Non-autonomous extrinsic motivations may be externally regulated (by coercive external factors like rewards and punishments) or introjected (driven by internal pressures like shame or guilt); whereas autonomous extrinsic motivations may be identified or integrated (fully endorsing extrinsic behaviors as personally important or well-integrated within one’s overarching value-system). Consequently, although intrinsic motivations are inherently authentic, extrinsic motivations are not necessarily inauthentic.

Despite a historical tendency to consider extrinsic motivations as fundamentally negative and contradistinctive to intrinsic motivations (R. M. Ryan & Deci, 2004), it is clear that research interested in authentic goal-striving must take the full continuum of autonomous motivation into account.

Within SDT, living authentically is considered integral to the satisfaction of basic psychological needs that are conducive to well-being (R. M. Ryan & Deci, 2002), and is particularly theoretically implicated in eudaimonic well-being (a sense of meaning, purpose and fulfillment in life attained through striving for personal growth and development; R. M.
Considerable research has associated measures of both trait authenticity and autonomous motivation with a multitude of well-being indicators; including increased life satisfaction, positive affect, psychological well-being, secure self-esteem, vitality, self-actualization, mental health, relationship satisfaction, academic and work performance (see Deci & Ryan, 2000; Kernis & Goldman, 2006). Based on these associations, there appears to be substantial value in research aimed at clarifying the conditions that are conducive to living authentically.

**Personal Growth in the Face of Death Awareness Reflects Authenticity**

Within the literature on terror management theory (TMT; Solomon et al., 2004), subtle or subconscious forms of death awareness have been found to elicit rigid defense of one’s cultural worldview, often with negative outcomes (e.g. prejudice). However, in response to more conscious, naturally occurring death awareness, people commonly report positive outcomes that appear to reflect personal growth rather than defensiveness.

Considerable research on *posttraumatic growth* (Tedeschi & Calhoun, 2004) and *near-death experiences* (NDEs; Martin & Kleiber, 2005) has documented a wide range of growth outcomes which follow personal confrontations with mortality (e.g. a cancer diagnosis or near fatal car crash). Common themes in these self-reported growth outcomes include a greater present-focus, an increased sense of self-reliance, a clarification of what is valuable or meaningful in life, and a consequent shift in one’s priorities (particularly away from extrinsic values including materialism, fame and physical attractiveness). These growth outcomes appear to reflect authentic self-development, and although this similarity has been noted previously (Joseph & Linley, 2005; Martin et al., 2004), there is a considerable gap in published empirical research directly assessing the construct of authenticity as an outcome of contemplating death.
In order to explain the apparent paradox of both defensive and growth-oriented responses to death awareness reported in the literature, Cozzolino (2006) developed a model of *dual-existential systems*. This model proposes that defensiveness and growth emerge through two distinct processing systems which are often activated under different conditions. When one’s mortality is primed in a vague or subtle manner, as within TMT, it is argued to lead to abstract information processing that relies upon abstract features of the self (e.g. group categorizations and cultural worldviews) to inform one’s responses. On the other hand, deeply personalized confrontations with death as occur in trauma and NDEs are argued to activate specific information processing, whereby responses are based upon what is most personally relevant and specific to one’s life (e.g. personal needs and values).

While the NDE and posttraumatic growth findings are predominantly reliant upon retrospective self-reports of growth, they are reinforced by experimental findings demonstrating that deeper, more conscious contemplations of death have less negative and more positive outcomes (see Vail et al., 2012). In particular, Cozzolino et al. (2004) developed a *death reflection* task to induce specific, personal thoughts of death and its implications for the way one is living their life. This was intended to more closely resemble the death awareness within NDEs and trauma compared to the inductions used within the TMT literature. After completing this death reflection task, participants with a higher extrinsic value orientation (prioritizing money, fame and beauty) exhibited significantly decreased extrinsic behavior (greed). In contrast, participants exhibited increased greed after a subtle mortality salience induction. While these findings potentially imply more authentic functioning after death reflection—given greed is characteristically an externally regulated (and therefore non-autonomous) behavior—these studies did not directly assess autonomous motivation. Without assessing the degree of internalization of this extrinsic behavior
(identified or integrated extrinsic motivations), firm conclusions cannot be made regarding authentic goal-striving per se.

To date, very few empirical research projects have explicitly examined authenticity as an outcome of death awareness. However, in three studies, Seto et al. (2016) found that when participants were asked to recall a personal experience which made them think about their own mortality, the vividness of the recalled memory was associated with higher levels of perceived (trait) authenticity, in addition to greater importance of current personal goals and more intrinsic motivation. These findings provide encouraging support for the argument that death awareness can enhance authentic living, and align with theory and research suggesting that the deeper one’s contemplation of death, the greater the growth outcomes (Cozzolino, 2006; Martin & Kleiber, 2005). Although this research was correlational in nature and had somewhat limited control regarding the types of mortality experiences recalled, Arena, Moreton, and Tiliopoulos (2020) found corroborating experimental evidence. Inducing death reflection (opposed to subtle mortality salience) was found to increase state autonomous motivation (rather than only intrinsic motivation) among those high in trait curiosity. Additionally, those high in psychological flexibility exhibited increased autonomous motivation in response to any thoughts of death, likely due to an inclination toward deeper, more mindful processing of threatening information. These findings increase confidence that confronting mortality can lead to more authentic outcomes (at least for certain individuals); however, lab-induced death reflection may not extend to real-world confrontations with death. Conscious and specific contemplation of mortality may therefore have the potential to enhance authentic goal-striving, although there is a need for further research into the factors which facilitate these outcomes, and their manifestation in everyday settings (outside of the lab or the fairly extreme cases of NDEs and personal trauma).
Death Awareness in the Workplace

Many employees routinely experience mortality cues as part of their occupation, although limited work has delved into the different ways that death awareness may emerge in the workplace and the divergent outcomes this can lead to. In beginning to address this gap, Grant and Wade-Benzoni (2009) developed a contingency model of death awareness in the workplace, based in part on the work of Cozzolino et al. (2004). They propose two main forms of death awareness, differentiated by emotionality, duration, focus of attention, and importantly, the consequences they produce. Death anxiety can be defined as a negative affective experience involving fear and dread of mortality (Grant & Wade-Benzoni, 2009; Wong, Reker, & Gesser, 1994). It is processed in the ‘hot’ experiential system, which is characterized by fast, reactive, automatic and emotionally-charged processing that occurs preconsciously, often on the basis of cognitive heuristics. This system can be likened to the abstract existential system above. Death reflection, however, is processed in the ‘cool’ cognitive system, characterized by enduring, intentional and rational processing. This can be likened to the specific existential system, and is proposed by Grant and Wade-Benzoni (2009) to engender growth-oriented or prosocial outcomes, namely generativity—the prosocial concern and commitment to act in a way that benefits future generations and the greater social system (McAdams & de St Aubin, 1992). Generativity is both guided by and contributes to one’s personal value-system, implying that it is a form of authentic goal-striving which advances personal growth. As stated by Grant and Wade-Benzoni (2009), when individuals “reflect on death, they become increasingly aware that time is finite and turn to their values in order to make decisions about how to allocate their resources” (p. 612).

The mortality cues that trigger death awareness within the workplace can vary widely, with different implications for how death awareness is experienced. According to Grant and Wade-Benzoni (2009), mortality cues that are internal (opposed to external) to the workplace,
and those related to personal (opposed to vicarious) mortality are more likely to increase both
dearth anxiety and death reflection. Mortality cues also differ in the frequency and/or duration
of exposure. Acute cues are sporadic or brief in nature (e.g. workplace accidents or bomb
threats), and are expected to induce death anxiety rather than reflection, as sudden, short-
lived cues are likely to elicit reactive emotional responses that fade after the cue is no longer
present. Chronic cues are recurrent or lasting reminders of mortality (e.g. dealing with the
dead or dying on a daily basis), and are expected to induce death reflection rather than
anxiety, given that habituation is likely to result in emotional desensitization which allows for
more cool, deliberate and prolonged cognitive processing. Therefore, dangerous jobs (e.g.
firefighters and police officers) and ‘dirty work’ (e.g. paramedics and funeral workers) which
inherently involve chronic exposure to mortality cues are more likely to elicit death reflection,
which may in turn facilitate growth outcomes like autonomous motivation.

Despite calls for research (e.g. Stein & Cropanzano, 2011), very little work has
explicitly tested the above model of death awareness in the workplace, particularly the
positive outcomes ensuing from death reflection (see Sliter, Sinclair, Yuan, & Mohr, 2014 for
the impact of death anxiety on work-related well-being). Addressing this gap in the literature,
Yuan et al. (2019) developed a self-report measure of death reflection⁹, which exhibited a
positive relationship with mortality cues and life satisfaction, and was distinct from death
anxiety within a sample of firefighters. Furthermore, while mortality cues predicted lower
workplace safety performance when death reflection was low (indicating a generative
concern for others’ well-being in the workplace), they did not predict safety performance
when death reflection was high, suggesting that death reflection may assist in maintaining
prosocial motivations. While these findings are encouraging, the impact of workplace death

⁹ This scale was published after completion of the present study.
reflection on autonomous motivation remains untested. Such research appears to have value for both individuals and organizations, given the relationships between autonomous motivation and both personal well-being and positive job-related outcomes (Deci & Ryan, 2000).

**Individual Differences in the Proclivity toward Authentic Growth**

We do not expect that every person contemplating death will react by functioning in more authentic ways. Models of positive responses to death awareness all acknowledge potential individual differences in the proclivity toward growth (Cozzolino, 2006; Grant & Wade-Benzoni, 2009; Vail et al., 2012). As stated by Vail et al. (2012), “conscious thoughts of death… may motivate efforts toward personal growth and intrinsic goal pursuits among individuals who come to perceive such efforts as effective ways to restore or improve their psychological health or enrich their sense of meaning in life” (p. 308-309). Thus, individuals with the necessary personal resources or predisposition to openly explore and capitalize on the opportunity for growth afforded by conscious death reflection—or those who are more inclined to consciously reflect on death in the first place—are more likely to exhibit authentic self-development. Despite this, research into the various personal characteristics which may facilitate death reflection or growth-oriented responding (i.e. ‘facilitators’ of growth) is fairly limited. We therefore propose several constructs which are of interest in this regard.

**Personality traits.** Psychological flexibility refers to adopting a mindful, non-defensive orientation to one’s inner states, so that in the face of negative or threatening experiences, one may flexibly maintain or adjust behavior to pursue valued goals (F. W. Bond et al., 2011). This open, mindful self-awareness is expected to facilitate more conscious reflection on one’s mortality. Furthermore, mindful self-awareness and the uninhibited
pursuit of personal goals are crucial for authentic self-development (Kernis & Goldman, 2006; R. M. Ryan & Deci, 2004). In a related vein, curiosity is defined as an inclination to seek novelty, uncertainty, and challenges that expand one’s worldview and sense of self (Kashdan et al., 2009). These qualities are likely to foster interest in, and reflection on, one’s mortality (which is by nature uncertain and threatening); and additionally imply an interest in personal growth that is likely to enhance authentic responses to death. Both of these traits have been implicated in enhancing autonomous motivation after experimentally induced death awareness (Arena et al., 2020).

**Attitudes toward death.** When exposed to frequent mortality cues, individuals possessing less fearful attitudes toward death are likely to be more open to reflecting on the implications of death in their life. As such, a neutral acceptance of death as a natural and inevitable reality that is neither welcomed nor feared may allow for more ‘cool’ cognitive processing, and has been proposed to be an adaptive attitude that allows one to make the most of their life (Wong et al., 1994; Yalom, 1980). On the other hand, death anxiety appears to stimulate information processing systems which are incompatible with death reflection and motivate avoidance of death-related thoughts (Grant & Wade-Benzoni, 2009).

**Coping strategies.** Finally, the stressful nature of chronic exposure to mortality cues implies a potential role for coping strategies (Carver, Scheier, & Weintraub, 1989), whereby more adaptive or approach-oriented styles of coping would be expected to increase engagement in ‘cool’, active and reflective processing of mortality; and maladaptive or avoidant strategies would be expected to decrease this type of processing and therefore relate to less authentic outcomes.
Study 4

The current study aimed to build on past research examining authentic outcomes in the context of mortality-related recollections (Seto et al., 2016) or lab-induced death reflection (Arena et al., 2020), by maximizing ecological validity using a quasi-experimental design. Employees in the funeral and cemetery industries encounter consistent, confronting mortality cues as part of their daily work, which according to Grant and Wade-Benzoni (2009), places them under the type of chronic, vicarious death awareness that facilitates moderately high death reflection and low death anxiety. Such conditions are theoretically conducive to growth responses to death awareness, thus providing an ideal natural setting for examining authentic goal-striving as a potential outcome of confronting mortality, and thereby extending the above recent efforts to empirically test the assertions of existential theorists (e.g. Heidegger, 1927/2004; Yalom, 1980). Furthermore, studying the predictors of authentic goal-striving in this context can potentially offer insights into the nature and facilitation of death-related growth.

Hypothesis 1: Group Differences in Autonomous Motivation

We hypothesized that funeral/cemetery workers would have significantly higher autonomous motivation than the control group.

Hypothesis 2: Group Differences in the Facilitators of Growth

We hypothesized that there would be significant differences between the two groups on the proposed facilitators of growth. Specifically, it was predicted that funeral/cemetery workers would score significantly higher than the control group on psychological flexibility, curiosity, neutral death acceptance, and approach-oriented coping; and significantly lower on death anxiety and avoidant coping. These relationships were expected for two reasons. Firstly,
these personal resources would likely encourage self-selection into, and remaining in, death-related occupations; and secondly, the chronic mortality cues involved in these occupations would likely encourage the development of these capacities as a means of effective coping.

**Hypothesis 3: The Moderation of Group Differences in Autonomous Motivation**

Given that certain personal characteristics were expected to increase growth responses to death reflection, we hypothesized that chronic exposure to mortality cues would more strongly predict autonomous motivation among those with more adaptive levels of the facilitator variables.

**Method**

**Participants and Procedure**

Participants were recruited from two sources. Representing a group high in death reflection, 112 participants were sampled from a large funeral, cemetery and crematorium company operating in Australia and New Zealand. A poster was circulated in employee lunch rooms by the company’s training and development team, advertising a voluntary study on well-being and coping within the workplace. Those interested received an anonymous link to the survey (hosted on Qualtrics) from members of the employee training team. All surveys were completed at the employees’ discretion, either during work hours using an on-site computer or in their own time, as part of a larger study protocol. Consenting participants were informed at several points before and during participation that responses were anonymous and employers would not have access to their data. Completed measures from participants not completing the entire protocol were retained. To ensure this sample was chronically exposed to death, participants were asked about the frequency of exposure to mortality cues (graves or cemeteries, coffins, deceased persons, cremation ashes, grieving
families, and images of or written information about the prior cues). Those experiencing mortality cues ‘very rarely (a few times a year)’ or ‘occasionally (once or twice a month)’ were excluded from analyses ($n = 4$), in addition to one participant with non-serious responses, leaving a total of 107 participants in the sample. Of those remaining, 87.8% reported that their job involves exposure to five or six (out of six) of the listed mortality cues, and 93.5% reported exposure to them every day or most days. Participants reported an average of 6.75 years ($SD = 7.22; Mdn = 4$) in their current job.

A paid control sample was recruited through Qualtrics online survey panels. Eligible participants were adults employed in an occupation unrelated to death, and not involving exposure to potentially traumatic or life-threatening situations (e.g. funeral workers, nurses, doctors, paramedics, firefighters, rescue workers, police officers, miners, trauma counselors, or military personnel). This sample was matched with the funeral/cemetery workers on key demographic characteristics: age, gender, ethnicity, highest level of education, and marital status. After the removal of six participants either not fitting the inclusion criteria or with non-serious responses, 121 consenting participants remained in the control sample. Payment was administered by Qualtrics (approximately $10 per participant).

A total of 228 participants (75.4% female) were therefore included in the present study. The median age group was 45–49, the mode level of education was a vocational qualification (50.9%), and the mode marital status was married or in a domestic partnership (75.4%; see Appendix C for further details). The sample was predominantly Caucasian/European (94.3%), followed by 3.9% Asian and 1.7% Maori, Aboriginal or Hispanic. This sample size was limited by the number of funeral/cemetery workers willing to participate. With the available sample size, sensitivity analyses revealed 80% power ($\alpha = .05$) to detect small–moderate differences between groups using independent samples $t$-tests ($d = .37$) for Hypotheses 1 and 2, and small interaction effect sizes ($\Delta r^2 = .03$) using multiple
regression for Hypothesis 3. This level of power for the hypothesized interaction effects was considered sufficient based upon the size of a similar interaction effect ($\Delta r^2 = .04$) reported by Yuan et al. (2019).

**Measures**

**Personal Projects Questionnaire** (Sheldon & Kasser, 1998). As a measure of autonomous motivation, and thus, authentic goal-striving, participants were first asked to spend at least five minutes brainstorming a minimum of 10 personal projects or goals that they are currently working toward. Participants then selected the five projects most reflective of their motivations in general or which give the most comprehensive overview of their life. Participants were then asked four questions pertaining to the type of motivation they have for each of the five goals, respectively assessing their degree of external, introjected, identified, and intrinsic motivations. Scores for each type of motivation are summed, and a weighted composite autonomous motivation score is calculated using the following formula: 

$$\text{(2*intrinsic + identified)} - \text{(2*external + introjected)}.$$ 

Higher scores reflect greater overall autonomous motivation.

**Acceptance and Action Questionnaire–II** (F. W. Bond et al., 2011). Psychological flexibility was assessed with 10 items capturing the tendency to be mindful of one’s thoughts and emotions in order to pursue important goals, rather than avoiding inner experiences and behaving reactively (higher scores reflect greater flexibility).

**Curiosity and Exploration Inventory–II** (Kashdan et al., 2009). Trait curiosity was measured with 10 items reflecting the degree to which one actively seeks to stretch or expand their capacities and experiences, and embraces novelty and uncertainty.

**Death Attitude Profile–Revised** (Wong et al., 1994). Three distinct attitudes toward death were assessed in the present study: fear of death (7 items assessing content pertaining
to death anxiety), neutral acceptance of death (5 items assessing an ambivalent or indifferent view of death as a natural and essential part of life), and approach acceptance of death (10 items regarding beliefs in a pleasant afterlife). Approach acceptance was measured in order to test for any incidental group differences in religious or spiritual attitudes.

The COPE Inventory (Carver et al., 1989). The four-item scales of eight dispositional coping strategies were implemented. Four strategies represent approach-oriented or adaptive styles of coping: active coping (taking action to directly address the stressor), planning (thinking about how to confront the stressor), positive reinterpretation and growth (focusing on the positive aspects of the stressful situation and viewing it as an opportunity for growth), and suppression of competing activities (decreasing engagement in activities unrelated to dealing with the stressor). Four strategies represent avoidant or otherwise maladaptive styles of coping: denial (ignoring the existence of the stressor), behavioral disengagement (withdrawing efforts to solve the problem or achieve one’s goals), substance use (using drugs or alcohol to disengage from the stressor), and focus on and venting of emotions (increased attention to and expression of one’s emotional distress). After confirming a two-factor solution to coping strategy scores\(^{10}\), aggregate variables were computed by averaging across the relevant scales, representing overall ‘approach-oriented’ and ‘avoidant’ coping styles.

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\(^{10}\) Principal component analysis with oblimin rotation was conducted on the 8 coping subscale scores to create two broad coping factors, which were correlated at \( r = -.19 \). This two-factor solution explained 60.1\% of the variance. All approach-oriented subscales loaded > .76 on the first factor. All avoidant strategies loaded > .53 on the second factor. There were no salient (> .30) cross-loadings.
Results

In support of the two groups being matched on demographic variables, chi-square tests revealed no significant differences in the proportions of demographic characteristics between groups (all $p$s > .151; see Appendix C for details). Descriptive statistics, reliability estimates and independent sample $t$-tests for differences between groups are summarized in Table 8. All variables were measured with an acceptable degree of reliability, although the scale reliability for neutral death acceptance was marginal. No significant group differences were found for approach acceptance to death, suggesting that the groups were not different on religious or spiritual attitudes. Zero-order correlations for all variables are available in Appendix C. Autonomous motivation demonstrated low-moderate relationships with all facilitator variables in the expected directions.

Hypothesis 1: Group Differences on Autonomous Motivation

Autonomous motivation was significantly higher for funeral/cemetery workers versus the control group, supporting Hypothesis 1 (see Table 8). The effect size was small–moderate.

Hypothesis 2: Group Differences in the Facilitators of Growth

There were significant group differences in the expected direction for all growth facilitators, in support of Hypothesis 2. Funeral/cemetery workers were higher in flexibility, curiosity, neutral death acceptance, and approach-oriented coping, but lower in death anxiety and avoidant coping (see Table 8). Effect sizes were large, with the exception of small–moderate effect sizes for approach-oriented and avoidant coping.
### Hypothesis 3: The Moderation of Group Differences in Autonomous Motivation

Separate moderated regressions were conducted to assess whether each of the facilitator variables predicted more marked differences in autonomous motivation between groups (i.e. whether they appeared to facilitate authentic growth in the presence of mortality cues; see Table 9). Interaction terms were all in the hypothesized direction, though only reached significance for flexibility and death anxiety (each with a small effect size). This provided only partial support for Hypothesis 3. Tests of simple slopes were conducted for flexibility and death anxiety (at ± 1SD from the mean), to clarify the nature of these interactions. As expected, group membership predicted higher autonomous motivation when flexibility was high; $\beta = -0.24$, $t(224) = -2.58$, $p = .011$; but not when flexibility was low; $\beta = 0.07$, $t(224) = 0.67$, $p = .505$. In the opposite direction, group membership predicted higher autonomous motivation when death anxiety was low; $\beta = -0.27$, $t(223) = -2.86$, $p = .005$; but not when death anxiety was high; $\beta = 0.02$, $t(223) = 0.20$, $p = .844$.

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**Table 8.**

**Descriptive Statistics, Cronbach’s Alphas and t-Tests for Differences Between Groups**

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>α</th>
<th>Range</th>
<th>Total M (SD)</th>
<th>Funeral/Cemetery Workers M (SD)</th>
<th>Control M (SD)</th>
<th>t (df)</th>
<th>Effect Size (d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Autonomous Motivation</td>
<td>228</td>
<td>.78</td>
<td>-80–120</td>
<td>61.64 (35.80)</td>
<td>68.36 (37.54)</td>
<td>55.69 (33.22)</td>
<td>2.70 (226)**</td>
<td>.36</td>
</tr>
<tr>
<td>2. Flexibility</td>
<td>228</td>
<td>.91</td>
<td>1.2–7.0</td>
<td>5.04 (1.09)</td>
<td>5.41 (0.90)</td>
<td>4.72 (1.14)</td>
<td>5.09 (223.52)**</td>
<td>.67</td>
</tr>
<tr>
<td>3. Curiosity</td>
<td>228</td>
<td>.91</td>
<td>1.2–7.0</td>
<td>3.09 (0.81)</td>
<td>3.47 (0.68)</td>
<td>2.75 (0.77)</td>
<td>7.39 (226)**</td>
<td>.99</td>
</tr>
<tr>
<td>4. Neutral Death Acceptance</td>
<td>227</td>
<td>.65</td>
<td>2.6–7.0</td>
<td>5.64 (0.85)</td>
<td>6.02 (0.64)</td>
<td>5.31 (0.87)</td>
<td>7.10 (218.29)**</td>
<td>.93</td>
</tr>
<tr>
<td>5. Death Anxiety</td>
<td>227</td>
<td>.88</td>
<td>1.0–7.0</td>
<td>3.46 (1.43)</td>
<td>2.90 (1.17)</td>
<td>3.95 (1.46)</td>
<td>-6.02 (223.13)**</td>
<td>-.78</td>
</tr>
<tr>
<td>6. Approach Death Acceptance</td>
<td>227</td>
<td>.96</td>
<td>1.0–7.0</td>
<td>3.71 (1.62)</td>
<td>3.61 (1.69)</td>
<td>3.79 (1.56)</td>
<td>-0.84 (225)</td>
<td>-.11</td>
</tr>
<tr>
<td>7. COPE Approach</td>
<td>221</td>
<td>.89</td>
<td>1.4–3.9</td>
<td>2.82 (0.49)</td>
<td>2.92 (0.46)</td>
<td>2.73 (0.50)</td>
<td>2.83 (219)**</td>
<td>.40</td>
</tr>
<tr>
<td>8. COPE Avoidant</td>
<td>221</td>
<td>.85</td>
<td>1.0–3.5</td>
<td>1.68 (0.44)</td>
<td>1.60 (0.43)</td>
<td>1.74 (0.45)</td>
<td>-2.44 (219)**</td>
<td>-.32</td>
</tr>
</tbody>
</table>

*Note.* *p < .05, **p < .01. *Levene’s test for inequality of variance between groups was significant, thus equal variances were not assumed.*
Table 9.

*Standardized Beta-Weights from Moderated Regressions predicting Autonomous Motivation from Group and Each Facilitator Variable.*

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Flexibility</th>
<th>Curiosity</th>
<th>Neutral Acceptance</th>
<th>Death Anxiety</th>
<th>COPE Approach</th>
<th>COPE Avoidant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group(a)</td>
<td>-.08</td>
<td>-.11</td>
<td>-.09</td>
<td>-.12</td>
<td>-.15(*)</td>
<td>-.11</td>
</tr>
<tr>
<td>Facilitator</td>
<td>.44(**)</td>
<td>.23(*)</td>
<td>.30(*)</td>
<td>-.29(*)</td>
<td>.19</td>
<td>-.42(**)</td>
</tr>
<tr>
<td>Facilitator x Group</td>
<td>-.23(*)</td>
<td>-.13</td>
<td>-.14</td>
<td>.22(*)</td>
<td>&lt;.01</td>
<td>.10</td>
</tr>
<tr>
<td>(\Delta R^2)</td>
<td>.02(*)</td>
<td>.01</td>
<td>.01</td>
<td>.02(*)</td>
<td>&lt;.01</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Total (R^2)</td>
<td>.09(**)</td>
<td>.05(**)</td>
<td>.06(**)</td>
<td>.04(**)</td>
<td>.05(*)</td>
<td>.15(**)</td>
</tr>
</tbody>
</table>

*Note.* \(\ast p < .05, \ast\ast p < .01.\) \(\text{Group was dummy coded (funeral/cemetery workers} = 0, \text{control} = 1).\) Thus, Betas for the facilitators represent the slope for funeral/cemetery workers. All facilitator variables have been mean-centered. \(\Delta R^2\) values refer to the unique variance explained by the addition of the interaction term within each model.

**Discussion**

The present study aimed to examine whether a group of individuals chronically exposed to mortality cues as part of their occupation (and thus, likely to be reflecting on death) would exhibit greater autonomous motivation than a matched control sample. It additionally aimed to examine whether differences in certain personality traits, attitudes and coping styles could help describe those more inclined toward autonomous motivation under these conditions. The results clearly supported our first and second hypotheses, indicating that funeral/cemetery workers were higher in both autonomous motivation and significantly different on all facilitator variables (in the expected directions) compared to the control group. However, there was only partial support for the third hypothesis. While the moderating effects of the facilitators were all in the hypothesized directions, only flexibility and (low) death anxiety significantly predicted a stronger relationship between death-related work and higher autonomous motivation.
Implications

The differences in autonomous motivation observed between groups align with our wider theoretical rationale and past research, suggesting that consciously reflecting on mortality instigates specific information processing (regarding the implications of death for one’s life), which leads to growth-oriented outcomes reflecting more authentic functioning. These findings contribute to an emerging body of research demonstrating that conscious and vivid exposure to death is related to more authentic outcomes (Seto et al., 2016); and extends experimental findings (Arena et al., 2020) by demonstrating this relationship within the context of naturally occurring mortality cues. By specifically demonstrating associations with greater overall autonomous motivation (rather than extrinsic value shifts alone or more general positive outcomes), the present study corroborates the work of existential theorists (e.g. Heidegger, 1927/2004; Yalom, 1980) regarding the role of death awareness in authentic self-development, helping to clarify the nature of death-related growth and drawing clear links to the way it is expressed in daily life. While the size of the overall difference in autonomous motivation between groups was small to moderate, the moderation analyses (discussed below) suggest that certain factors are associated with greater differences between groups.

Those in death-related occupations were also significantly different on all six constructs theorized to facilitate more authentic responses to death reflection. Higher psychological flexibility, curiosity, neutral death acceptance and approach-oriented coping, in addition to lower death anxiety and avoidant coping, are all likely to assist funeral and cemetery workers effectively deal with the chronic exposure to mortality cues and emotional demands unique to their jobs. These findings contribute to our understanding of this understudied population, suggesting that workers within death-related occupations, willingly exposing themselves to chronic mortality cues, tend to possess relatively high capacities for
openly confronting and processing threatening or stressful stimuli. These findings align with previous research by Chan and Tin (2012), who found that workers in death-related occupations tended to emphasize the collective importance of personal resources (e.g. self-reflection and flexibility), existential coping (e.g. accepting death and processing questions of meaning) and emotional coping (e.g. managing one’s own death anxiety), over practical job skills and knowledge. They also extend past work focusing on the predictors of death anxiety within funeral/cemetery workers (e.g. Harrawood, 2010), by considering the predictors of more positive forms of psychological functioning within this population.

High flexibility and low death anxiety in particular were found to be stronger predictors of autonomous motivation for funeral/cemetery workers compared to the control sample, suggesting that these variables potentially facilitate greater shifts toward autonomous motivation in response to chronic mortality cues. High flexibility entails a mindful orientation, enabling individuals to non-judgmentally and non-defensively experience negative internal states. This reduces the likelihood that one will behave reactively to threatening experiences, and increases the likelihood that they will consult their values to guide their behavior under such conditions (F. W. Bond et al., 2011). Given that flexibility has also been found to increase authentic responses to experimentally induced death awareness (Arena et al., 2020), this construct holds considerable promise for understanding which individuals are more likely to process death awareness in growth-oriented ways, and the mechanisms through which growth-oriented responses emerge.

Similar to flexibility, low trait death anxiety characterizes individuals who are generally less emotionally reactive to death (Grant & Wade-Benzoni, 2009). The present findings suggest that low death anxiety may also promote growth-oriented processing of death. Death anxiety has been consistently tied to defensive, prevention-focused or self-protective mechanisms which reduce approach-oriented engagement in life and positive self-
development (e.g. Cozzolino, 2006; Sliter et al., 2014; Wong & Tomer, 2011). Furthermore, death anxiety has been found to have a negative association with the meaningfulness component of one’s sense of coherence, indicating that when death anxiety is low, there is more appreciation of life’s challenges and potential mobilization of resources to cope with stress and engage in meaning-making (Tomer & Eliason, 2000). In resolving death anxiety, an individual may therefore become free to more actively contemplate the meaning of their mortality and thereby engage in personal development toward more authentic functioning; however, future research is needed to further investigate both the causal nature of this relationship and the mechanisms underlying it.

By examining both the contextual factors and personal characteristics associated with autonomous motivation, the present research has important implications for understanding and potentially cultivating optimal psychological functioning (Deci & Ryan, 2000). For instance, being able to effectively achieve goals is only associated with greater well-being when goals are autonomously motivated (Sheldon & Kasser, 1998). The present study therefore contributes to our understanding of which individuals are more likely to express these more optimal forms of motivation under existentially threatening or emotionally demanding conditions.

Caveats, Limitations and Future Directions

The lack of significant moderating effects for curiosity, neutral death acceptance or coping styles is difficult to explain; however, these findings do not mean these constructs are irrelevant to authentic self-development in general, only that the current study did find not them to facilitate autonomous motivation more strongly for those exposed to mortality. It could be that these constructs simply have equivalent roles within the expression of autonomous motivation regardless of exposure to mortality, or that these interactive effects
were too small to detect with the available sample size. Despite the current sample size being adequately powered to detect small interaction effects of the magnitude previously reported in the literature (Yuan et al., 2019), observed effect sizes were consistently smaller than those we had 80% power to detect. These data may therefore be used to inform future research of the size of effect that could be expected when investigating authentic growth using similar methodologies. It seems that such studies may benefit from using larger sample sizes where possible.

Given the cross-sectional, quasi-experimental nature of the present study, these findings alone cannot demonstrate that chronic exposure to mortality cues (or the experience of death reflection under these conditions) caused increases in autonomous motivation. Although the matching of the control sample plausibly rules out the influence of demographic factors, there is always a possible impact of unintended group differences that are not measured or controlled for in such an experiment. The direction of causality for the group differences on the facilitator variables is also unclear, although it is plausible that employment in death-related occupations has a reciprocal relationship with these personal characteristics. Individuals with the capacity to cope with the demands of death-related work may be more likely to choose to enter and remain in such professions, and, conversely, the demands of death-related work may encourage the development of adaptive capacities and characteristics. Through chronic exposure, for instance, employees become somewhat emotionally desensitized to death (Grant & Wade-Benzoni, 2009), which would decrease ‘hot’ experiential reactions (e.g. death anxiety) and enable the development of ‘cool’ cognitive processing styles (e.g. mindful flexibility or approach-oriented coping).

It is important to recognize that while our theoretical reasoning proposes autonomous motivation as an outcome of reflecting on death, the present research cannot rule out the possibility that like the facilitator variables, autonomous motivation may have also partly
determined self-selection into (and remaining in) death-related occupations. Autonomous motivated individuals pursue personally meaningful and fulfilling goals that are well-aligned with their values (R. M. Ryan & Deci, 2002). Therefore, such individuals may be drawn toward funeral and cemetery work to the extent that it provides an opportunity for meaningful engagement (e.g. through helping others and contributing to the community; Grant & Wade-Benzi, 2009). To better tease apart the influence of these factors and the direction of causality, longitudinal research designs which assess personal characteristics at the intake of new employees and then follow up periodically thereafter would be of considerable value.

When considering the types of death-related occupations and contexts to which our findings apply, it should be noted that we do not expect the current findings to generalize to acute exposure to mortality cues (within or outside of the workplace), due to the differential forms of death awareness and information processing it is theorized to instigate (Grant & Wade-Benzi, 2009). Furthermore, while we interpret the present results as generally indicative of the outcomes that may be expected from chronic exposure to mortality cues at large, further research conducted on diverse samples (e.g. within other death-related occupations) would help to clarify the generalizability of the present findings, and whether unique stressors or experiential features of other forms of death reflection alter outcomes in ways unaccounted for by the present study.

The present research also suggests avenues for investigating potential means of promoting authentic self-development for individuals dealing with mortality in their daily life. The enhancement of psychological flexibility is the central aim of Acceptance and Commitment Therapy (ACT; Hayes, Luoma, Bond, Masuda, & Lillis, 2006); and ACT-based interventions have successfully been employed to improve distress associated with living with cancer (Hulbert-Williams et al., 2015), in addition to improving work-related outcomes in organizational settings (Moran, 2015). Training programs centered on psychological
flexibility may therefore have utility in enhancing adaptive responses to chronic mortality
cues (including more authentic functioning) within death-related organizations.

Future research may also benefit from examining whether interventions specifically
targeting death anxiety may also produce changes in authentic goal-striving. One recent
meta-analysis concluded that fears of death can be substantially reduced using cognitive
behavior therapy (R. E. Menzies, Zuccala, Sharpe, & Dar-Nimrod, 2018), which involves
gradually exposing individuals to their fears and relevant death-related stimuli or situations.
The exposure to mortality cues within funeral and cemetery work may similarly decrease
death anxiety over time. Given this, it may prove useful to examine whether CBT
interventions directly addressing death anxiety can facilitate more growth-oriented processing
which leads to greater authentic functioning (alongside a reduction in fear).

Lastly, research suggests that psychedelic-assisted psychotherapy has the potential to
produce therapeutic effects by reducing death anxiety (Moreton, Szalla, Menzies, & Arena,
2019) and increasing psychological flexibility (Watts & Luoma, 2020). Future research may
therefore explore whether simultaneously targeting both of these aspects could enhance the
efficacy of psychedelic therapy in facilitating more optimal goal pursuits among clients.

Conclusions

In linking research on the positive outcomes of death reflection to autonomous
motivation, the present study builds on efforts to integrate core aspects of existential
philosophy into the psychological study of death awareness (Martin et al., 2004; Seto et al.,
2016). It appears that consistent, conscious awareness of mortality is related to greater
autonomous motivation and therefore, more optimal, authentic engagement in the pursuit of
life goals—particularly for individuals who are more flexible and less anxious of death. This
study therefore has implications for a wide range of settings where individuals are grappling
with issues of mortality, both within various forms death-related work and in one’s personal life. It is our hope that this provides part of the groundwork for future research to establish not only which individuals are more likely to experience positive self-development, but also how to potentially mobilize personal resources that enable people to live as best as possible in the face of fundamental existential issues.
CHAPTER 5: General Discussion
This thesis investigated the relationship between authenticity and both the defensive and growth-oriented processing of death awareness. Four studies were conducted with five overarching aims: 1) to examine whether authenticity reduces defensiveness in response to death awareness; 2) to confirm whether experimentally induced death awareness can increase authentic functioning; 3) to investigate the potential moderating role of the depth of death awareness in producing more authentic responses; 4) to investigate the personal characteristics which predict more authentic responses to death awareness; and 5) to examine authentic functioning within the context of naturally occurring reminders of death. The present chapter firstly recapitulates the research conducted to address these aims, before considering implications, limitations, and directions for future research.

**Thesis Summary**

**Chapter 1**

The first chapter began with an overview of authenticity and its relation to death awareness from the perspective of existential philosophy, which heavily informed the conceptualization of this thesis. Extant research on the construct of authenticity was then outlined, followed by the literature regarding both growth-oriented responses to death awareness (within the context of posttraumatic growth and near-death experiences; PTG and NDEs) and defensive responses to death awareness (within the context of terror management theory; TMT). A distinction between observed growth-oriented and defensive responses in the literature was drawn largely from the perspective of the dual-existential systems model, and the potential for individual differences in the predisposition toward either growth or defensive responses was introduced. Given the non-defensive nature of authenticity and its
close relationships with reported growth outcomes of death awareness, the dearth of research
directly assessing the role of authenticity within non-defensive or growth-oriented processing
of death awareness constituted a substantial gap in the literature which this thesis intended to
address.

Chapter 2

This chapter clarified the theoretical and empirical evidence suggesting that
authenticity inherently involves low defensiveness, and consistently relates to those factors
which have been found to decrease defensive responding to subtle mortality salience (MS)
primes within TMT research. This evidence led to the formulation of the hypothesis that
individuals higher in authenticity may respond less defensively to MS. Within Study 1, trait
authenticity was firstly shown to exhibit an expected pattern of relationships with other
variables previously found to buffer terror management defenses. Counter to hypotheses,
however, trait authenticity was not found to buffer defensive responses to subtle MS (outside
of a significant interaction effect for a single authenticity subscale prior to controlling for
social desirability).

A secondary aim of Study 1 was to investigate the potential moderating role of awe-
proneness, given that it involves a tendency toward experiencing (and a likely habituation to
accommodating) worldview-threatening information, which may decrease defensiveness.
This was intended as an initial step in clarifying whether individual differences in
accommodative tendencies facilitate less defensive (and potentially more growth-oriented)
responses to death awareness. Awe-proneness was found to possess only some of the
expected relationships with other previously established defensiveness buffers, and was not
found to moderate defensive responses to MS.
Chapter 3

Chapter 3 outlined the first experimental tests of whether death reflection can increase authentic functioning. While past experimental research has often focused on the pursuit of intrinsic as opposed to extrinsic goals in the face of death, no study had yet assessed the full spectrum of autonomous motivation in this context. It was argued that this is vital to making claims about authenticity, which involves the full endorsement of one’s goals, even if they are extrinsic in nature. To this end, two studies were conducted. Study 2 assessed dispositional levels of autonomous motivation before randomly allocating participants to either a (deep) death reflection or control condition and subsequently measuring state autonomous motivation for current personal goals. Results demonstrated that individuals low on trait autonomy became more autonomously (i.e. authentically) motivated after reflecting on death, while those high in trait autonomy did not differ on state autonomy between groups.

Study 3 aimed to replicate and extend Study 2, by directly examining the role of the depth to which death awareness is induced, and also considering the moderating effects of personality traits theorized to facilitate growth-oriented responding to threatening information. To achieve these ends, a third experimental condition (subtle MS) was therefore added to the study design, and two additional personality traits (psychological flexibility and curiosity) were assessed. The moderating effect of trait autonomy from Study 2 was not replicated in Study 3. Nonetheless, increases in state autonomy following death awareness were found for individuals high in flexibility and curiosity. Highly flexible individuals were found to become more autonomously motivated after exposure to either of the death conditions compared to the control. Highly curious individuals, however, were found to become more autonomously motivated after the deeper death reflection condition compared to the subtle MS condition.
Chapter 4

The final study of this thesis reported within Chapter 4 was conducted with the primary aim of enhancing ecological validity by investigating the link between death awareness and authentic functioning in a naturalistic setting. Specifically, Study 4 compared a sample of funeral and cemetery workers to a demographically matched control sample on autonomous motivation. Funeral/cemetery workers were found to be higher on autonomous motivation than the matched control sample—a result that, although quasi-experimental, dovetails with the findings of Chapter 3 that death reflection can increase autonomous motivation for certain individuals.

Study 4 additionally explored the individual differences that may facilitate authentic functioning for those chronically exposed to mortality cues. Funeral/cemetery workers were higher on flexibility, curiosity, neutral death acceptance and approach-oriented coping style; and lower on death anxiety and avoidant coping style than the control group. These variables were all generally correlated with autonomous motivation; however, only flexibility and death anxiety demonstrated significantly stronger associations with autonomous motivation for funeral/cemetery workers compared to the control group, suggesting that these variables in particular may facilitate authentic self-development in the context of chronic mortality cues.

Strengths and Overarching Implications

Several prominent existential philosophers (Heidegger, 1927/2004; Kierkegaard, 1849/2004; Sartre, 1943/1958) conceptualized authenticity as necessarily involving a non-defensive openness to the reality of existence, which importantly includes acknowledging (rather than avoiding) one’s inevitable mortality. They also postulated that confronting mortality has the potential to reveal to an individual their responsibility for their own life,
which can lead to the re-evaluation of inauthentic ways of being and thereby promote more authentic living. Therefore, by working to more directly integrate the construct of authenticity within fields of psychology pertaining to both the defensive and growth-oriented processing of death awareness, this thesis builds upon the work of existential psychological theorists (May, 1953; Yalom, 1980) by strengthening the ties between existential philosophy and empirical psychology (e.g. TMT, PTG and self-determination theory; SDT).

The core strengths of the research within this thesis are that it provides: 1) the first experimental test of whether trait authenticity buffers defensive responses to mortality salience; 2) the first experimental tests of whether death awareness leads to increases in authentic functioning; 3) the first test of the relationship between death exposure and authentic functioning in a naturalistic, non-clinical context; 4) the examination of as yet untested individual differences moderators of the effects of death awareness; and 5) the use of a measure of autonomous motivation to operationalize authentic outcomes. The current section elaborates upon these strengths and explores the overarching implications of this research.

**Authenticity as Reducing Defensive Responses to Death Awareness**

Within Chapter 1 and 2, authenticity was framed as inherently non-defensive, involving an unbiased awareness of self-threatening information and the capacity to evaluate and potentially adjust one’s self-concept or way of living in light of such information (Holley S Hodgins & Knee, 2002; Kernis & Goldman, 2006; R. M. Ryan & Deci, 2004). Defensiveness, on the other hand, involves avoiding threatening information and reverting to unconscious ways of responding, based on values which are not evaluated and therefore not necessarily fully internalized or self-endorsed (Cozzolino, 2006; Martin et al., 2004; Solomon et al., 2004). Furthermore, Chapter 2 outlined the associations between authenticity and a
wide range of constructs implicated in less defensive responses to MS. The testing of a possible buffering effect of trait authenticity on terror management defense mechanisms therefore provided a clear avenue to build upon both the TMT and authenticity literature. Despite this theoretical and empirical grounding, Study 1 did not find sufficient evidence that trait levels of authenticity buffered defensive reactions to MS.

Overall, there appeared to be a general inability to reliably elicit terror management defenses in Study 1, which may itself have valuable implications. Study 1 did not find a main effect of MS; however, the significance of main effects is quite variable within studies examining moderating factors of worldview defense (e.g. Juhl & Routledge, 2010; Niemiec et al., 2010; Routledge et al., 2010). This may be due to the fact that such studies typically control for the moderators when testing main effects, and assess the moderator variables prior to the manipulation (which can sometimes eliminate main effects; e.g. Jonas & Fischer, 2006). Nonetheless, there were also no significant post-hoc interactive effects for previously established moderators of defensiveness (personal need for structure, neuroticism and mindfulness).

While there were some methodological factors that may have contributed to these results (particularly regarding the adaptation of the dependent measure of university-based worldview defense within a novel cultural context), they coincide with other recent reports of an inability to replicate terror management defense mechanisms. It is clear that there is an extensive amount of published research in support of TMT (see Burke et al., 2010), yet with the recent replication crisis (Open Science Collaboration, 2015) and the potential “file drawer problem” (Rosenthal, 1979), concerted efforts to replicate TMT findings across varied contexts and lab groups appears warranted. Relatively recently, there have been failed attempts to replicate worldview defense effects in Asia (including a non-significant overall effect size within a meta-analysis of 24 studies; Yen & Cheng, 2010), a failure to confirm
increased death-thought accessibility after a delay from MS (across six experiments; Trafimow & Hughes, 2012), an inability to replicate a MS effect found in the US with British samples (across three pre-registered experiments; Pepper et al., 2017), and a failure to replicate typical MS effects using either a Norwegian or an online US sample (within two well-powered, pre-registered experiments; Sætrevik & Sjåstad, 2019). While these findings do not entirely undermine TMT, they do begin to cast some doubt on the generalizability of terror management defense mechanisms.

Particularly troubling is a recent attempt by Klein et al. (2019) to replicate a classic finding from TMT across 21 separate labs within the US. The finding to be replicated was a simplified version of Study 1 from Greenberg et al. (1994), namely the preference for the author of a pro-US opposed to an anti-US essay after exposure to the typical morality salience prime compared to a television control prime (similar to the pro- versus anti-worldview essays employed within Chapter 2). The study was highly powered, pre-registered and labs were randomly assigned to conduct their replication either according to an “author advised” protocol (a standardized protocol designed in collaboration with the first three of the original authors, to maximize potential replication) or an “in house” protocol designed by the individual lab (based upon the original paper and other publicly available resources). Only one of 21 labs found a significant effect and the grand mean effect size was non-significant regardless of original author involvement. Klein et al. (2019) concluded that the original effect may have been a false positive, or that it is not yet understood how (or no longer possible) to recreate the necessary conditions for it to emerge.

In the context of the above findings, the core implication of Chapter 2 is that terror management defenses may be more difficult to elicit than previously thought, and they may not be as robust or generalizable as much of the older published data suggests (although the above findings and those of this thesis do not address all the claims of TMT). Given that
these defensive mechanisms are proposed to be basic aspects of human nature with an evolutionary origin, the recently reported difficulty to replicate these effects across different settings and cultures seems problematic. Of course, priming effects are known to be particularly sensitive to methodological or contextual differences (Cesario, 2014). However, Klein et al. (2019) made concerted efforts to replicate lab conditions as closely as possible, and published TMT research has reported effects with a wide variety of measures and within varied cultural contexts (Burke et al., 2010). The extent to which the large number of published significant findings is undermined by the much smaller number of failed replications is as yet unclear, and continued efforts to replicate the core findings of TMT will likely reveal the depth of these issues. However, it was not the intention of this thesis to embark on such an endeavor, and the potential difficulty to elicit terror management defenses was one reason for moving away from the assessment of defensive responses in favor of assessing potential growth responses in Chapters 3 and 4. With the sensitive nature of eliciting subtle mortality salience effects, there may be an appeal to pursuing the effects of more severe forms of death awareness.

**Authentic Self-Development as a Growth Response to Death Awareness**

**Building upon prior research.** This thesis builds upon prior research regarding growth responses to death awareness by providing direct experimental and quasi-experimental tests of whether death awareness relates to living in more authentic ways. As a key paper motivating the research in this thesis, Cozzolino et al. (2004) provided a valuable test of growth responses to death reflection, finding that it can lead more extrinsically-oriented individuals to downgrade the pursuit of extrinsic goals (exhibiting less greed). Extrinsic goals (e.g. for wealth, beauty and recognition) are important predictors of lower well-being (e.g. Deci & Ryan, 2000), and Cozzolino et al.’s (2004) study was strengthened
by the assessment of a behavioral outcome unconstrained by issues of self-report data. While greed appears to be predominantly regulated by external rewards and is therefore likely to be enacted with a low degree of autonomous motivation, the degree to which motivation for this extrinsic goal had been internalized was not directly measured. The type or content of goals (extrinsic or intrinsic) is related to the reasons one pursues their goals (the degree of autonomous motivation), although this relationship tends to be small–moderate in size (Sheldon & Kasser, 1998; Sheldon et al., 2004). While there is some degree of overlap, whereby extrinsic goals are generally less autonomously motivated, individuals can pursue extrinsic goals for more or less autonomous reasons. Both goal content and autonomous motivation uniquely predict well-being (Deci & Ryan, 2000; Sheldon & Kasser, 1995, 1998; Sheldon et al., 2004), and changes in either can be indicative of personal growth. However, in order to support the argument that death reflection increases authenticity specifically, a holistic measure of autonomous motivation was required. Indeed, activation of the specific existential system is theorized to facilitate growth toward greater need satisfaction in part through engaging in more self-determined (i.e. autonomous) goal pursuits (Cozzolino, 2006).

Chapter 3 therefore provided evidence for the dual-existential systems model and built upon Cozzolino et al.’s (2004) original findings regarding death reflection, by demonstrating growth not only in terms of what goals people pursue (goal contents) but also why they pursue them (goal motivation)—at least for certain individuals. This provides evidence that growth can indeed be expressed through striving for greater authenticity, by downgrading motivations driven by coercive and poorly internalized reasons, and/or upgrading motivations that are more fully endorsed and personally meaningful.

Chapter 4 addressed a limitation of the death reflection manipulation acknowledged by Cozzolino et al. (2004). In order to maximize personal engagement in death reflection and decrease abstract contemplation of the general concept of death, this manipulation requires
participants to visualize a specific death-related scenario (namely, an apartment fire). This may be necessary to increase the activation of the specific existential system, yet it means that the effects may be contingent on the specific features of that scenario, decreasing generalizability to other death scenarios. Although quasi-experimental, in finding that funeral and cemetery workers exhibit greater autonomous motivation than a matched control group, Chapter 4 provides evidence that naturally occurring death reflection (of a very different nature to that induced by the death reflection manipulation) may also promote growth toward authenticity. The mortality cues experienced by this sample are both very concrete and enduring over long periods of time, which is expected to increase the depth of death reflection and the habituation to the threat it poses, thereby decreasing anxiety-driven, defensive responses and increasing deliberate, growth-oriented responses (Cozzolino, 2006; Grant & Wade-Benzoni, 2009).

The present research also builds on correlational research by Seto et al. (2016) who investigated the relationship between the depth of death awareness and authenticity. They found greater perceived vividness of a personal, mortality-related memory was associated with higher levels of trait authenticity (particularly the Authentic Living subscale of Wood et al.’s [2008] Authenticity Scale), greater importance of current personal goals (including meaningfulness and commitment to goals), and the possession of more intrinsic goals. The fact that effects were not observed for all subscales of the direct measure of (trait) authenticity, however, suggested that further research corroborating and building upon the specific association between death awareness and authenticity was worthwhile. Chapters 3 and 4 therefore complement Seto et al.’s (2016) findings by assessing the degree of autonomous striving for (and thus, authentic endorsement of) one’s personal goals. Chapter 3 also addressed Seto et al.’s (2016) call for studies employing experimental designs to enable stronger inferences of causation than their own correlational designs permitted. In employing
Cozzolino et al.’s (2004) death reflection task, Chapter 3 was able to overcome a limitation involved in requiring participants to recall an event that reminded them of their mortality. While an advantage of the ‘recall’ paradigm is that death awareness pertains to an actual personal experience, it provides limited control regarding the various types of experiences individuals are recalling, and whether these memories are true or accurate. Seto et al.’s (2016) third study did return the hypothesized effects while controlling for several aspects of the content of participants’ memories, including the perceived seriousness of the event, the degree to which it was considered a near-death experience, and personal involvement in the event (none of which predicted more authentic outcomes). However, if at the cost of ecological validity, by experimentally manipulating vivid death reflection, the studies in Chapter 3 possessed greater internal validity by controlling the specific death-related scenario across participants and guiding their reflection on it. As such, they represent the first experimental testing to date of the hypothesis that reflecting on death can lead to greater authentic functioning.

The quasi-experimental design of Chapter 4 was intended to balance the tradeoff between internal and ecological validity. Following Cronbach (1957), it was considered fundamental to extend the experimental findings by investigating the association between authentic functioning and chronic exposure to mortality cues in a real-world setting. Laboratory manipulations (even those that are well-designed) are likely to be somewhat limited in their ability to induce deep reflections on mortality, due to their hypothetical nature. Ultimately, participants will be mindful of the fact that there is no imminent danger (e.g. the building is not currently on fire), which enables them to retain some psychological distance from the prospect of their mortality. Indeed, while checking for non-serious responses to the open-ended questions of the death reflection task in Chapter 3, a minority of participants reported reminding themselves of this fact to alleviate the discomfort of reflecting on death.
In contrast, funeral and cemetery workers are less able to avoid the reality of the mortality cues they experience, given that these cues are physically present, affect the lives of their clients, and must be continually dealt with in order to fulfill the requirements of their job. While specific job roles and duties within this sample varied, there was a very consistent and high level of exposure to concrete mortality cues across participants, suggesting a high degree of ecological validity.

The fact that the types of mortality cues experienced by funeral and cemetery workers are vicarious in nature does suggest that they may be relatively less impactful than actual threats to one’s own mortality (Grant & Wade-Benzoni, 2009). Nonetheless, the combined frequency and confronting nature of them (e.g. regularly handling deceased persons) is theorized by Grant and Wade-Benzoni (2009) to activate “cool”, approach-oriented reflection on death and its implications for one’s life. In fact, posttraumatic growth has often been found to emerge in response to vicarious exposure to trauma (for a review, see Manning-Jones, de Terte, & Stephens, 2015); and Seto et al. (2016) reported evidence that the vividness of a close other’s mortality experience increased authentic outcomes comparably to the vividness of one’s own confrontation with mortality (suggesting that vicarious mortality cues may also elicit growth). As such, despite not involving personal confrontations with death, Study 4 still represents a meaningful naturalistic investigation of the association between death awareness and authentic functioning.

In sum, by employing a combination of experimental and quasi-experimental methods across different (student versus general public) populations, Chapters 3 and 4 collectively provide the most comprehensive testing to date of the hypothesis that authenticity can emerge as a growth response to death awareness.
Growth toward authenticity as a non-defensive response. Since authenticity was not found to decrease defensive responses to MS as a moderator in Chapter 2, it may seem that the evidence within this thesis was unable to associate authenticity with the non-defensive processing of death awareness. However, conceptualizing the development of greater authenticity as a growth-oriented outcome of death awareness highlights its non-defensive nature. Within Cozzolino’s (2006) dual-existential systems model, defensiveness and growth are proposed to encapsulate divergent modes of responding to death awareness, hinging upon distinct forms of information processing (abstract versus specific) and seemingly incompatible motivational orientations (avoidance/prevention-focused versus approach/promotion-focused). Grant and Wade-Benzoni (2009) expanded further on this distinction, by associating defensive responses with the “hot” experiential system (characterized by automatic, anxiety-driven reactions to death), and growth responses with the “cool” cognitive system (characterized by deliberate, analytical processing of death). From this perspective, individuals cannot operate within both systems at once—one cannot simultaneously avoid and approach threatening information, or react in an automatic and deliberate fashion. To use Cozzolino’s (2006) metaphor, it seems that both sides of the existential coin cannot be face-up at the same time. This implies that growth responses are by nature non-defensive, as they involve approach-oriented processing of mortality in order to adapt and improve one’s way of living. Authenticity has been consistently related to less general defensiveness and more approach-oriented, accommodative tendencies in the wider literature (as elaborated upon in Chapters 1 and 2). Therefore, to the extent that findings within Chapters 3 and 4 support increased authenticity as an adaptive growth response, they also support increased authenticity as a non-defensive response to contemplating mortality.

Despite the distinction between these pathways, any particular individual may nonetheless alternate between them at different points in time—implying that the expression
of a particular non-defensive, growth response does not necessarily preclude the expression of a separate defensive response. Indeed, the abstract or specific nature of the mortality prime appears to be an important factor in determining which pathway is taken (Cozzolino, 2006; Martin et al., 2004; Vail et al., 2012). Grant and Wade-Benzi (2009) also acknowledge that while states of death anxiety and death reflection are unlikely to co-occur, individuals may transition between these states, largely as a function of the depth or duration of the mortality cues. Initial anxiety may transition to reflection once the reactive shock has worn off, and the individual is habituated to the threat. The findings of this thesis do suggest that individuals possessing certain characteristics are generally more prone to growth responses than others; however, all individuals are likely to have the potential to respond to death awareness with the activation of either existential system. An individual responding defensively on a particular occasion does not guarantee that they will always respond in this manner (with the same reasoning applying to growth responses). Therefore, although this thesis looked at the role of depth of death awareness and between-person moderators, there will necessarily exist some amount of within-person variability in the activation of the specific versus abstract existential systems—a question to which this thesis does not speak.

The Crucial Role of Individual Differences

In the presence of research demonstrating the potential for both positive and negative outcomes related to confronting mortality—including not only socially detrimental defense mechanisms, but to also the triggering or exacerbation of various forms of psychopathology (Iverach et al., 2014; Schubert, Schmidt, & Rosner, 2016)—it is essential to investigate the factors that may drive the effects of death awareness in different directions. Thus, this thesis investigated the role of individual differences in determining different responses to death awareness and found novel evidence regarding the constructs likely to promote growth
responses to contemplating death. Of note is that evidence for a main effect of death awareness on authenticity was limited. There was no main effect in Studies 2 or 3, and while there was a main effect of group in Study 4, this became non-significant after accounting for the moderating effects of most of the individual differences variables. In the case of Study 4, the emergence of a main effect is still valuable and may indicate that naturalistic forms of death reflection are more likely to influence authenticity in general; although a substantial amount of this effect appears to be accounted for by the moderating influence of the individual differences. Hence, it seems that the core overarching implication of this thesis is that death reflection may facilitate authenticity for certain individuals in particular.

These findings build upon the dual-existential systems theory, by providing evidence that the depth of mortality cues is not the only determinant of growth responses. While individual differences moderated the effects of death awareness in Studies 2 and 4, Study 3 most directly examined this question by manipulating and comparing the depth of mortality cues. The deeper induction predicted greater authentic functioning than the more subtle induction for those high in curiosity (implying that the depth of the mortality cues was instrumental in producing more authentic outcomes for these individuals); however, those high in psychological flexibility exhibited increased authenticity after either induction compared to the control. This does not necessarily mean that the depth of contemplating mortality was unimportant for flexible people. On the contrary, Chapter 3 makes the argument that those high in flexibility are likely to engage more deeply in death reflection after any mortality cue. Flexibility enables individuals to acknowledge and experience negative emotions without becoming reactive to them (F. W. Bond et al., 2011). This suggests that they may be less likely to defensively avoid death awareness and more likely to consciously maintain their attention on it (deepening their reflection). The proposition that certain individuals are able to respond in growth-oriented ways to even subtle mortality cues
is supported by the findings of Vess et al. (2009), whereby subtle mortality salience induced more self-expansive exploration among individuals low in personal need for closure. As suggested by Vail et al. (2012), it seems that some individuals are indeed more prone to perceive and engage in opportunities for growth when contemplating death.

**Psychological flexibility.** While the potential roles of trait authenticity, curiosity and death anxiety were also discussed in prior chapters, the role of psychological flexibility in promoting more authentic responses to death awareness deserves particular attention here, given that this interaction was the only replicated effect across studies (within Chapters 3 and 4). Firstly, a point of clarification is warranted regarding the relationship between psychological flexibility and authenticity. The Acceptance and Commitment Therapy (ACT; Hayes et al., 2006) model of psychological flexibility includes one component (of six) pertaining to committed action, defined as the pursuit of value-consistent goals, and therefore largely equivalent to autonomous motivation. Importantly, however, the Acceptance and Action Questionnaire-II (F. W. Bond et al., 2011) measure of psychological flexibility used within this thesis does not directly assess this component of the model per se. That is, it assesses the degree to which negative internal events do not interfere with pursuing a valued life, although it does not assess whether one is actually pursuing a valued life (i.e. the degree of autonomous goal pursuit one is involved in), thus avoiding potential conceptual overlap with the measure of autonomous motivation. Therefore, the findings presented in this thesis are consistent with the broader ACT model, in that the mindful, non-reactive adaptability measured by the Acceptance and Action Questionnaire-II may indeed facilitate authentic goal pursuits when confronting difficult internal states (in this case, death awareness).

This finding also contributes to the abundance of research associating flexibility with positive psychological outcomes, including improved mental health, lower levels of distress,
greater pain tolerance, increased behavioral effectiveness at work, more advanced stages of identity development and greater resilience to stressful events (F. W. Bond et al., 2011; Feldner et al., 2006; Hayes et al., 2006; Kashdan & Rottenberg, 2010). Within ACT, a lack of flexibility is conceived as “a primary source of psychopathology (as well as a process exacerbating the impact of other sources of psychopathology)” (Hayes et al., 2006, p. 6), and it is the core aim of ACT to enhance psychological functioning by increasing clients’ flexibility. Indeed, increases in flexibility (measured by the Acceptance and Action Questionnaire) have been found to mediate the psychotherapeutic effects of ACT for various forms of psychopathology (see Ciarrochi, Biliach, & Godsell, 2010)—and pertinently, studies have found that increases in flexibility account for the effectiveness of ACT in reducing distress within cancer survivors (Hulbert-Williams et al., 2015).

Following from this, an especially encouraging implication regarding the present findings for psychological flexibility is that they not only clarify which individuals are more likely to experience authentic growth when grappling with issues of mortality, but potentially provide insight into the enhancement of psychological growth in these contexts. There is considerable theory and research outlining the underlying component processes involved in enhancing flexibility, and established therapeutic methods for doing so (Hayes et al., 2006). Therefore, this thesis has implications for clinicians aiming to enhance authentic functioning (and perhaps psychological growth more generally) for clients with serious illness or trauma. It may also have implications for enhancing authentic functioning in the context of a wide range of clinical presentations, given that death anxiety is a transdiagnostic construct underlying many manifestations of psychopathology (e.g. panic disorder, obsessive compulsive disorder and depressive disorders; Iverach et al., 2014). Iverach et al. (2014) note that ACT (and thus, flexibility) may provide a particularly effective means for clinicians to
assist their clients to address underlying issues of mortality, and call for research to directly investigate this potential.

Some indirect support for this potentiality comes from research into psychedelics. Psychedelic-assisted psychotherapy has been found to be effective in reducing death anxiety and the distress associated with terminal illness (Moreton et al., 2019), and there is also emerging evidence that it could be used to increase flexibility (Watts & Luoma, 2020). Recent evidence has additionally found that on average, individuals who have had psychedelic experiences report a subsequent increase in flexibility, and these perceived increases in flexibility mediate the self-reported positive effects on well-being (A. K. Davis, Barrett, & Griffiths, 2020). Therefore, the findings of this thesis suggest that increases in flexibility may be one mechanism through which psychedelics assist individuals to effectively process death. Moreover, given the transdiagnostic nature of death anxiety, this thesis suggests that flexibility may facilitate more general psychotherapeutic outcomes partly through assisting individuals to productively process deeper existential issues that underpin or maintain pathological symptoms.

There are also potentially wide-reaching implications for organizational contexts, not only for employees working in death-related occupations (as in Chapter 4), but also for employees working in dangerous jobs (e.g. firefighters, soldiers or mine workers) or experiencing enduring mortality cues external to the workplace (e.g. personal illness or bereavement). Moreover, workforces across the globe are aging at increasing rates which is likely to precipitate a general, wide-spread increase in workplace death awareness, in turn necessitating a greater appreciation for how to best manage issues of mortality in these contexts (Grant & Wade-Benzoni, 2009). To the extent that flexibility has been found to decrease the association between the emotional demands of one’s job and levels of exhaustion (Biron & Van Veldhoven, 2012), it is also likely to assist when these emotional
demands pertain to issues of mortality. If workplace counseling or training programs targeting flexibility may be able to foster more authentic functioning for those exposed to mortality cues, this could have beneficial outcomes for both employees and organizations, given the associations between employee autonomy and work-related satisfaction, performance, engagement, motivation, problem solving and creativity (Baard, Deci, & Ryan, 2004; Deci et al., 2001; Gagné & Deci, 2005; Ilardi, Leone, Kasser, & Ryan, 1993). Fortunately in this regard, there are precedents for the successful use of ACT-based workplace interventions that target psychological flexibility in order to improve work-related outcomes (F. W. Bond, Hayes, & Barnes-Holmes, 2006; Moran, 2015).

**The Value of Using Autonomous Motivation as an Index of Authentic Growth**

One strength of Studies 2–4 of this thesis is that they utilized motivational indices of authentic outcomes, rather than trait measures. There are several benefits of this approach. For instance, assessments of autonomous motivation for current, concrete personal goals more effectively capture the ways an individual is actually intending to act in their life, compared to assessments of an individual’s perceptions of their general tendencies. Trait measures of authenticity may still be valid in the contexts of assessing growth or psychotherapeutic effects (as suggested by Wood et al., 2008); however, goal-based motivational measures are less reliant on perceptions of how one generally feels or behaves, and may better capture fluctuations in authenticity at any particular time. Such measures of autonomous motivation do typically ask participants to select the goals that best describe them or are most characteristic of them (thus containing a dispositional element), although what is actually measured are the reasons the participant is currently motivated to pursue these goals. Doing so better captures variation in why an individual is engaged in their
specific life goals (i.e. how authenticity is being expressed through their actual goal pursuits) compared to trait measures.

Trait measures of authenticity also require participants to engage in more complex mental operations than motivational assessments, which raises the likelihood of error in the former. Consider an example item from Wood et al.’s (2008) Authentic Living subscale, which assesses aspects of autonomy: “I live in accordance with my values and beliefs”, rated on a scale from 1 (does not describe me at all) to 9 (describes me very well). A participant is required to firstly consider the ways in which they generally “live”, which in itself is a difficult and complex task. It is unclear how well any individual would be able to bring to mind all the various ways in which they behave in their life. Participants are also required to have clear, direct knowledge of what their values and beliefs are, which may be a somewhat unrealistic expectation (Baumeister, 2019; Jongman-Sereno & Leary, 2019), particularly without implementing a values survey beforehand. This item then requires participants to simultaneously hold both their general way of living and their general values and beliefs in mind, in order to make an overall comparison between the two. Given the difficulty involved in each element of this task (and the time pressure of knowing that this is only one of many items in any given experiment), participants are likely to rely upon cognitive heuristics (e.g. recalling their most readily accessible behaviors) and general intuitive judgments in their responses, which are likely to increase vulnerability to response distortion. It is acknowledged that the trait measure of autonomous motivation employed as a moderator in Studies 2 and 3 is subject to some of the same criticisms, given that it asks participants why they “generally do different things in [their] life” (Guay et al., 2003). All self-report measures are prone to these issues to some degree, and trait measures of general, felt authenticity are still valuable to research (Vess, 2019). However, personal goal-based measures of
autonomous motivation possess certain advantages for assessing authentic outcomes in the context of this thesis.

Using a personal goal-based approach to assess autonomous motivation firstly gets around the issue of requiring participants to consider their general ways of acting or accessing their specific values and beliefs. Instead, participants are asked to make judgments about why they pursue concrete goals in their life (e.g. “because you really believe that it is an important goal to have—you endorse it freely and value it wholeheartedly”). Secondly, making these judgments does not involve directly assessing the alignment of goals with particular values. Rather, it involves the less complicated task of reporting the degree to which one consciously endorses their goals (or feels pressured, constrained or gratified when pursuing them).

Thirdly, while these are still subjective judgments (autonomous motivation is a subjectively experienced phenomenon; R. M. Ryan & Deci, 2004; Sheldon, 2014), they are potentially less prone to bias than trait measures. Measures of autonomous motivation firstly ask participants to brainstorm a range of personal goals, and then to separately select a subset of these goals without knowing that they will be reporting on their autonomous motivation for them. The selection of goals should therefore be unaffected by the knowledge of the ratings being made about them. Also, the fact that ratings are made about specific goals indicates that participants are not as free to selectively report on more favorable behaviors as they are when answering trait authenticity measures. For these reasons, the measurement of autonomous motivation for personal goals may be a more valid way to assess changes in authentic striving in response to death awareness, and the present studies complement and build on previous research utilizing trait measures.
Caveats and Limitations

Sample Characteristics

Studies 1–3 were somewhat limited by the use of convenience samples of undergraduate students and some potential issues regarding the restricted age range of these samples were noted in Chapters 2 and 3. Although a very large majority (close to 90%) of studies conducted on TMT sample from undergraduate populations (Burke et al., 2010), and studies conducted on growth responses to death reflection also commonly use these samples (Blackie et al., 2016; Cozzolino et al., 2004; Lykins et al., 2007; Prentice et al., 2018), there are some reasons to suggest that age may influence responses to death awareness. It is quite well-documented that death anxiety generally peaks in young adulthood and decreases with age subsequently (Chopik, 2017). Given that defensive responses to mortality salience are theoretically anxiety-driven, the use of undergraduate samples is not necessarily problematic for the study of terror management defenses (separate issues regarding the measurement of awe-proneness were noted in Chapter 2). In fact, Maxfield, Pyszczynski, Greenberg, and Bultmann (2017) only found defensive responses to emerge for younger and not older individuals. Younger individuals, however, may not be as likely to engage in death reflection compared to older individuals, since anxious responses to death decrease the capacity for reflective processing; and aging is likely to enhance death reflection through increases in emotional self-control and habitation to death (Grant & Wade-Benzoni, 2009). This implies that the use of an undergraduate sample in Chapter 3 potentially underestimated the effects of death reflection. Interestingly, a main effect of death awareness group was not found in Chapter 3 and was found in Chapter 4, although further testing would be required prior to concluding that these results were influenced by age.

Study 4 partly aimed to improve the generalizability of the association between death awareness and authenticity by using a sample with a wider age range; however, this study
was subject to other sampling issues. The difficulty in identifying an accessible group of individuals chronically exposed to naturally occurring mortality cues, is that any such group (e.g. firefighters, soldiers, ambulance drivers or cancer patients) is likely to possess other unique characteristics which may complicate the interpretation of results. As discussed in Chapter 4, the funeral and cemetery workers exhibited average differences from the matched control sample on all measured individual differences constructs, and the design of this study cannot tease apart the direction of the relationship between these variables and self-selection into this line of work (indeed, it is plausible that there is a bidirectional relationship in this regard). Of course, the same issue applies to the direction of causality for authentic outcomes; although in combination with the findings of Chapter 3, it appears plausible that autonomous motivation was at least partly influenced by workplace exposure to death. It was clear from its initial inception that Study 4 would not provide conclusive results in this regard. Rather, Study 4 was designed as a first step to directly assessing authentic functioning in such a sample, and identifying potentially important individual differences for future research to consider. To avoid these issues in the future, it may help to sample from populations with greater within-population variation in exposure to mortality cues than funeral and cemetery workers (e.g. nurses or firefighters; Sliter et al., 2014), as comparing within occupations would help avoid the potential selection effects.

**Lack of Replication Across Studies**

Two primary findings within this thesis were not replicated across studies—the moderation of the relationship between death awareness and authentic goal-striving by trait autonomy (within Chapter 3) and by curiosity (between Chapters 3 and 4). While these findings are not a limitation of the research per se, a lack of replication does limit the conclusions that can be drawn from the research, thereby constituting an important caveat.
Potential reasons for the mixed results regarding trait autonomy were discussed in Chapter 3, regarding those high on this construct potentially possessing a combination of competing tendencies toward being (a) less in need of making changes to their goal pursuits to live authentically, and (b) more generally growth-oriented and able to accommodate their worldview. In regards to (a), evidence from the literature on PTG and NDEs suggest that in response to death awareness, people downgrade their previous extrinsic motivations toward materialism, social status or physical attractiveness, in favor of pursuing more intrinsic or personally meaningful motivations (Groth-Marnat & Summers, 1998; Kinnier et al., 2001). This implies that those who are not motivated toward extrinsic goals would have less need to downgrade them after confronting mortality. Supporting this, Cozzolino et al. (2004) found death reflection to elicit a shift for individuals higher on extrinsic values to decrease their pursuit of extrinsic values, and found that less extrinsically-oriented individuals did not alter their pursuit of extrinsic values. Although it was made clear in prior chapters that extrinsic pursuits are not equivalent to inauthentic pursuits, there is a degree of similarity nonetheless, and it therefore seemed plausible for a similar shift to emerge for less autonomous individuals. That is, they may re-evaluate their goal pursuits to become more autonomous, and thus, authentic. Indeed, Study 2 found evidence of this effect.

Regarding the opposing expectation (b), however, SDT proposes that the felt capacity to satisfy basic psychological needs is a pre-condition for individuals to experience continued personal development and growth (R. M. Ryan & Deci, 2002). People are most likely to internalize extrinsic motivations and become more autonomously motivated, when their autonomy is supported and they “experience a sense of choice, volition, and freedom from external demands” (R. M. Ryan & Deci, 2002, p. 20). This sense of general, felt autonomy appears similar to what is captured by trait measures of autonomy and authenticity. Chapter 2 also developed several arguments that more authentic people may react less defensively to
death, and although the results did not support this hypothesis, this line of reasoning suggests that more authentic individuals may therefore be more inclined toward growth. While no such evidence was obtained, it seems that this combination of factors may have contributed to the mixed results in Chapter 3. The aim of Chapter 3 to clarify the direction of this moderation effect was therefore left somewhat unfulfilled, as it is not entirely clear whether there is no overall interactive effect of trait autonomy, or whether further replication attempts may reveal a consistent direction of this effect. It is plausible that due to this combination of factors, future research may continue to find mixed or null results. The design of Study 4 moved away from considering autonomous motivation as a moderator and solely focused on this construct as an outcome of death awareness, although suggestions for alternative approaches to this question are offered in the Future Directions section below.

The interactive effect of curiosity found in Study 3 was not replicated in Study 4, and in light of some methodological differences between studies, it is worth exploring whether these may have influenced the results. Both studies used the same measure of curiosity, although the instructions for the measure of autonomous motivation were slightly altered given the different designs of the studies. Study 3 assessed autonomous motivation for current goals that participants were most motivated to pursue at the point in time after the manipulation; whereas Study 4 assessed autonomous motivation for current goals that were most representative of participants in general, given that the mortality cues in Study 4 were enduring rather than a single discrete event. These changes were considered appropriate to the design of Study 4 and were not expected to alter the effect of curiosity.

Another potential explanation for the different results regarding curiosity relates to the different conditions investigated in Studies 3 and 4. In Study 3, higher curiosity increased autonomous motivation specifically in response to deep rather than subtle forms of death awareness (and did not moderate the effect of the combined death conditions compared to the
control). On the other hand, Study 4 compared those exposed to mortality cues against a control group and did not explicitly measure the depth of death reflection. This seems unlikely to have influenced the results, however, as the funeral and cemetery worker sample was chosen for their chronic exposure to specific mortality cues, which is theorized to deepen death reflection (Cozzolino, 2006; Grant & Wade-Benzi, 2009). It is unlikely that a substantial subset of funeral and cemetery workers were only contemplating death in a subtle or unconscious way (due to the nature of their job), such that curiosity no longer moderated the effect of mortality exposure on authentic outcomes. Finally, the sample size of Study 4 was somewhat restricted by the number of funeral and cemetery workers available and willing to participate in the study, which limited the power to detect smaller effects. The interactive effect of curiosity did emerge in the same direction with similar Beta coefficients in Study 3 ($\beta = .10$, comparing mortality salience against death reflection) and Study 4 ($\beta = -.13$, comparing funeral/cemetery workers against the control group$^{11}$), although did not reach significance in Study 4. Therefore, it is possible that an effect of curiosity was present in Study 4, though was too small to be detected with the available sample size.

**Reliance on Self-Reported Growth Outcomes**

Although the outcome measure of autonomous motivation used to operationalize authentic functioning may have strengths over other measures, it is nonetheless reliant on a self-report measurement modality. Ultimately, such measures are still assessing the felt, conscious experience of autonomous motivation (in line with the conceptualization of the

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$^{11}$ There was also a difference in the coding of the group variable between studies, which can alter Beta values (though not significance). Group was contrast-coded in Study 3 (mortality salience = -.5, death reflection = .5), and dummy-coded in Study 4 (funeral/cemetery workers = 0, control = 1). When coding the Study 4 group variable in a comparable way to Study 3 (control = -.5, funeral/cemetery workers = .5), $\beta = .08$. 
construct; R. M. Ryan & Deci, 2004; Sheldon, 2014), and as with any self-report scale, scores will be subject to a range of potential conscious and unconscious biases. That is, increases in autonomous motivation from exposure to death awareness may not fully reflect one’s actual motivations, may not necessarily be expressed in one’s behaviors, or may be short-lived. In isolation, the studies in Chapters 3 and 4 are unable to resolve these issues, although Chapter 4 partly circumvents the last of these issues, given that the outcome measure was a general (rather than state) index of autonomous motivation implemented in the context of long-term exposure to mortality cues. Nevertheless, previous research has found associations between self-reported autonomous motivation and higher objective performance and goal attainment outcomes (both cross-sectionally and longitudinally), in addition to longitudinal increases in well-being (Baard et al., 2004; Boiche et al., 2008; Gagné & Deci, 2005; Sheldon & Elliot, 1999; Sheldon & Houser-Marko, 2001; Sheldon & Kasser, 1998; Sheldon et al., 2004). This evidence provides some degree of confidence in the validity of self-reported autonomous motivation, and its relevance to more adaptive ways of living.

This issue relates to the debate within the PTG literature regarding the degree to which self-reported growth following trauma is in fact illusory. Zoellner and Maercker (2006) propose a two-component “Janus-faced” model of PTG, whereby perceptions of growth reflect either, or some combination of, actual growth (an adaptive outcome of coping with trauma) and a positive illusion (a predominantly maladaptive strategy for coping with trauma). While the conception of PTG put forth by Tedeschi and Calhoun (1996) focuses solely on the adaptive side of self-reported growth, individuals are also able to use these perceptions to avoid acknowledging their distress, which is typically maladaptive (though may successfully serve a short-term palliative function in some cases; Zoellner & Maercker, 2006). It is important to note that characteristic features of the assessments of PTG and related constructs (e.g. benefit finding) are likely to increase their susceptibility to self-
enhancement illusions. For example, the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996) asks participants to retrospectively report on the degree to which they have changed since their trauma. Of course there are design limitations inherent to researching such phenomena, however even prospective studies rely on self-reported perceptions of the benefits of an unfolding trauma (e.g. C. G. Davis, Nolen-Hoeksema, & Larson, 1998). Although the perception of positive change may be definitional for these constructs, the fact that these indices of growth transparently ask the subject about the effects of their trauma raises the likelihood of response distortion. By explicitly reporting on the perceived positive sides of one’s trauma, an individual can more easily and directly use such judgments to distract from the negative aspects of their trauma—as opposed to reporting on an outcome measure not inherently tied to the trauma, such as relationship satisfaction or motivational tendencies. Therefore, while self-reported autonomous motivation may still be subject to a degree of response distortion, such an approach in Chapters 3 and 4 evades more serious issues associated with self-reports of perceived growth.

**Future Directions**

**Further Experimental and Longitudinal Research**

There are several avenues for further research to clarify and expand upon the findings of this thesis. Primarily, the assessment of growth toward authenticity in response to death awareness would benefit greatly from longitudinal experimental designs that are able to track within-person changes in authenticity over time. Ideally, this would involve the repeated implementation of the same index of authenticity at two or more time points. Due to the time-frame of the experimental studies within Chapter 3, it was inappropriate to implement the same index of autonomous motivation both before and after the manipulation (within approximately half an hour), due to the likelihood of an anchoring effect reducing the ability
of the experimental induction to significantly alter responses. Thus, future research would benefit from implementing repeated measures of a personal project-based measure of autonomous motivation over a longitudinal time frame.

There are precedents for using repeated measures designs to assess intrinsic-extrinsic value shifts in response to extended death awareness manipulations (conducted over six days; Lykins et al., 2007; Prentice et al., 2018), and similar methodologies are likely to have utility in assessing changes in autonomous motivation. Such a design would enable not only a more direct assessment of changes in authentic functioning than the moderation analyses within Chapter 3, but would offer additional and more detailed data. For instance, such a design would allow an opportunity to assess detailed changes (or different trajectories) in motivation for the same goals over time, in addition to whether certain goals were dropped and new goals were adopted. This would enable the analysis of trends in the types of goals that individuals drop versus adopt over the course of the experiment. By allowing for the calculation of difference scores between the pre- and post-manipulation levels of autonomous motivation, such a design would also enable the categorization of participants according to those who have increased, decreased or remained relatively stable in their authentic functioning. Doing so would open avenues for examining the characteristics of those who experience growth versus those who don’t, including whether they were relatively lower or higher in initial autonomous motivation (potentially clarifying the mixed results within Chapter 3).

Longitudinal research conducted within naturalistic settings would also be highly valuable, particularly if conducted over long periods of time, in order to explore trajectories of change and potential within-person variability in growth or defensive responses as a function of habituation to death awareness. As mentioned in Chapter 4, assessing funeral and cemetery workers at recruitment and then following up over the course of one or more years,
could clarify the direction of effects (and any potential reciprocal effects) between exposure to chronic mortality cues, personal characteristics and authenticity. Similar research could also be conducted within other death-related occupations such as firefighters and nurses, although such research may need to consider the increased variability in mortality cues in these occupations.

Longitudinal studies help to address the question of whether death awareness elicits genuine, enduring growth toward authenticity; although to this end, it would also be valuable to supplement self-reported measures of authenticity with behavioral measures. The challenge of such an endeavor is that people express authenticity in different ways, based upon different value systems. Some behavioral methods of assessing values-based action may be found within the ACT literature, including increased student re-enrolment (Chase et al., 2013) and amount of times using an app for smoking cessation (Bricker et al., 2014). It also seems feasible to potentially use commitment to freely chosen, intrinsically-oriented activities as a behavioral outcome, such as choosing to sign up for a prosocial volunteering opportunity in one’s community, or persistence in learning an instrument or playing a sport. When considering the use of behavioral outcome measures, however, it is important to distinguish between authentic striving (e.g. continued effort to quit smoking or attend university classes) as opposed to performance outcomes (e.g. successful smoking cessation or grades). Authenticity itself refers to enacting one’s values rather than being ultimately successful in one’s goals. Implementing such measures would corroborate self-reports of increased autonomous motivation by demonstrating that intentions to behave authentically are acted upon.
Going Beyond Death Awareness

This thesis has centered its focus on death awareness as a self-threatening experience that has the capacity to instigate either defensiveness or growth. However, as outlined in Chapter 1, death is only one form of existential threat. Existential theorists propose that death awareness is threatening because it activates a broader existential awareness—an awareness of the underlying groundlessness of existence, in which nothing is fixed or certain, there is no objective meaning, we are totally free to create our own meaning and therefore responsible for doing so (Heidegger, 1927/2004; Kierkegaard, 1844/2000; May, 1950; Sartre, 1943/1958; Yalom, 1980). Death awareness is only one route to confronting the groundless nature of existence (although perhaps a particularly direct and concrete route), implying that other forms of existential awareness not involving death are also likely to instigate defensiveness or growth. Indeed, this has been proposed within the meaning maintenance model (Heine et al., 2006), whereby threats to one’s meaning frameworks can instigate both accommodation and defensive compensation. Furthermore, while the argument was made in prior chapters that a majority of traumas studied within the context of PTG center around the threat of mortality, PTG has also been studied in regards to traumas unrelated to death, such as divorce (Mahoney, Krumrei, & Pargament, 2008; Tedeschi & Calhoun, 1996) and immigration (Weiss & Berger, 2008). Such events challenge core schematic beliefs similarly to events involving death awareness and instigate the same meaning-making processes. Evidence has also been reported for cross-cultural travel to function as a seismic event (similar to trauma), through which individuals experience personal growth toward authenticity (Hirschorn & Heffron, 2013). Therefore, it appears that the findings of this thesis pertaining to death awareness may have implications for existential awareness more generally.

Future experimental research may consider whether existential meaning threats unrelated to death may have similar effects to death awareness. Along these lines, Hornsey,
Faulkner, Crimston, and Moreton (2018) implemented an awe-based experimental manipulation depicting the vastness of the universe. As discussed by the authors, this manipulation can be considered existential to the degree that it raises questions about the nature of existence (particularly one’s relative place within the universe) and can undermine one’s regular sense of self (through eliciting feelings of self-diminishment; Hornsey et al., 2018). Complementary research by G. N. Rivera et al. (2019) demonstrated that awe inductions can decrease one’s sense of meaning in life to the extent that they elicit a sense of self-diminishment, suggesting that awe has the potential to threaten meaning (although awe can simultaneously have positive effects on meaning to the extent that it elicits positive affect). While the authors state the possibility that such a threat may elicit defensive, compensatory motivations to re-establish meaning in the short term, they also acknowledge that “it is possible that this momentary effect triggers a restructuring of one’s worldviews that ultimately promotes long-term positive changes in meaning in life” (G. N. Rivera et al., 2019, p. 11). To the extent that exposure to the vastness of the universe challenges one’s meaning frameworks similarly to death awareness (as argued in relation to awe within Chapter 2), it is plausible that a sufficiently potent induction of this kind may require accommodation of one’s meaning frameworks that leads to authentic self-development—at least for flexible individuals, and perhaps over an extended period of time.

In considering the broader underlying processes involved in threat-induced growth toward authenticity, future research would also benefit from explicitly examining the mechanisms driving these changes. While the research in this thesis considered the individual differences which moderate expressions of growth, it did not directly test the mediating factors theorized to elicit growth, such as the breaking down of core assumptions and attempts to make meaning out of the threatening event (Heidegger, 1927/2004; Janoff-Bulman & Frantz, 1997; C. L. Park, 2010; Tedeschi & Calhoun, 2004; Yalom, 1980).
Qualitative methods have been employed by Adams (2015) to demonstrate the association between specific schema changes and personal growth outcomes experienced by women with chronic illnesses; and Cozzolino et al. (2004) content analyzed participants’ open-ended responses to the death reflection manipulation to confirm that it induced a reflection on one’s life, goals, regrets and other people. It therefore seems feasible to use similar content analysis techniques to test for the mediating role of shattered assumptions and meaning-making attempts on authentic growth in response to death awareness. By confirming the mechanisms accounting for growth, this line of research may extend the applicability of findings pertaining to death to other contexts involving the same processes.

Applications to Clinical and Psychedelic Research

As discussed above, the research within this thesis implies that psychological flexibility may contribute toward psychotherapeutic outcomes for various disorders, *in part* due to the enhanced capacity to effectively process underlying existential issues such as death anxiety. Future research might therefore consider using mediational models to assess the degree to which this indirect pathway predicts therapeutic outcomes, as a means of gaining insight into the therapeutic process. It is possible that this line of research could lead to greater sensitivity among clinicians regarding the role of death awareness in the development and maintenance of various forms of psychopathology, which may in turn have the potential to improve treatment efficacy (Iverach et al., 2014). Of course, this is not proposed to be the sole or most important route through which flexibility exerts its effects, and future research is also likely to benefit from examining whether this pathway influences outcomes over and above the effects of other known mediators, or only for particular subsets of clients.

The revival of psychedelic research within the last two decades provides a promising context for further exploration of the interplay between death awareness and flexibility in
promoting psychological growth and well-being. After widespread sanctions stifled the scientific study of psychedelics in the late 1960s, increasing research is now exploring a wide range of potential psychological benefits of these substances, particularly in the context of psychotherapy (Pollan, 2018). For instance, Carhart-Harris, Bolstridge, et al. (2018) have shown very large (and sustained) positive effects of psychedelic-assisted psychotherapy in cases where other treatments have been ineffective. Watts and Luoma (2020) have in fact used the model of psychological flexibility from ACT to develop a framework for psychedelic-assisted psychotherapy for depression, aimed at promoting flexibility as a vehicle for therapeutic change. This thesis has framed flexibility as a predictor of growth-oriented processing of death, suggesting that this therapeutic approach may have downstream benefits in assisting clients to effectively process issues pertaining to mortality.

In addition to this, there is an implication that flexibility may not only influence responses to death, but that deep, reflective exposure to death may increase flexibility. This is because the psychedelic experience itself (at least at high doses such as those used in psychedelic therapies) commonly involves deep confrontations with one’s mortality—including experiences of ego-death, in which one’s sense of self disintegrates in a way that resembles a psychological death (Leary, Alpert, & Metzner, 1964; Pahnke, 1969).

Furthermore, strong parallels have been reported between the psychedelic experience (particularly when elicited using DMT) and the near-death experience (Timmermann et al., 2018). Therefore, it is possible that the vivid exposure to death during the psychedelic experience is partly responsible for subsequent increases in flexibility. This position is supported by findings within the NDE literature. For instance, Martin, Sanders, Kulkarni, Anderson, and Heppner (2014) outline how the growth experienced by people with NDEs reflects more mindful and flexible ways of being. These individuals appear to break away from habitual or automatic preconceptions, becoming more able to flexibly consider multiple
different perspectives, which allows individuals to make adjustments in their life that reflect greater authenticity. While Chapter 3 specifically addressed the influence of prior flexibility on growth responses to death, Chapter 4 acknowledged the possibility that exposure to death may also increase flexibility, which in turn facilitates authenticity (although the cross-sectional data could not clarify directionality). Therefore, it seems that both pathways are deserving of further research.

By simultaneously considering both of these pathways, it is possible that future research may discover means of enhancing the efficacy of psychedelic-assisted psychotherapy. While the use of psychedelic therapy to augment flexibility is already being developed (Watts & Luoma, 2020), the ability of flexibility to moderate responses to existential threat suggests that building flexibility prior to implementing psychedelic therapy may assist those clients likely to struggle with the challenges of the psychedelic experience. Not all individuals gain profound insights or well-being as a result of psychedelic experiences, and it seems that a key determinant of such responses is the resistance (lack of open receptivity) to the difficulties inherent in the experience (Carhart-Harris, Roseman, et al., 2018; Watts & Luoma, 2020). Therefore, in the context of the findings of Chapter 3, it seems that for individuals prone to resistance (most likely those low on prior flexibility), implementing a separate intervention aimed at increasing flexibility before conducting psychedelic therapy may increase treatment efficacy. The model of psychedelic therapy put forth by Watts and Luoma (2020) does include a 3-hour preparation session partly aimed at encouraging “full willingness to engage with difficult emotions” (p. 98); however, it may be ideal to extend this preparation to ensure that resistance-prone clients have developed a minimally sufficient level of flexibility prior to the psychedelic session.

In sum, the research conducted within this thesis implies that by considering the interplay between death awareness and individual differences in psychological flexibility,
future clinical research may come to a better understanding of the process of psychological growth within therapeutic contexts, and potentially discover means to better facilitate therapeutic change.

**Thesis Overview and Conclusions**

This thesis has addressed questions largely stemming from existential philosophy and spanning various fields of psychology (including social, personality, positive, clinical and organizational psychology), regarding the interplay between authenticity and death awareness. The awareness of mortality is a ubiquitous and fundamental feature of the human experience, with potentially profound impacts on the way individuals live their life—which need not be negative. By investigating authenticity within this context, in addition to the role played by various individual differences, this thesis has provided novel insights into how and for whom contemplating death can have positive implications. This chapter has explored the overarching implications of this research, in addition to acknowledging its limitations and suggesting fruitful avenues for further scientific inquiry. This thesis arrived at the following primary conclusions:

1. Based on the findings of Study 1, trait authenticity does not appear to reliably decrease defensive responses to subtle mortality salience, although several caveats to this conclusion have been noted.

2. Experimentally induced death reflection appears to be able to increase authentic functioning for particular individuals (Study 2 and 3).

   a. Low levels of prior authentic functioning may predict greater increases in authentic functioning in response to death reflection, although these results
were inconclusive and future research is required to confirm the presence of this effect (ideally using longitudinal, within-person designs).

b. The depth of mortality cues alone does not appear to be sufficient to predict growth toward authenticity, although compared to subtle mortality salience, deeper mortality cues may increase authentic functioning among highly curious individuals.

c. High flexibility appears to facilitate more authentic responses to death awareness in general (likely due to deeper processing of any mortality cues).

3. Naturally occurring, chronic exposure to mortality cues appears to be associated with higher authentic functioning in general (Study 4), and this relationship is moderated by certain individual differences.

a. Higher flexibility and lower death anxiety are particularly associated with greater authentic functioning under these conditions.

b. Curiosity, neutral death acceptance, and coping styles may not differentially predict authentic functioning under these conditions.

The studies within this thesis provided important steps toward directly integrating the construct of authenticity within modern existential psychological research on the defensive and growth-oriented responses to death awareness. The findings ultimately provide qualified empirical support for the position held by many (e.g. Joseph & Linley, 2005; Martin et al., 2004; May, 1953; Yalom, 1980), that in the face of death awareness, individuals can indeed come to express greater authenticity in their daily motivations for life goals. That is, individuals with appropriate predispositions may be able to capitalize on the opportunity for authentic self-development provided by an awareness of their eventual nonexistence. This serves as a foundation for future research to not only better understand the experience of
growth and those most likely to experience it, but to potentially discover means of facilitating positive self-development when individuals are confronted with their mortality.

Death, it seems, may have the power to put life into perspective. By contrasting life against its eventual end, it becomes precious by the fact that it is limited, revealing an opportunity to re-assess whether one is actively engaged in pursuing as valuable a life as possible. Ultimately, it is for the individual to decide what is valuable, and therefore, acknowledging mortality can empower the individual to make this choice more consciously for themselves. An awareness of death may have the somewhat paradoxical capacity to place life more firmly in one’s own hands.
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doi:10.1177/1089268019829471


Appendix A: Chapter 2 Supplemental Analyses

Table A1.

Standardized Beta-Weights from Post-Hoc Moderated Regressions Predicting Worldview Defense from Group and Previously Studied Personality Moderators.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>PNS</th>
<th>Mindfulness</th>
<th>Neuroticism</th>
<th>Attachment-Av&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Attachment-Anx&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>-.04</td>
<td>-.04</td>
<td>-.05</td>
<td>-.10</td>
<td>-.10</td>
</tr>
<tr>
<td>Personality Variable</td>
<td>.11</td>
<td>.13</td>
<td>-.14</td>
<td>-.11</td>
<td>.05</td>
</tr>
<tr>
<td>Personality x Group</td>
<td>-.12</td>
<td>-.01</td>
<td>.05</td>
<td>-.03</td>
<td>-.07</td>
</tr>
<tr>
<td>Total $R^2$</td>
<td>.03</td>
<td>.02</td>
<td>.02</td>
<td>.02</td>
<td>.02</td>
</tr>
<tr>
<td>$\Delta R^2$</td>
<td>.01</td>
<td>&lt;.01</td>
<td>&lt;.01</td>
<td>&lt;.01</td>
<td>.01</td>
</tr>
</tbody>
</table>

Note. *<i>p < .05, **<i>p < .01. PNS = Personal need for structure; Av = Avoidant; Anx = Anxious. Group was contrast-coded (control = -.5; mortality salience = .5), so that main effect regression coefficients are averaged over group. All personality variables were mean-centered. <sup>a</sup>Regression analyses for attachment styles were only conducted on those individuals who have been in a romantic relationship (n = 118).

Table A1 presents the standardized Beta coefficients from the third step of five separate exploratory post-hoc hierarchical linear regressions, testing the interactive effects of personality variables previously found to moderate terror management defenses. There were no significant main effects or interactions for any of the personality variables. These regression analyses did not control for social desirability, however the addition of social desirability in a fourth step did not meaningfully alter the results.
Appendix B: Chapter 3 Supplemental Analyses

Replicating the Precise Interaction Effect from Study 2 with Study 3 Data

Table B1.

Hierarchical linear regression of the effects of death reflection (versus control only) and trait autonomy on state autonomy (N = 289).

<table>
<thead>
<tr>
<th></th>
<th>Step 1</th>
<th>Step 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b (SE)</td>
<td>β</td>
</tr>
<tr>
<td>TA</td>
<td>1.12 (0.19)**</td>
<td>.32**</td>
</tr>
<tr>
<td>Group</td>
<td>5.42 (4.25)</td>
<td>.07</td>
</tr>
<tr>
<td>Group x TA</td>
<td>0.16 (0.39)</td>
<td>.02</td>
</tr>
</tbody>
</table>

R² = .11**

ΔR² = < .01

Note. *p < .05, **p < .01. TA= mean-centered trait autonomy; CI= confidence interval. Group has been contrast-coded (control= -.5; death reflection=.5), so that the regression coefficient for the main effect of TA is averaged over group.

The interaction between group (death reflection versus control) and trait autonomy on state autonomy from Study 2 was not replicated in Study 3.

Testing for Differences between the Study 2 and 3 Samples on Trait Autonomy

In order to explore a potential reason for the lack of replication of the interaction effect found in Study 2, a t-test was run for differences between the Study 2 (n = 183) and Study 3 (n = 442) samples on trait autonomy. Levene’s test for equality of variances was non-significant (p = .086), suggesting that despite unequal sample sizes, equal variances could be assumed. There was no significant difference in mean levels of trait autonomy between groups; Study 2 M = 3.69 (SD = 9.06), Study 3 M = 4.71 (SD = 10.75), t(623) = -1.12, p = .261, CI95% = [-2.79, 0.76].
Testing for Differences between Study 2 and 3 Control Samples on State Autonomy

In order to explore another potential reason for the lack of replication of the interaction effect found in Study 2, a t-test was run for differences between the Study 2 control ($n = 95$) and Study 3 control ($n = 150$) samples on state autonomy. Levene’s test for equality of variances was non-significant ($p = .603$), and there was no significant difference in mean levels of state autonomy between groups; Study 2 $M = 28.04$ ($SD = 41.55$), Study 3 $M = 34.93$ ($SD = 39.05$), $t(243) = -1.31$, $p = .191$, CI$_{95\%} = [-17.39, 3.61]$.
Appendix C: Chapter 4 Supplemental Analyses

Table C1.

*Chi-Square Tests for Differences between Groups on Demographic Variables*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Funeral/Cemetery</th>
<th>Control</th>
<th>Chi-Square</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18–24</td>
<td>1</td>
<td>2</td>
<td>3.30</td>
<td>.973</td>
</tr>
<tr>
<td>25–29</td>
<td>11</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30–34</td>
<td>7</td>
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<tr>
<td>35–39</td>
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<td>40–44</td>
<td>13</td>
<td>15</td>
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<td>45–49</td>
<td>15</td>
<td>21</td>
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<td>50–54</td>
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<td>55–59</td>
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<td>65–69</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70–74</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
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<tr>
<td><strong>2. Gender</strong></td>
<td></td>
<td></td>
<td>0.05</td>
<td>.825</td>
</tr>
<tr>
<td>Female</td>
<td>80</td>
<td>92</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
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<td>29</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>3. Ethnicity</strong></td>
<td></td>
<td></td>
<td>6.73</td>
<td>.151</td>
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<tr>
<td>Caucasian/European</td>
<td>101</td>
<td>114</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>2</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aboriginal</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maori</td>
<td>2</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>4. Education</strong></td>
<td></td>
<td></td>
<td>5.59</td>
<td>.349</td>
</tr>
<tr>
<td>Less than Year 10</td>
<td>0</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Year 10</td>
<td>13</td>
<td>7</td>
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<tr>
<td>Year 12</td>
<td>17</td>
<td>23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vocational qualification</td>
<td>56</td>
<td>60</td>
<td></td>
<td></td>
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<tr>
<td>Undergraduate degree</td>
<td>16</td>
<td>20</td>
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<td></td>
</tr>
<tr>
<td>Postgraduate degree</td>
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<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>5. Marital Status</strong></td>
<td></td>
<td></td>
<td>4.04</td>
<td>.257</td>
</tr>
<tr>
<td>Single, never married</td>
<td>9</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married/Domestic partnership</td>
<td>77</td>
<td>95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>17</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Separated</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table C1 outlines the frequency distributions for all demographic variables split by group, alongside the associated Chi-Square tests for differences between groups. The groups were not significantly different on any of the demographic variables.

Table C2.

**Zero-Order Correlation Coefficients for All Measures within the Total Sample.**

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Group</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Autonomous Motivation</td>
<td>-.18**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Flexibility</td>
<td>-.32**</td>
<td>.28**</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4. Curiosity</td>
<td>-.44**</td>
<td>.18**</td>
<td>.31**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Neutral Acceptance</td>
<td>-.42**</td>
<td>.22**</td>
<td>.36**</td>
<td>.30**</td>
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<td></td>
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<tr>
<td>6. Death Anxiety</td>
<td>.37**</td>
<td>-.15*</td>
<td>-.47**</td>
<td>-.23**</td>
<td>-.51**</td>
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<td></td>
<td></td>
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<tr>
<td>7. Approach Acceptance</td>
<td>.06</td>
<td>.09</td>
<td>.12</td>
<td>.03</td>
<td>.15*</td>
<td>-.08</td>
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<tr>
<td>8. COPE Approach</td>
<td>-.19**</td>
<td>.14*</td>
<td>.46**</td>
<td>.43**</td>
<td>.31**</td>
<td>-.27**</td>
<td>.21**</td>
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</tr>
<tr>
<td>9. COPE Avoidant</td>
<td>.16*</td>
<td>-.36**</td>
<td>-.65**</td>
<td>-.10</td>
<td>-.22**</td>
<td>.27**</td>
<td>-.03</td>
<td>-.27**</td>
</tr>
</tbody>
</table>

*Note.* *p < .05, **p < .01. *Group was dummy coded (funeral/cemetary workers = 0, control = 1).

Table C2 provides the zero-order correlations between all variables. Autonomous motivation demonstrated low-moderate relationships with all facilitator variables in the expected directions.
Table C3.

Zero-Order Correlation Coefficients between Autonomous Motivation and Facilitators Split by Group.

<table>
<thead>
<tr>
<th>Facilitators</th>
<th>Funeral/Cemetery Workers</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexibility</td>
<td>.35**</td>
<td>.15</td>
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<tr>
<td>Curiosity</td>
<td>.19</td>
<td>.05</td>
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<tr>
<td>Neutral Acceptance</td>
<td>.22*</td>
<td>.14</td>
</tr>
<tr>
<td>Death Anxiety</td>
<td>-.22*</td>
<td>.01</td>
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<tr>
<td>COPE Approach</td>
<td>.17</td>
<td>.07</td>
</tr>
<tr>
<td>COPE Avoidant</td>
<td>-.38**</td>
<td>-.32**</td>
</tr>
</tbody>
</table>

Note. *p < .05, **p < .01.

Table C3 presents the zero-order correlations between the six facilitators and autonomous motivation split by group. Correlations were stronger for the funeral/cemetery workers than the control group for all cases, and were in the hypothesized directions. Higher correlations for flexibility, curiosity, approach-oriented coping, and neutral acceptance of death, but lower correlations for death anxiety and avoidant coping were obtained for the funeral/cemetery workers as compared to the control group. A more consistent pattern of significant correlations was found among funeral/cemetery workers, whereas in the control group, only avoidant coping was significantly associated with autonomous motivation.